



# OPERATION AND MAINTENANCE MANUAL

## A18 / A26 - 60/66' Liquid Fertilizer







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## LIMITED WARRANTY

FAST AG Solutions warrants to the buyer that the new machinery is free from defects in material and workmanship.

This warranty is only effective as to any new machinery which has not been altered, changed, repaired or treated since its delivery to the buyer, other than by FAST AG Solutions or its authorized dealers or employees, and does not apply to accessories, attachments, tools or parts, sold or operated with the new machinery, if they have not been manufactured by FAST AG Solutions.

FAST AG Solutions shall only be liable for defects in the materials or workmanship attributable to faulty material or bad workmanship that can be proved by the buyer, and specifically excludes liability for repairs arising as a result of normal wear and tear of the new machinery or in any other manner whatsoever, and without limiting the generality of the foregoing, excludes application or installation of parts not completed in accordance with this operator's manual, specifications, or printed instructions.

Written notice shall be given by registered mail, to the Manufacturer within seven (7) days after the defect shall have become apparent or the repairs shall have become necessary, addressed as follows:

FAST AG Solutions  
4130 Commerce Boulevard  
Windom, MN 56101

This warranty shall expire one (1) year after the date of delivery of the new machinery.

If these conditions are fulfilled, FAST AG Solutions shall at its own cost and at its own option either repair or replace any defective parts provided that the buyer shall be responsible for all expenses incurred as a result of repairs, labor, parts, transportation or any other work, unless FAST AG Solutions has authorized such expenses in advance.

The warranty shall not extend to any repairs, changes, alterations, or replacements made to the new equipment other than by FAST AG Solutions or its authorized dealers or employees.

This warranty extends only to the original owner of the new equipment.

Rubber parts (including tires, hoses, grommets) are not warranted.

This warranty is limited to the terms stated herein and is in lieu of any other warranties whether express or implied, and without limiting the generality of the foregoing, excluded all warranties, express or implied or conditions whether statutory or otherwise as to quality and fitness for any purpose of the new equipment. the Manufacturer disclaims all liability for incidental or consequential damages.

This Applicator is subject to design changes and FAST AG Solutions shall not be required to retrofit or exchange items on previously sold units except at its own option.

Warranty void if not registered.



# FAST LIQUID FERTILIZER APPLICATOR WARRANTY REGISTRATION FORM INSPECTION REPORT

**Warranty Registration**

This form must be filled out by the dealer and signed by both the dealer and the customer at the time of delivery.

Customer Name				
Address				
City		State		Zip
Phone				
Dealer Name				
Address				
City		State		Zip
Applicator Model				
Serial Number				
Delivery Date				

**DEALER INSPECTION REPORT**

- All Fasteners Tight
- Wheel Bolts Torqued
- Hydraulic Hoses and Fittings Free and Tight
- Fertilizer Hoses and Fittings Free and Tight
- Wheel Drive Turns Freely
- Lubricate Machine
- Check Tire Pressure
- Frame and Wings Level
- Monitors and Controllers Function
- Wiring Harness Connected

**SAFETY**

- Safety Chain Installed
- All Guards Installed
- All Safety Signs Installed
- Reflectors, SMV and Lights Clean
- Review Operating and Safety Instructions

I have thoroughly instructed the buyer on the above-described equipment which review included the Operator's Manual content, equipment care, adjustments, safe operation and applicable warranty policy.

Date \_\_\_\_\_  
 Dealer's Rep. Signature \_\_\_\_\_

The above equipment and Operator's Manual have been received by me and I have been thoroughly instructed as to care, adjustments, safe operation and applicable warranty policy.

Date \_\_\_\_\_  
 Owner's Signature \_\_\_\_\_

White - FAST  
 Yellow - Dealer  
 Pink - Customer



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## FAST A18 / A26 Applicator

APPLICATOR SERIAL NUMBER \_\_\_\_\_

DATE PURCHASED \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

TANK SIZE \_\_\_\_\_

NUMBER OF COULTERS \_\_\_\_\_

PUMP MANUFACTURER:

(CIRCLE ONE)

ACE FMC205-304

ACE FMC-650

ACE FMC-750

Hypro 9306S-HM1C-U

Hypro 9306C-HM1C-U



**FOREWARD**

READ THIS MANUAL carefully to learn how to operate and service your machine correctly. Failure to do so could result in personal injury or equipment damage. This manual and safety signs on your machine may also be available in other languages.

THIS MANUAL SHOULD BE CONSIDERED a permanent part of your machine and should remain with the machine when you sell it.

MEASUREMENTS in this manual are given in both metric and customary U.S. unit equivalents. Use only correct replacement parts and fasteners. Metric and inch fasteners may require a specific metric or inch wrench.

RIGHT-HAND AND LEFT-HAND sides are determined by facing in direction implement will travel when going forward.

WRITE PRODUCT IDENTIFICATION NUMBERS (P.I.N.) in Specification section. Accurately record all numbers to help in tracing machine should it be stolen. Your dealer also needs these numbers when you order parts. File identification numbers in a safe place off machine.

BEFORE DELIVERING THIS MACHINE, your dealer performed a pre-delivery inspection.

THIS LIQUID APPLICATOR IS DESIGNED SOLELY for use in customary agricultural or similar operations for the purpose of side dressing row crops ("INTENDED USE"). Use in any other way is considered as contrary to the intended use. The manufacturer accepts no liability for damage or injury resulting from this misuse, and these risks must be borne solely by the user. Compliance with



and strict adherence to the conditions of operation, service and repair as specified by the manufacturer also constitute essential elements for the intended use.

THIS LIQUID APPLICATOR SHOULD BE OPERATED, serviced and repaired only by persons familiar with all its particular characteristics and acquainted with the relevant safety rules (accident prevention). The accident prevention regulations, all other generally recognized regulations on safety and occupational medicine and the road traffic regulations must be observed at all times.

Any arbitrary modifications carried out on this LIQUID APPLICATOR will relieve the manufacturer of all liability for any resulting damage or injury.

WARRANTY is provided as part of FAST's support program for customers who operate and maintain their equipment as described in this manual. Warranty is explained on warranty certificate which you should have received from your dealer.

This warranty provides you assurance that FAST will back its products where defects appear within warranty period. In some circumstances, by FAST also provides field improvements, often without charge to customer, even if product is out of warranty. Should equipment be abused, or modified to change its performance beyond original factory specifications, warranty will become void and field improvements may be denied. Setting fuel delivery above specifications or otherwise overpowering machines will result in such action.

TIRE MANUFACTURER'S warranty applicable to your machine may not apply outside U.S.

If you are not the original owner of this machine, it is in your interest to contact your local FAST dealer to inform them of this unit's serial number. This will help FAST notify you of any issues or product improvements.

**Pre-Delivery**

After machine has been completely assembled, inspect to be sure it is in good running order before delivering to customer. The following checklist is a reminder of points to inspect. Check off each item as it is found satisfactory or after proper adjustment is made.

- SMV emblem installed; protective shipping tape removed from reflectors and lights are installed.
- All grease fittings have been lubricated. (See LUBRICATION AND MAINTENANCE section in this manual.)
- Inspect to be sure all nuts have been tightened to proper torque and all cotter pins spread.
- Tires are properly inflated. Tighten wheel bolts to specified torque.
- Make sure fertilizer coulters are properly adjusted.
- Warning lights are properly installed and operational.
- Make sure all customer-ordered attachments have been installed or are available for delivery.
- Any parts scratched in shipment have been touched up with paint.
- Remove all shipping decals.
- This machine has been thoroughly checked and to the best of my knowledge is ready for delivery to the customer.
- Verify transport pins are inserted in transport hole.

Signed: \_\_\_\_\_

Date: \_\_\_\_\_

## Delivery

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At the time machine is delivered, following checklist is a reminder of information which should be conveyed directly to the customer. Check off each item as it is fully explained to customer.

- Tell customer to use proper tools.
- Explain to customer that life expectancy of this or any other machine depends on regular lubrication as directed in operator's manual.
- Give operator's manual to customer and explain all operating adjustments.
- Make customer aware of all safety precautions that must be followed while using this machine.
- When machine is transported on a road or highway at night or during day, accessory lights and devices should be used for adequate warning to operators of other vehicles. In this regard, tell customer to check local governmental regulations.
- To the best of my knowledge, this machine has been delivered ready for field use and customer has been fully informed as to proper care and operation.

Signed: \_\_\_\_\_

Date: \_\_\_\_\_

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**After-Sale**

The following is a suggested list of items to be checked at a dealer-customer mutually agreeable time during the first operating season.

- Check with customer as to performance of machine. Make certain proper operating adjustments are understood.
- If possible, operate machine to see that it is functioning properly.
- Acquaint customer with any special attachment which will help do a better job.
- Go over entire machine for loose or missing hardware.
- Check for broken or damaged parts.
- Ask customer if recommended periodic lubrication has been performed.
- Review operator's manual with customer and stress importance of proper lubrication and safety precautions.

Signed: \_\_\_\_\_

Date: \_\_\_\_\_



**Owner Register**

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Name		Model Number
Post Office		P.I.N. Number
County	State	Date Purchased

**SAFETY****Recognize Safety Information**

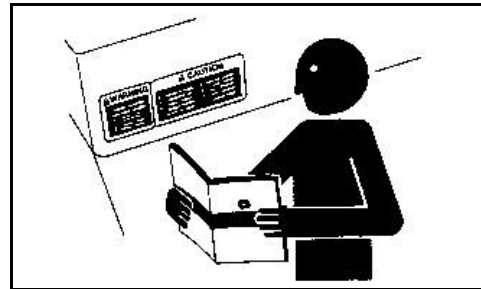
This is a safety-alert symbol. When you see this symbol on your machine or in this manual, be alert to the potential for personal injury.

Follow recommended precautions and safe operating practices.

**Understand Signal Words**

A signal word—DANGER, WARNING, or CAUTION—is used with the safety-alert symbol. DANGER identifies the most serious hazards.

DANGER or WARNING safety signs are located near specific hazards. General precautions are listed on CAUTION safety signs. CAUTION also calls attention to safety messages in this manual.

**Follow Safety Instructions**

Carefully read all safety messages in this manual and on your machine safety signs. Keep safety signs in good condition.

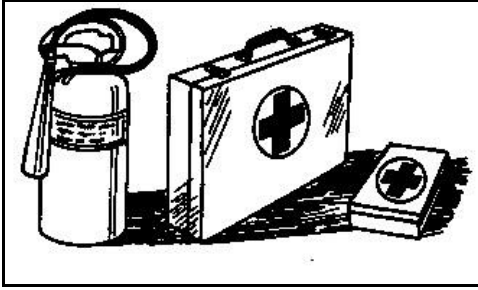
Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety signs. Replacement safety signs are available from your FAST dealer. There can be additional safety information contained on parts and components sourced from suppliers that is not reproduced in this operator's manual.

Learn how to operate the machine and how to use controls properly. Do not let anyone operate without instruction.

Keep your machine in proper working condition. Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.

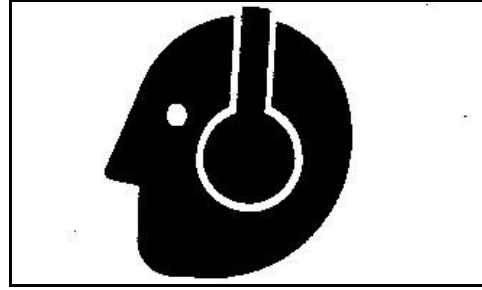
If you do not understand any part of this manual and need assistance, contact your FAST dealer.

### Prepare for Emergencies



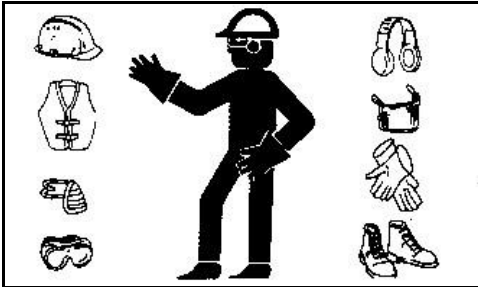
Be prepared if a fire starts.  
Keep a first aid kit and fire extinguisher handy.  
Keep emergency numbers for poison control center, doctors, ambulance service, hospital, and fire department near your telephone.

### Protect Against Noise



Prolonged exposure to loud noise can cause impairment or loss of hearing.  
Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.

### Wear Protective Clothing



Wear close fitting clothing and safety equipment appropriate to the job.  
Operating equipment safely requires the full attention of the operator. Do not wear radio or music headphones while operating machine.

### Practice Safe Maintenance



Understand service procedure before doing work. Keep area clean and dry.  
Never lubricate, service, or adjust machine while it is moving. Keep hands, feet, and clothing from power-driven parts. Disengage all power and operate controls to relieve pressure. Lower equipment to the

ground. Stop the engine. Remove the key. Allow machine to cool. Securely support any machine elements that must be raised for service work.

Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Remove any buildup of grease, oil, or debris.

On self-propelled equipment, disconnect battery ground cable (-) before making adjustments on electrical systems or welding on machine.

On towed implements, disconnect wiring harnesses from tractor before servicing electrical system components or welding on machine.

### Support Raised Equipment



Always use a safety support when working on, under, or around machine. Transport/ Service locks can be used for this purpose.

Shut off tractor engine and remove key when working on machine.

If air has been allowed to enter hydraulic hoses or cylinders, bleed hydraulic system before use. If there is a failure in hydraulic system, unsupported raised equipment could suddenly lower, causing serious personal injury or death.

If support is not available, completely lower wings and frame, relieve hydraulic pressure and disconnect hoses from tractor.

### 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 accidentally burst when heat goes beyond the immediate flame area.

### Avoid High-Pressure Fluids



Inspect hydraulic hoses periodically – at least once per year – for leakage, kinking, cuts, cracks, abrasion, blisters, corrosion, exposed wire braid or any other signs of wear or damage.

Replace worn or damaged hose assemblies immediately with FAST approved replacement parts.

Escaping fluid under pressure can penetrate the skin causing serious injury.

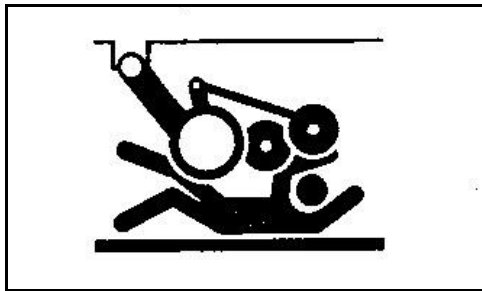
Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure.



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

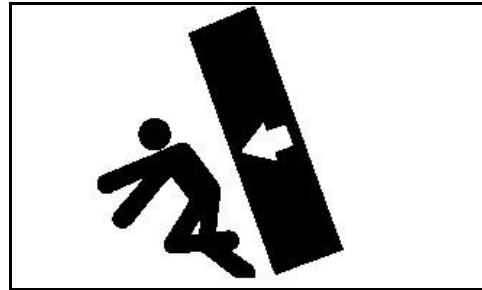
If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source.

### Inspect Lift Circuit Hoses



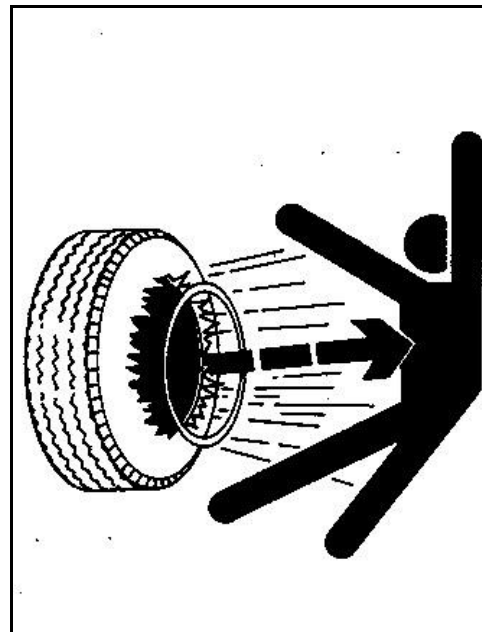
Avoid serious injury or death while working under a raised implement. Hydraulic hoses between the lift cylinders and hydraulic lock-up valves should be inspected frequently for leakage, kinking, cuts, cracks, abrasion, blisters, corrosion, exposed wire braid or any other signs of wear or damage. Worn or damaged hose assemblies can fail during use and should be replaced immediately. See your Fast dealer for replacement hoses.

### Store Attachments Safely



Stored attachments such as dual wheels can fall and cause serious injury or death. Securely store attachments and implements to prevent falling. Keep playing children and bystanders away from storage area.

### Service Tires Safely



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

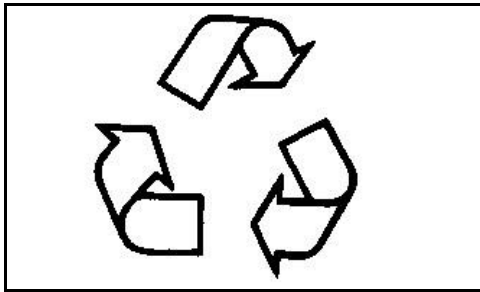
Do not attempt to mount a tire unless you have the proper equipment and experience to perform the job.

Always maintain the correct tire pressure. Do not inflate the tires above the recommended pressure. Never weld or heat a wheel and tire assembly. The heat can cause an increase in air pressure resulting in a tire explosion. Welding can structurally weaken or deform the wheel.

When inflating tires, use a clip-on chuck and extension hose long enough to allow you to stand to one side and NOT in front of or over the tire assembly. Use a safety cage if available.

Check wheels for low pressure, cuts, bubbles, damaged rims or missing lug bolts and nuts.

### Dispose of Waste Properly



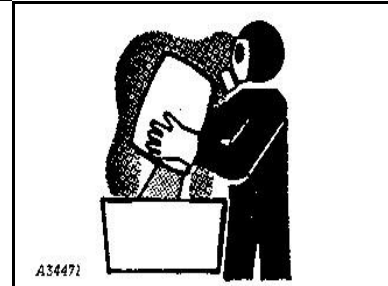
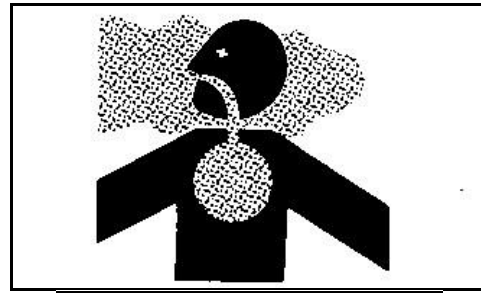
Improperly disposing of waste can threaten the environment and ecology. Potentially harmful waste used with equipment include such items as oil, fuel, coolant, brake fluid, filters, and batteries.

Use leakproof containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from them.

Do not pour waste onto the ground, down a drain, or into any water source.

Air conditioning refrigerants escaping into the air can damage the Earth's atmosphere. Government regulations may require a certified air conditioning service center to recover and recycle used air conditioning refrigerants.

### Handle Agricultural Chemicals Safely



Chemicals used in agricultural applications such as fungicides, herbicides, insecticides, pesticides, rodenticides, and fertilizers can be harmful to your health or the environment if not used carefully.

Always follow all label directions for effective, safe, and legal use of agricultural chemicals.

Reduce risk of exposure and injury:

Wear appropriate personal protective equipment as recommended by the manufacturer. In the absence of manufacturer's instructions, follow these general guidelines:

Chemicals labeled 'Danger': Most toxic. Generally require use of goggles, respirator, gloves, and skin protection.

Chemicals labeled 'Warning': Less toxic. Generally require use of goggles, gloves, and skin protections.

Chemicals labeled 'Caution': Least toxic. Generally require use of gloves and skin protection.

Avoid inhaling vapor, aerosol or dust.

Always have soap, water, and towel available when working with chemicals. If chemical

contacts skin, hands, or face, wash immediately with soap and water. If chemical gets into eyes, flush immediately with water.

Wash hands and face after using chemicals and before eating, drinking, smoking, or urination.

Do not smoke or eat while applying chemicals.

After handling chemicals, always bathe or shower and change clothes. Wash clothing before wearing again.

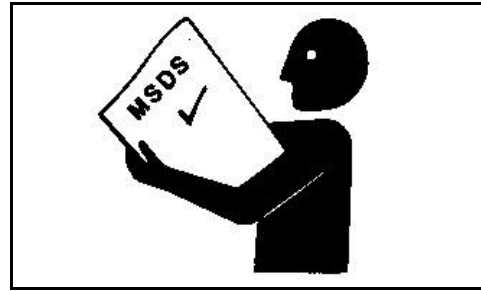
Seek medical attention immediately if illness occurs during or shortly after use of chemicals.

Keep chemicals in original containers. Do not transfer chemicals to unmarked containers or to containers used for food or drink.

Store chemicals in a secure, locked area away from human or livestock food. Keep children away.

Always dispose of containers properly. Triple rinse empty containers and puncture or crush containers and dispose of properly.

### Handle Chemical Products Safely



Direct exposure to hazardous chemicals can cause serious injury. Potentially hazardous chemicals used with FAST equipment include such items as lubricants, coolants, paints, and adhesives.

A Material Safety Data Sheet (M/SDS) provides specific details on chemical products: physical and health hazards, safety procedures, and emergency response techniques.

Check the M/SDS before you start any job using a hazardous chemical. That way you will know exactly what the risks are and how to do the job safely. Then follow procedures and recommended equipment.

## Operate Safely



Before operating, make sure air has been bled from wing-fold hydraulic system.

Be sure area around machine is clear before raising or lowering machine frame or wings.

Do not operate with wings folded.

Do not operate close to the edge of a ditch, creek, gully or steep embankment. Avoid holes, ditches and obstructions which may cause tractor, machine, or towed equipment to roll over, especially on hillsides.

Avoid sharp turns on hillsides.

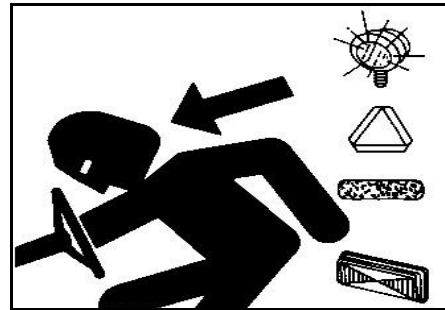
Slow down when turning or traveling over rough ground, and when turning on inclines.

Always shut off tractor and shift to PARK or set brakes when leaving tractor. Remove key when leaving tractor unattended.

Always have tractor stopped on level ground when raising or lowering wings. Operate machine from tractor seat only. If chemicals are used, follow manufacturer's recommendations for handling and storage.

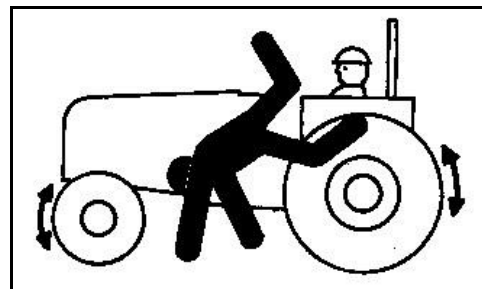
Tow machine behind a properly equipped tractor only.

## Use Safety Lights and Devices



Prevent collisions between other road users, slow moving tractors with attachments or towed equipment, and self-propelled machines on public roads. Frequently check for traffic from the rear, especially in turns, and use turn signal lights.

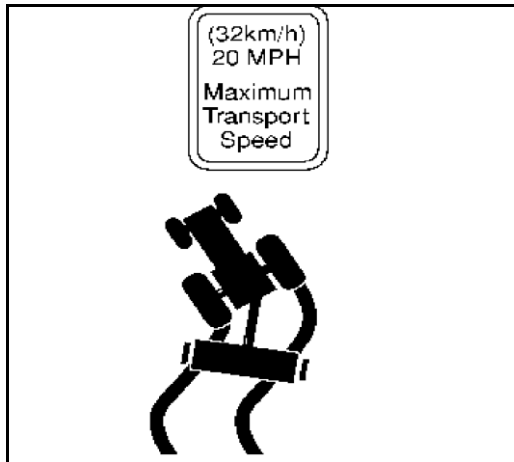
Use headlights, flashing warning lights, and turn signals day and night. Follow local regulations for equipment lighting and marking. Keep lighting and marking visible, clean, and in good working order. Replace or repair lighting and marking that has been damaged or lost. **Keep Riders Off Machine**



Only allow the operator on the machine. Keep riders off.

Riders on machine are subject to injury such as being struck by foreign objects and being thrown off of the machine. Riders also obstruct the operator's view resulting in the machine being operated in an unsafe manner.

## Observe Maximum Transport Speed



**CAUTION:** Be sure all bystanders are clear of applicator.

**IMPORTANT:** Transport applicator only with tank **EMPTY** to prevent applicator damage.

This applicator is not equipped with service or parking brakes. The maximum transport speed for this implement is 20 mph (32 km/h).

Some tractors are capable of operating at speeds that exceed the maximum transport speed of this implement. Regardless of the maximum speed capability of the tractor being used to tow this implement, do not exceed the implement's maximum transport speed.

Exceeding the implement's maximum transport speed can result in:

Loss of control of the tractor/implement combination

Reduced or no ability to stop during braking

Implement tire failure

Damage to the implement structure or its components

Use additional caution and reduce speed when towing under adverse surface conditions, when turning, and when on inclines. For transport, the weight of the **EMPTY** applicator must not be more than 1.5 times the weight of the tractor. Minimum towing tractor weight for the A-Series is 15,000 lbs (6804 kg).

Never tow this implement with a motor vehicle. Tow only with a properly ballasted tractor.

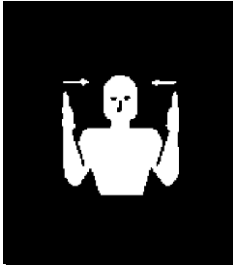
## EC Compliance Notification



**WARNING:** Environmental transportation hazard. A loaded machine driven on public roads has a high risk of tire failure. Do not use the machine for transporting product on public roads.

Never transport with the tank filled with water or chemical.

## Use a Signal Person



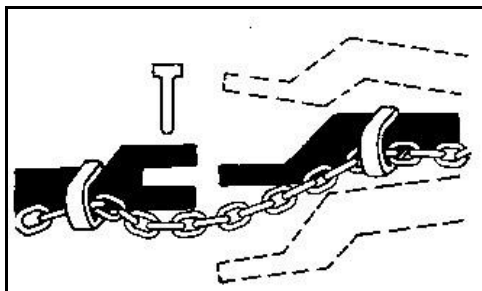
Use a signal person to direct movement of the tractor/fertilizer cart combination, whenever the tractor operator's view is obstructed.

Designate one individual as THE signal person. Always have signal person stand in clear view. Be sure signal person stays a safe distance away from the machine when it is moving.

Prior to starting the tractor, discuss hand signals and what each signal means to avoid misunderstandings and confusion which could result in a serious injury or fatal accident for someone.

Keep all bystanders away whenever the machine is moved.

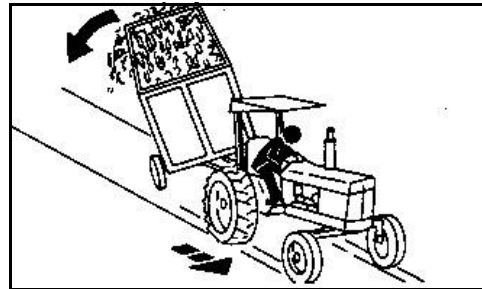
## Use a Safety Chain



A safety chain will help control drawn equipment should it accidentally separate from the drawbar.

Using the appropriate adapter parts, attach the chain to the tractor drawbar support or other specified anchor location. Provide only enough slack in the chain to permit turning.

## Tow Loads Safely



Stopping distance increases with speed and weight of towed loads, and on slopes. Towed loads with or without brakes that are too heavy for the tractor or are towed too fast can cause loss of control. Consider the total weight of the equipment and its load.

Observe these recommended maximum road speeds, or local speed limits which may be lower:

If towed equipment does not have brakes, do not travel more than 32 km/h (20 mph) and do not tow loads more than 1.5 times the tractor weight.

Ensure the load does not exceed the recommended weight ratio. Add ballast to recommended maximum for tractor, lighten the load, or get a heavier towing unit. The tractor must be heavy and powerful enough with adequate braking power for the towed load. Use additional caution when towing loads under adverse surface conditions, when turning, and on inclines.

## Avoid Overhead Power Lines



**CAUTION:** Keep away from overhead power lines. Serious injury or death may result. Proceed cautiously under overhead power lines and around utility poles. Know the transport height of your machine. Electrocutation can occur without direct contact with overhead electrical lines.

### Prepare for Transport

**CAUTION:** Avoid serious injury or death to your or others. Never tow machine behind a truck or other motor vehicle. This machine is designed only to be towed with a properly sized and ballasted tractor.

Use a tractor large enough to maintain control. Properly ballast tractor for towing your machine. Refer to tractor operator's manual and this manual to ensure that machine can be safely transported with your tractor.

Be aware of height and width restrictions to avoid collision with overpasses or other road users.

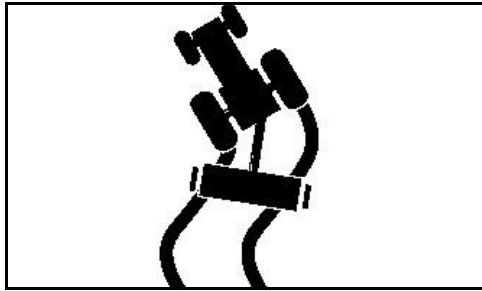
Always fold wings fully. If wing fold cylinders are removed, chain wings together to prevent accidental lowering. Fully raise frame, close hydraulic lock-up valve (if equipped) and install transport/ service locks before transporting. Latch the tractor brakes together.

Attach proper size safety chain for load being towed. Refer to USE A SAFETY CHAIN (in this section). **IMPORTANT:** Do not transport on a roadway unless machine is equipped with proper functioning lights and reflective marking/emblems. Ensure that the lights and reflective marking/emblems are clean and

visible. Contact your FAST dealer for lights and lighting harnesses.

Always follow local and national regulations for equipment size, lighting and marking before driving on public roadways. You are responsible for understanding and complying with all requirements regarding roadway transport. Refer to USE SAFETY LIGHTS AND DEVICES (in this section).

### Transport Safely



**IMPORTANT:** When transporting, always travel at a reasonable and safe speed which permits adequate control of steering and stopping. Reduce speed considerably when traveling over rough ground. Be certain everyone is clear of machine.

Refer to **OBSERVE MAXIMUM TRANSPORT SPEED** (in this section).

Do not exceed weight and speed guidelines (in this section).

Towed loads can swerve, upset or cause loss of control. Refer to **TOW LOADS SAFELY** (in this section). Shift tractor into a lower gear when transporting down steep slopes or hills; never coast. Stop slowly.

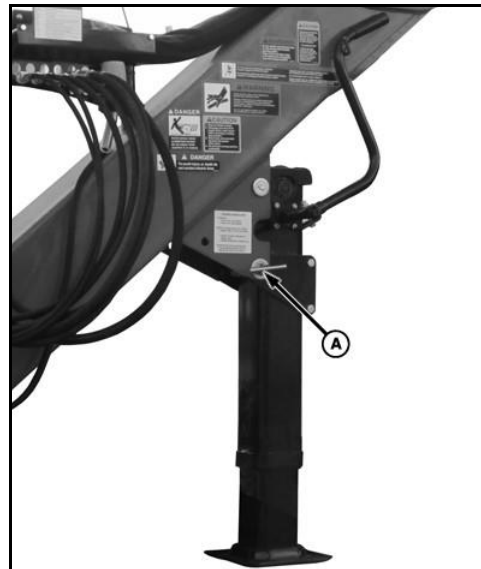
Wide turns may be required with machine in tow. Use caution in traffic and in congested areas.

To improve stability when traveling through the field, wings should be unfolded from transport position as soon as possible after leaving the

roadway. **IMPORTANT:** When transporting machine on a roadway, **ALWAYS USE** appropriate lamps and devices for adequate warning to operators of other vehicles.

Refer to **USE SAFETY LIGHTS AND DEVICES** (in this section).

### Park Safely



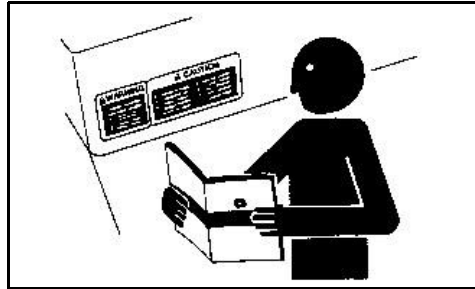
### Parked Jack Position

A - Pin

Park machine on a level surface, lower jack, and retain with pin (A). Block implement wheels.



## Replace Safety Signs



Replace missing or damaged safety signs. Use this operator's manual for correct safety sign placement.

There can be additional safety information contained on parts and components sourced from suppliers that is not reproduced in this operator's manual.

## Hitch

**A**

**⚠ DANGER**

**Avoid serious injury or death from runover. Do not adjust while machine is in motion.**

**B**

**⚠ CAUTION**

1. Keep all shields in place
2. Disengage and shut off all engine and/or motor power before servicing or unclogging machine.
3. Keep hands, feet and clothing away from powerdriven parts.
4. Do not leave running machine unattended.

**C**

**⚠ WARNING**

**Be sure cylinder and attaching hoses are fully charged with oil before operating system. Failure to do so will allow wings to fall rapidly when attempting to lower from transport position.**

**D**


**⚠ CAUTION**

**Agricultural chemicals can be dangerous. Improper selection or use can injure persons, animals, plants, soils or other property.**

**TO AVOID INJURY**

1. Select the right chemical for the job.
2. Handle and apply it with care. Follow instructions issued by the chemical manufacturer.

**A**




**WARNING**

Do not exceed this implement's maximum transport speed of 32 km/h (20 mph). Exceeding this speed may result in loss of control during transport or braking and result in injury or death.

Transport only with a properly ballasted tractor and a properly ballasted safety tow chain. Do not transport with a motor vehicle. Reduce speed and use additional caution when operating under adverse surface conditions and turning.


**B**



**WARNING**


Avoid serious injury from injection of pressurized hydraulic fluid. Always relieve pressure before performing service or maintenance on any hydraulic components. Refer to tractor and implement Operator's Manuals. Do not use hand to search for leaks. Use cardboard or similar material.

**C**



**DANGER**

To avoid injury or death do not contact electric lines.



**Wing**



**A**



**WARNING**

To avoid injury or death, stand clear of wing during fold and unfold operation.



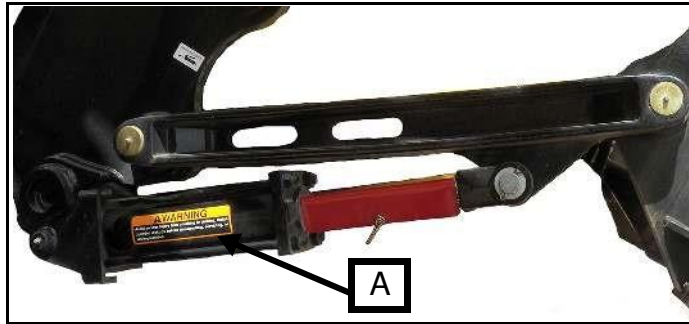
**B**



**DANGER**

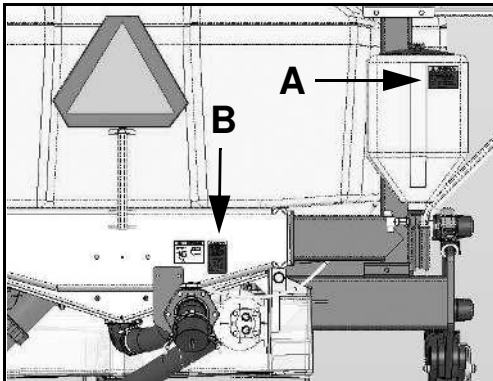
To avoid injury or death stand clear of machine when wings are being folded or unfolded. Mechanical or hydraulic failure can allow wings to fall rapidly.

## Main Frame



A

**⚠ WARNING**  
 Avoid serious injury from crushing or pinning. Install cylinder lockups before transporting, servicing, or storing machine.



B

**⚠ WARNING**  
 Water for rinse/wash purpose only. Do not drink from this container. Container may become contaminated by sprayer chemicals. Fill with clean rinse water only.

**⚠ CAUTION**  
 Agricultural chemicals can be dangerous. Improper selection or use can injure persons, animals, plants, soils or other property.  
**TO AVOID INJURY**  
 1. Select the right chemical for the job.  
 2. Handle and apply it with care. Follow instructions issued by the chemical manufacturer.

## Wheel and Tracks



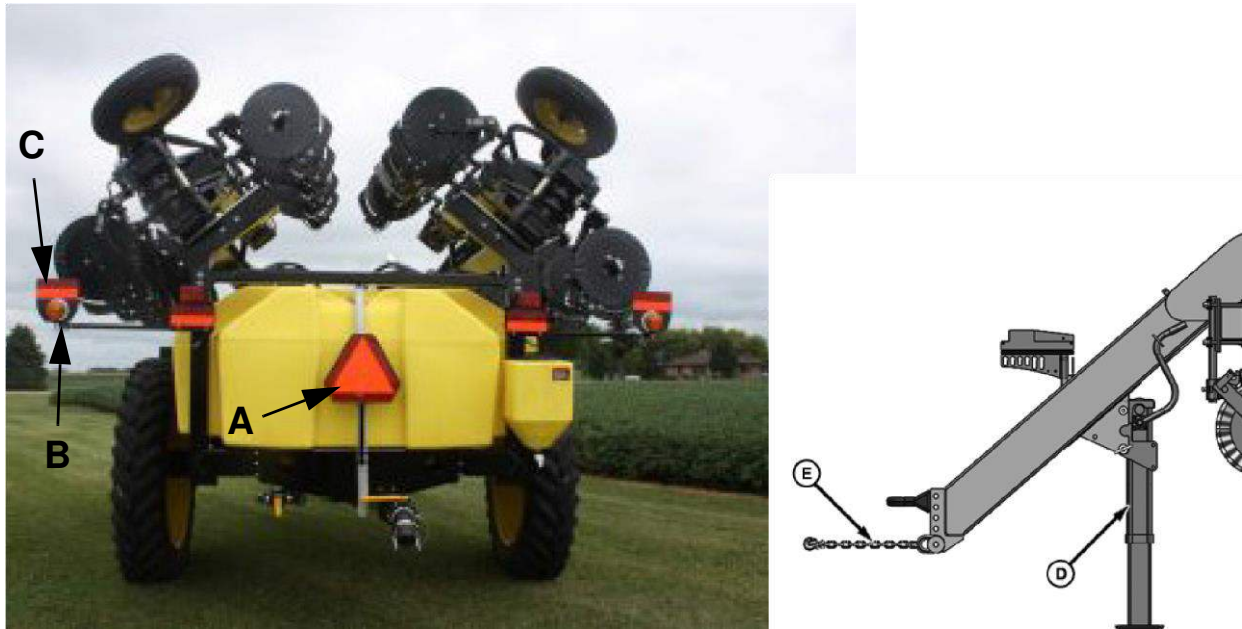
A

**ATTENTION: PLEASE CHECK LUG NUT TORQUE AT 5, 10, AND 50 HOURS OF OPERATION, AND REGULARLY THEREAFTER. TORQUE SHOULD BE 265 FT/LBS.**

**⚠ CAUTION**  
**HELP PREVENT FIRE**  
 Trash build-up between tracks and chassis can cause fire from increased friction.

- Keep machine free of trash.
- Keep a fire extinguisher at hand.

## Safety Features



- A - SMV Emblem
- B - Warning Lights
- C - Reflectors
- D - Jack
- E - Safety Chain

A18 / A26 Liquid Applicator: In addition to the safety features shown here, other components, systems, safety signs on the machine, safety messages and instructions in the Operator's Manual contribute to the safe operation of this machine when combined with the care and concern of a capable operator.

The construction of this implement may not meet all local or national requirements for transport on a public roadway. In regions or countries that have national certification requirements for roadway transport, it may be impossible for this implement to be approved for such roadway transport. The customer is responsible for understanding and complying with all local, regional, and national requirements regarding roadway transport.

- A—SMV Emblem identifies slow-moving equipment and alerts traffic approaching from rear.
- B and C—REFLECTORS and WARNING LIGHTS alert other drivers to presence and width of slow-moving machinery on roadways and signal turns.
- D—Jack prevents machine from falling when in storage.
- E—Safety Chain will help control machine should it accidentally separate from tractor drawb

## PREPARING MACHINE

### Use Tractor Operator's Manual



Always refer to tractor operator's manual for specific detailed information regarding operation of equipment.

### Pre-Operation Checklist

Efficient and safe operation of the machine requires that each operator reads and understands operating procedures and all related safety precautions outlined in this section. A pre-operational checklist is provided for the operator. It is important for both personal safety and maintaining the good mechanical condition of the applicator that this checklist be followed.

Before operating applicator, check the following items:

1. Lubricate machine per schedule outlined in LUBRICATION AND MAINTENANCE section.
2. Use only a tractor of adequate power and weight to operate applicator. See SPECIFICATIONS section for recommendations.
3. Be sure that machine is properly attached to tractor. Be sure that a mechanical retainer is installed through drawbar pin and safety chain is installed.
4. Inspect all hydraulic lines, hoses, fittings and couplers for tightness.
5. **IMPORTANT:** Extend the axles out of the shipping width setting and set the track or tire width for your application. Unit is shipped with axles to the narrowest setting using the shipping holes for shipping purposes only. See AXLE WIDTH CHARTS.
6. Check tires and verify they are inflated to specified pressure.
7. Check track tension and hardware torque.
8. Calibrate applicator if at start of season or a new applicator rate is being used.
9. Check condition and routing of all fluid hoses and lines. Be sure that all lines are routed in large arcs. Replace any that are damaged. Re-route those that are rubbing, pinched or crimped.
10. Check placement components. Remove and replace any that are worn.
11. Remove all entangled material. Raise tool bar and turn metering pump slightly. Check that there is liquid coming out of each nozzle. Unplug or connect lines as required. Replace any nozzles that are plugged.



## SETTING AXLE WIDTH

### SPECIFICATIONS

#### Tractor Horsepower, Size Recommendation

Use machine with tractors providing drawbar power in following ranges.

Tank Size	Machine Size m (ft)	kW (hp.)
6813 L (1800 U.S. gal)	18.3 - 20.1 (60 - 66)	149 - 164 (200 - 220)
9842 L (2600 U.S. gal)	18.3 - 20.1 (60 - 66)	149 - 164 (200 - 220)

Model	A18/A26 Side Fold (with Folding Gauge Wheels)
Transport Height	12'
Shipping Transport Width	11'10"
Working Transport Width	11'10"
Transport Length	25'
Empty Weight (lbs.)	18,250 (1800 gallon, 23 coulters)
Hitch Pin-to-Axle Length	15'10"
Tank Size(s) (gallon)	1800, 2600
Toolbar Size(s)	60', 66'
Standard Tires	380/90R46" (1800 gallon), 380/90R46" Duals (2400 gallon)
Delivery Type	Knife or Injection
Toolbar Crop Clearance (in field position)	27.5"
Standard Hydraulic Pump	Ace 205-304F
Toolbar Tube Size	5"x7" double bar, single on outer wings
Hydraulic Down Pressure	Yes
Hydraulic Wing Kick	Yes
Quick Fill Size	3"

#### Hydraulic System Requirements

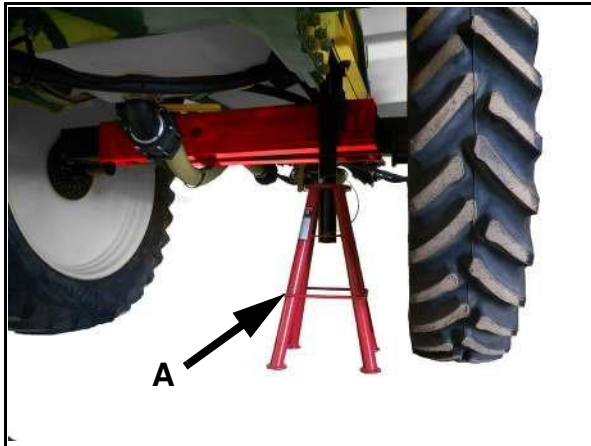
Tractor hydraulic system with ISO hydraulic couplers is required.

Four tractor control valves at the listed flow and pressure rates are required for following:

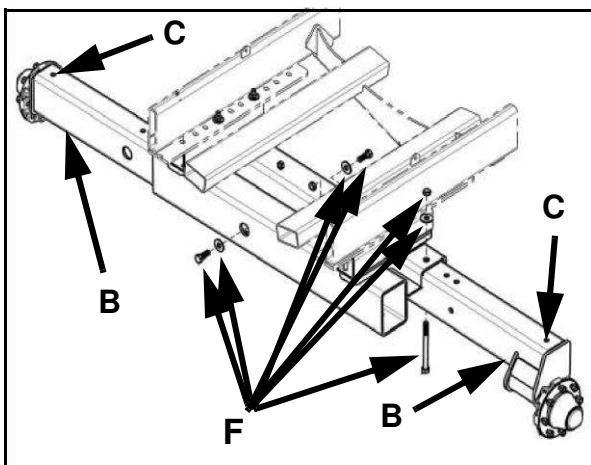
SCV Function	Flow Rate	Pressure
Toolbar Lift Cylinders and Wing Kick	68 lpm (18 gpm)	20,684 kPa (206.8 bar) (3000 psi)
Wing Fold Valve Block	45 lpm (12 gpm)	20,684 kPa (206.8 bar) (3000 psi)
Chemical/Fertilizer Pump Drive Motor	30 lpm (8 gpm)	20,684 kPa (206.8 bar) (3000 psi)
Flip Wing Down Pressure	34 lpm (9 gpm)	20,684 kPa (206.8 bar) (3000 psi)
Latch Cylinders	15 lpm (4 gpm)	20,684 kPa (206.8 bar) (3000 psi)
Steerable Gooseneck Hitch	15 lpm (4 gpm)	20,684 kPa (206.8 bar) (3000 psi)

## SETTING AXLE WIDTH

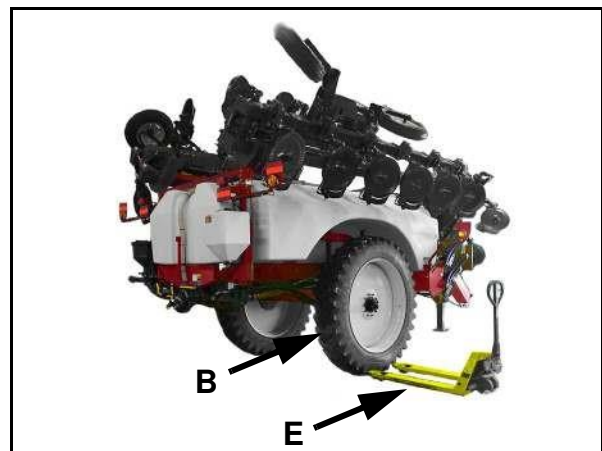
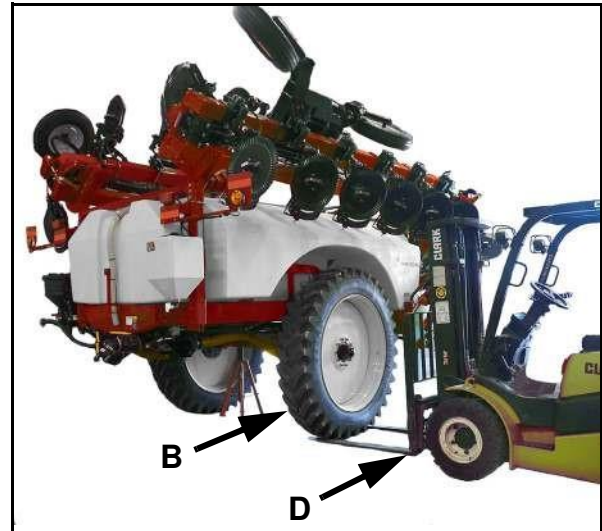
**IMPORTANT :** Adjust track axles out of the shipping width before transporting or application. Set axles to widest setting possible to match row width. Use only the holes with measurements. See axle width charts.



1. Jack one side up on frame in front of axle and support the frame on the rear of the axle with jack stands (A). 10 ton jack stand shown.

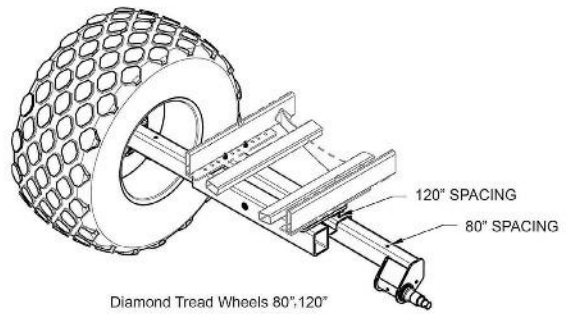
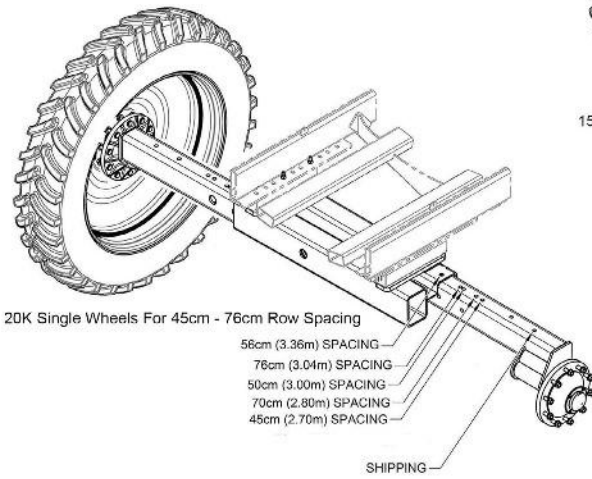
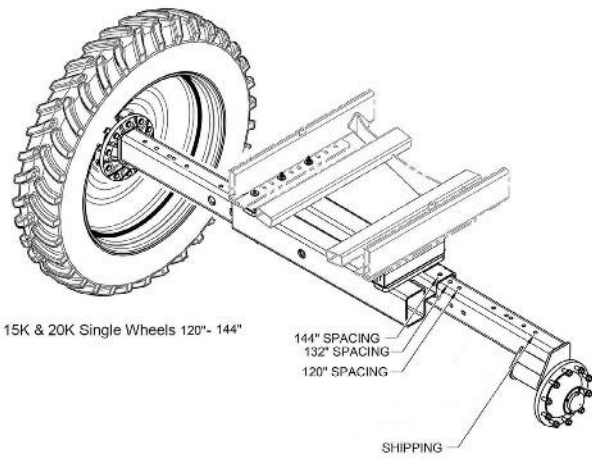
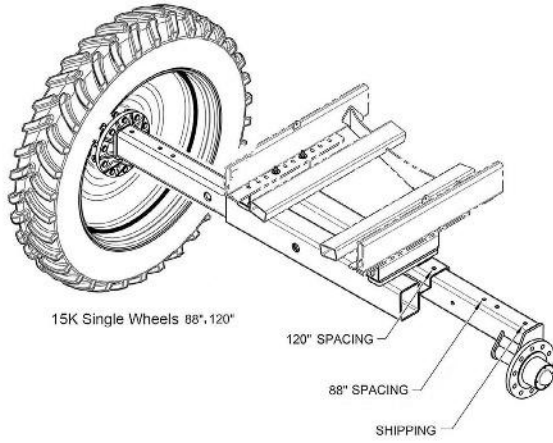


2. Remove the axle bolts (F) and slide the axles (B) out of shipping holes (C).



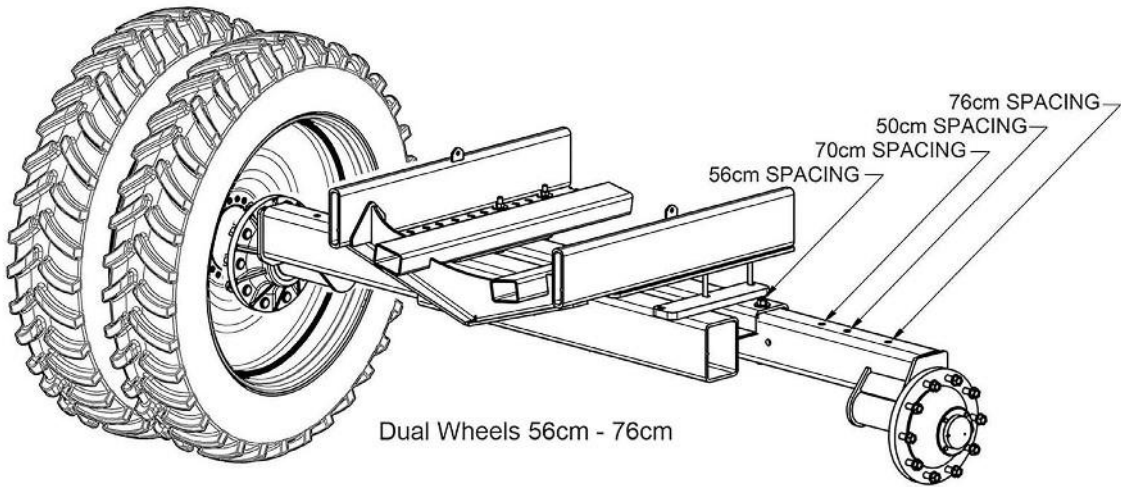
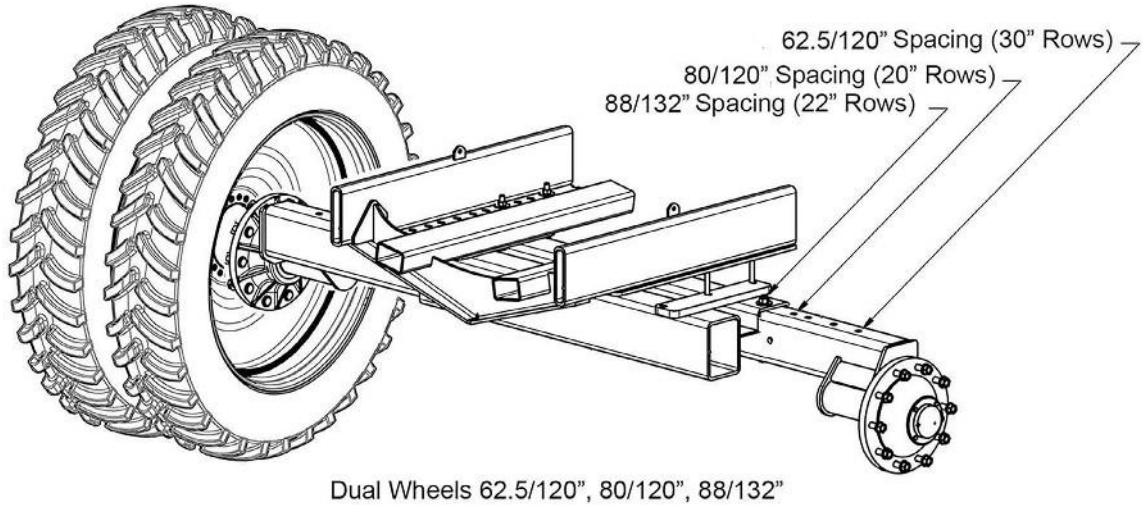
3. Using a forklift (D) or pallet jack (E), slide the wheel and axle tube (B) out to the holes matching row width (See axle width charts). Axles (B) must be moved out from shipping holes (C) to match crop spacing to prevent crop damage and for stability. Set both axles the same width.
4. Reinstall the axle hardware (A) with the threads facing up.
5. Torque the 5/8" bolts to 149 N-m (110 ftlbs) and the 3/4" bolts to 271 N-m (200 ftlbs).
6. Repeat for other side.

# AXLE WIDTH CHART - SINGLES

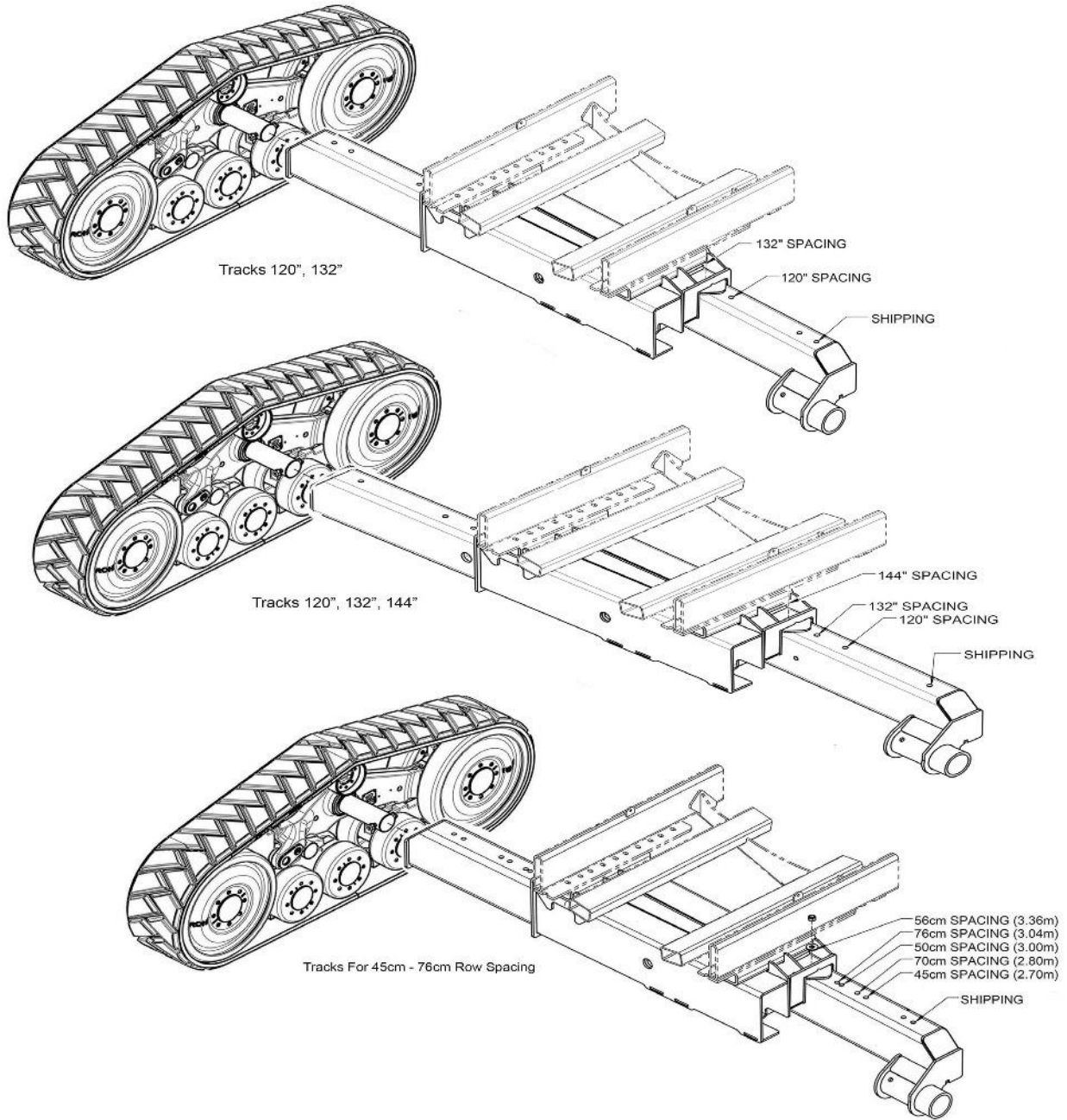




# AXLE WIDTH CHART - DUALS



# AXLE WIDTH CHART - TRACKS



## CHECKING TIRE PRESSURE

Check tire pressure and inflate as necessary. (See CHECKING TIRE PRESSURE in this section.)

Perform required lubrication. (See Lubrication section.)

Inspect for loose, damaged or missing parts. Repair or replace parts before entering field.

Make sure hydraulic hoses and harnesses do not interfere with moving parts. Relocate hoses and harnesses, and retain with clamps.

### Checking Tire Pressure



**CAUTION: Avoid loss of vehicle control during transport from failure of overloaded tires, which could cause serious injury or death to you or others.**

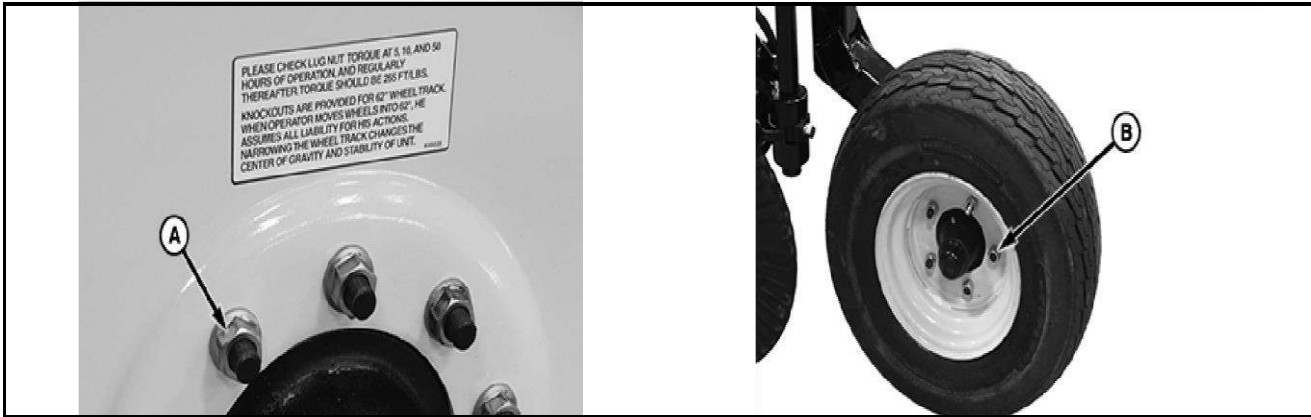
Equal pressure in all tires is necessary for even penetration. A low tire will cause deeper penetration on one side than other. Increased penetration on one side will result in side draft of machine. Inflate tires to shown specification.

Tire Size	Pressure
380/90R46 <b>LR168</b> (Singles)	538 kPa (8.38 bar) (78 psi)
380/90R46 <b>LR149</b> (Duals)	255 kPa (2.55 bar) (37 psi) Inner 227 kPa (2.28 bar) (33 psi) Outer
380/90R54 <b>LR170</b> (Singles)	517 kPa (5.17 bar) (75 psi)
380/90R54 <b>LR152</b> (Duals)	255 kPa (2.55 bar) (37 psi) Inner 227 kPa (2.28 bar) (33 psi) Outer
480/80R50 <b>LR176</b>	545 kPa (5.00 bar) (73 psi)
20.5 x 8-10	621 kPa (6.21 bar) (90 psi)
6.7R15	303 kPa (3.03 bar) (44 psi)



**NOTE:** Tire pressure is directly linked to LRXXX (bold italic). Make sure of the load rating of the tire before adding any air to the tire.

## CHECKING WHEEL NUTS



A - Main Frame Wheel Nut

B - Gauge Wheel Nut

Check tightness of all wheel nuts (A) and (B) during first week of operation and periodically after that. Tighten all wheel bolts to specification.

Item	Specification
(A) Main Frame Wheel Nut	359 N-m (265 ft-lbs)
(B) Gauge Wheel Nut	95 N-m (70 ft-lbs)



## GENERAL TRACK USE GUIDELINES

Avoid track and track system component damage, precondition tracks.

- Before trailering on road for first time, precondition tracks. See Perform Track Systems Break-In (100 Hours or Less) in this section.
- Avoid traveling at high speeds with new set of tracks and wheels, especially during the first 50-100 hours.

Trash build-up can cause fire from increased friction. Remove trash from trash build-up points between track and trailer frame.

Avoid operating track in grease, oil, or other petroleum chemicals. Avoid spilling these materials on track and wheels during service.

### Initial Break-In

Avoid track and track system component damage. Before roading for first time, precondition tracks with loose soil or clay based lubricant. Repeat application of lubricant or soil at least every 50 miles until destination is reached.

After installation of new or cleaned track belts or other frictional components, expose clean components to materials to lubricate and break them in.

- Work the Applicator in field in loose soil for at least 15 minutes.
- If the Applicator cannot be exposed to loose soil, use a “clay based” granular material (clay based lubricant, kitty litter, oil-dry absorbent or talc powder) to introduce a “joint” area between drive wheels and belts continuously for at least 15 minutes.

### Maximizing Track Life

Track carcasses are designed to exceed tread wear out, so long as integrity of carcass is maintained. It is critical to keep moisture out of the steel carcass and to avoid situations where localized cable overloading could occur. Track machine owners are advised to follow these guidelines to achieve maximum track life and avoid operational problems, all of which results in lower cost per operating hour:

- **Minimize roading. Excessive roading can increase track wear up to 15 times field wear rates**
  - o Minimize transport weight during road transport.
  - o Reduce maximum travel speed especially during high ambient conditions.
- **Use correct operational techniques**
  - o Avoid skidding and tread bar scrubbing on hard surfaces to reduce track wear.
  - o Use care when crossing ditches or transitions while making turns. Diagonal crossing of ditches causes track to become unsupported in the center and with idler hitting opposite embankment, can cause momentary loss of tension that can drop center section down and outside drive or idler wheels, making derailing a much higher risk if in a turn.

- o Use ratchet-turn or bump steer technique. When turning at end of field, steering performance can be gained by turning in several small turns, returning to neutral position between each ratchet steer. This helps gain more traction and complete turn more efficiently and with less ground disturbance than by attempting to power and spin through turn.
- **Maintain correct track tension**
  - o Under-tension causes rapid wear on tracks and inside surface of belt due to slippage and potentially cause material buildup.
  - o Over-tension adds extra load and stress to undercarriage bearings, internal track cables, and track frame.
- **Keep irregular material out of tracks**

Sharp hard material inside the track is primary reason for localized track tears and subsequent entry points for moisture into track carcass.



## PERFORM TRACK SYSTEMS BREAK-IN

### Break-In Overview

Avoid roading at high speeds with a new set of tracks and wheels, especially during first 50-100 operating hours. Damage to drive lugs and wheels may result.

Track systems break-in takes place during first season of use. Correct break-in helps reduce amount of initial drive lug wear. During break-in, drive lugs and idlers undergo a "polishing in" process which:

- Scours out excess rubber flash inside drive wheels.
- Embeds fine dust particles in rubber surfaces to remove tackiness of new rubber.

Surface polishing reduces frictional heating in tracks system. During break-in, new rubber surfaces require contact with a dry lubricant such as soil. Avoid high speed operation (roading or higher speed tillage) where track system is run in absence of dust generated by dry soil contact (wet conditions or paved roads). Operating in these conditions for lengthy periods may cause excessive early hour drive lug wear.

Perform initial break-in and alignment before any high-speed tractor operation. Excessively clean frictional track components (belts, drive wheels, front idlers and mid-rollers) can generate significant heat if run unlubricated. This heat is capable of damaging components. Break in and align new components as outlined.

### Initial Break-In

Avoid track and track system component damage. Before driving tractor on road for first time, precondition tracks with loose soil or clay-based lubricant. Repeat application of lubricant or soil at least every 50 miles until destination is reached.

After installation of new or cleaned track belts or other frictional components, expose clean components to materials to lubricate and break them in.

- Work tractor in field in loose soil for at least 15 minutes.
- If tractor cannot be exposed to loose soil, use a "clay based" granular material (clay based lubricant, kitty litter, oil-dry absorbent or talc powder) to introduce a "joint" area between drive wheels and belts continuously for at least 15 minutes. **Track Belt Alignment**

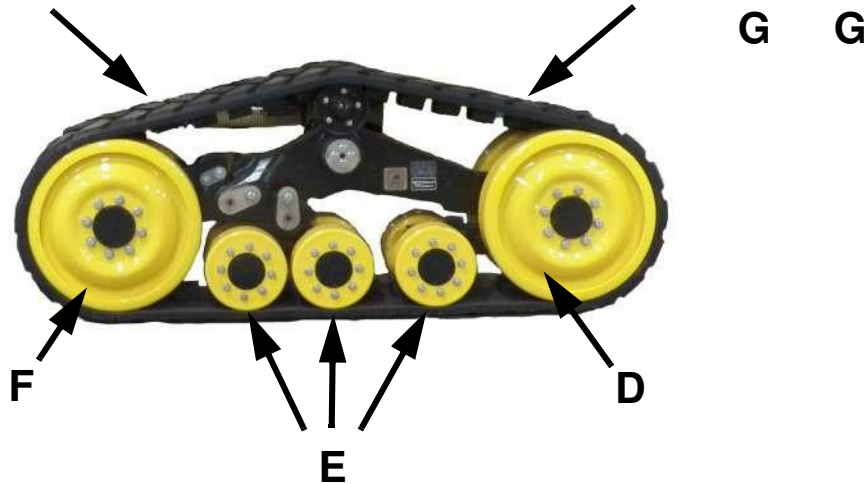
- After initial break-in procedure is completed, align track. See Check Track Alignment in the Tracks and Tread Settings section of this Operator's Manual.

### After Break-In

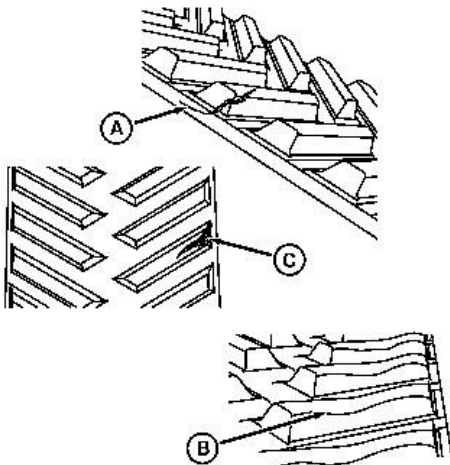
After initial 100 hour break-in and alignment, long-term break-in process (up to 400 hours) will likely occur. During this period, maximize exposure of tracks to soft soil and minimize high speed, heavily loaded transport operation.

## TRACK WEAR AND TRASH BUILD-UP

Avoid grease, oil, or other petroleum chemicals on tracks and wheels. Constant exposure to petroleum-based chemicals may damage rubber surfaces.



Trash build-up can cause fire from increased friction. Remove trash from trash build-up points (G) between track and applicator frame.



Inspect for cracking (A), uneven wear (B) and/or chipping or chunking (C) on rubber surfaces of drive wheels (D), mid-rollers (E) and idler wheels (F).





# TRACKS SERVICE

## Undercarriage Inspection and Maintenance

1. Remove any debris or material buildup on top of frame reaction arms. Buildup can wear down rubber on wheels.
2. Check for material buildup between mid wheels and idler wheels. Buildup can damage or crush guide lugs and can increase chances of derailing track. If guide lug tip damage is seen, it may be due to material buildup.
3. Look over mid rollers and idler wheels for visible cracks around bolt pattern or the rim. If seen, see your FAST dealer for best recommendation for repair or replacement.

Remove any embedded rocks, nails, or other sharp object in track belt or mid-rollers.

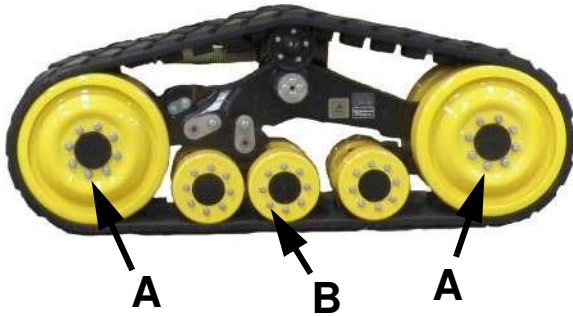
## TRACKS SERVICE

Service Task	See
Track Wear	Service — Check
Track Alignment	
Track Tension	
Idler Wheels and Mid-Rollers	
Track Trash Buildup	
Mid-Rollers Oil Level	
Idler Wheel Hub Oil Level	Service — Tighten
Idler Wheel and Mid-Roller Cap Screws	

## Mid Wheel, Wedges, Idler, and Mid-Roller Cap Screws

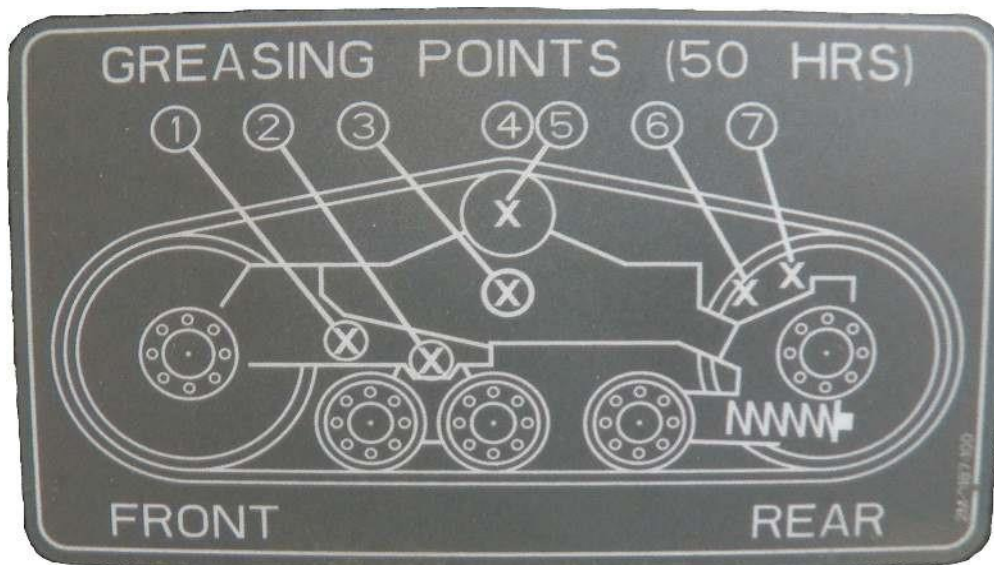
If the applicator is operated with loose cap screws, they may become worn and it may be necessary to replace them.

Re-tighten track cap screws after working **3 HOURS**, **10 HOURS** and **DAILY** during the first week of operation.



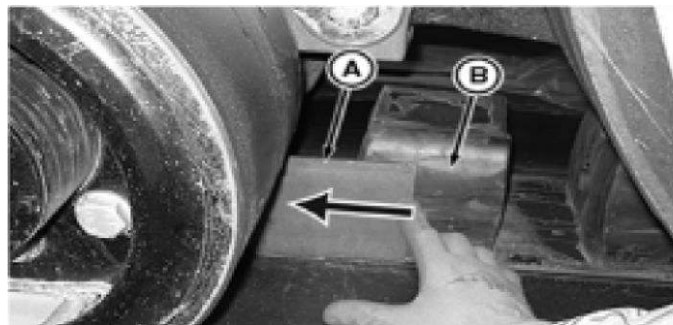
Inspect and re-torque idler wheel (A) and mid-roller (B).

M16 Idler Wheel Cap Screws	Torque	320 N-m (236 ft-lbs)
M20 Mid-Roller Wheel Cap Screws	Torque	620 N-m (457 ft-lbs)



## Check Track Alignment

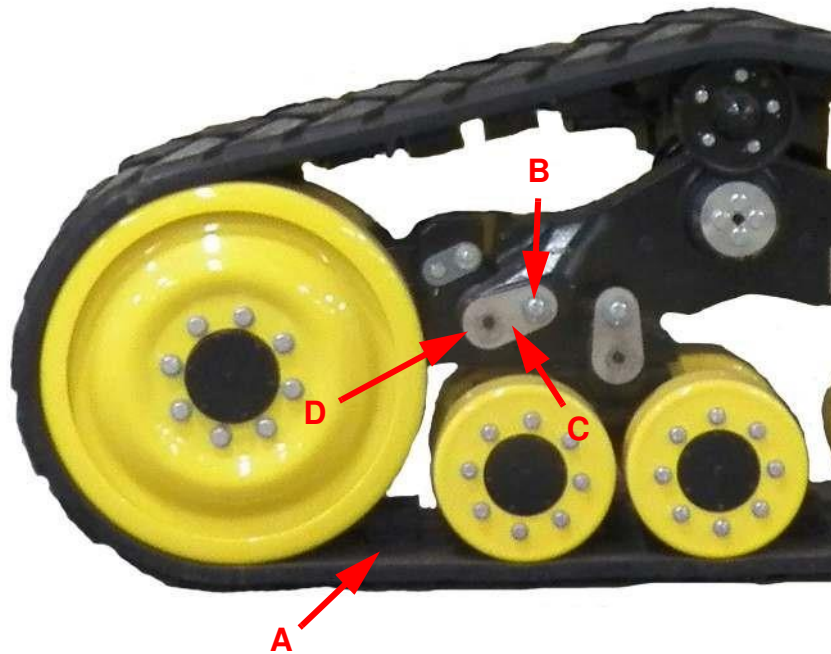
1. Prior to checking track alignment, the implement should be empty and spring tensioning mechanism set properly with no pre-load.
2. Pull the implement on a flat surface for a suitable time frame, allowing the belts to relax and move freely on the undercarriage rollers.
3. Drive in a straight line for roughly 200 ft and coast the tractor to a stop. Place the tractor in PARK and apply the emergency brake. Do not apply braking action during this process as sudden stops can affect track position during the alignment process.
4. Using a ¼" x 4" x 8" shim (A) slide between the front mid-roller and guide lugs (B). Bridge guide lugs with the shim maintaining pressure on 2 lugs minimum.



5. If the shim fits freely between the lugs and mid-roller on both sides of the undercarriage the alignment is correct. If the shim binds and does not fit between the mid-rollers / guide lugs track adjustment is necessary.

## Track Alignment Procedure

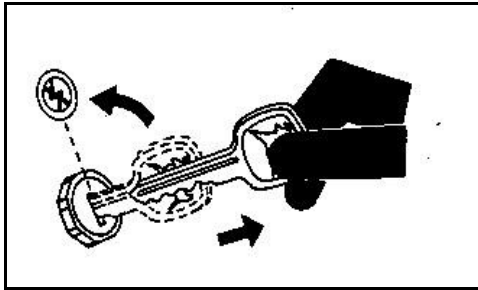
1. Remove the alignment bolt retainer lock plate cap screws (B) and lock plate (C) from the inboard and outboard sides of the undercarriage needing adjustment.
2. Loosen cap screw (D) counterclockwise 1-1.5 turns on the side of the undercarriage you want the track to move towards (A represents location between inner idler wheel surface and guide lug in figure below).



3. Tighten the special cap screw on the opposite side of the same undercarriage to specification. (Cap screw torque is 300 N-m (221 ft-lbs). Tighten cap screw loosened in step 2 to the same specification. Note: A single full turn is the standard increment during adjustment. Lessen this amount as final adjustment is approached.
4. Recheck track alignment and adjust until suitable clearance is obtained on both sides of the guide lugs. Note: Lock plates are reversible for double the index increments. If needed, increase torque on the special cap screw slightly allowing advancement to a suitable lock plate position.
5. When alignment is complete, reinstall the lock plates and tighten cap screws to their required torque specification of 130 N-m (95 ft-lbs).

## ATTACHING and DETACHING

### Attach Machine Safely



**CAUTION:** Prevent personal injury caused by unexpected movement of machine. Engage parking brake and/or place transmission in PARK, shut off engine, and remove key before working around hitch.

### Making Proper Hose Connections



**CAUTION:** Escaping fluid under pressure can penetrate skin causing serious injury. Avoid hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high-pressure fluids.

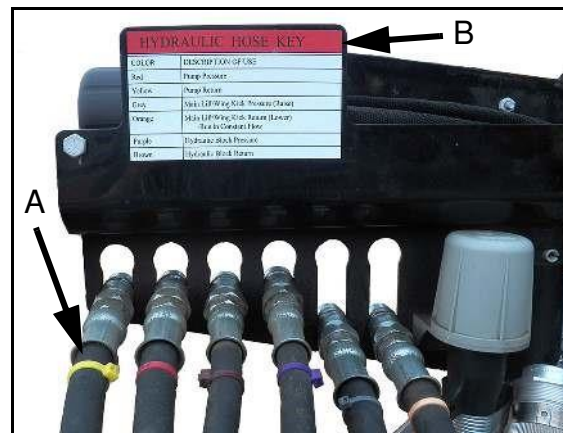
If an accident occurs, see a doctor immediately. Any fluid injected in skin must be surgically removed within a few hours or gangrene may result. Doctors

unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.



**CAUTION:** Hydraulic hoses can fail due to physical damage, kinks, age and exposure. Check hoses regularly. Replace damaged hoses.

**IMPORTANT:** All hydraulic couplers must be clear of debris, dust, and sand. Use protective caps on fluid openings until ready to make connection. Foreign material can damage hydraulic system.



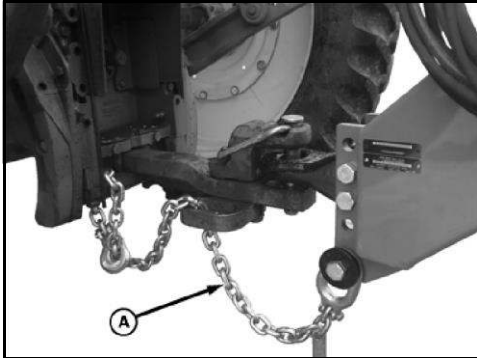
A - SCV Marker  
B - Hose Key Chart

Identify SCV marker color (A), then use the hose key chart (B) to connect to correct SCV outlet. (See SCV Identification chart.)

## Attach Machine to Tractor



**CAUTION:** Make sure that all bystanders are clear of working area.



1. Make sure there is enough room and clearance to safely back up to machine.
2. Slowly back tractor until holes on hitch and drawbar are aligned.
3. Install drawbar pin and retainer.
4. Attach safety chain (A) securely around tractor drawbar cage to prevent unexpected separation.
5. Check that applicator hydraulic system is compatible with tractor hydraulics. Change applicator if required. Do not operate unless tractor and applicator hydraulics are compatible

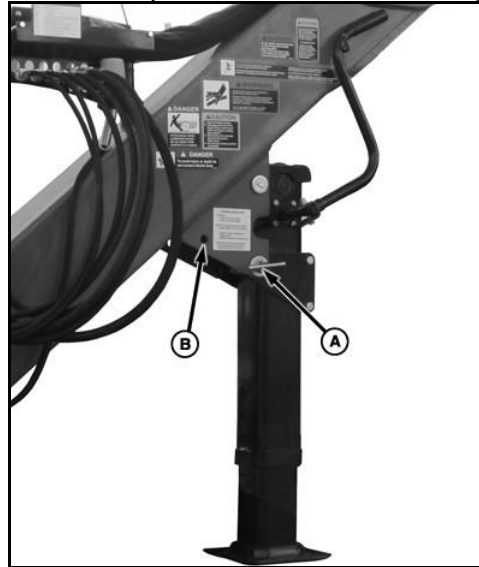
## 6.. Connect Hydraulics



**injury or death. Relieve hydraulic system pressure before connecting hydraulic hoses.**  
**CAUTION:** Prevent serious

- Use a clean rag or paper towel to clean dirt from couplers on hose ends and tractor couplers.
- Relieve pressure in hydraulic system.
- Route hoses over hitch and connect hoses to tractor couplers. Verify couplers are securely seated. Be sure to provide slack for turning.

Route electrical lines over hitch and connect to tractor electrical connectors. Be sure to provide slack for turning.

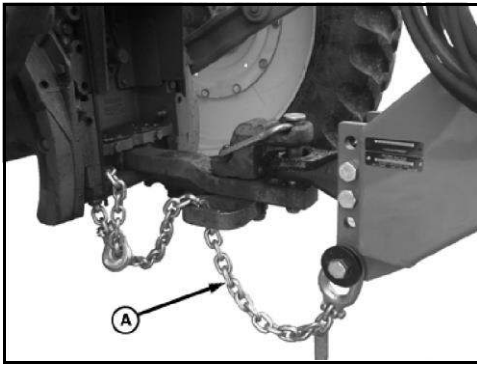


A - Pin


B - Hole

7. Turn crank handle to raise jack. Pull pin (A) out and pivot jack frame forward into its stowed position. Insert pin in hole (B) to secure jack.

## Attach Safety Chain to Tractor



A - Safety Chain

 **CAUTION: A safety chain (A) will help control drawn equipment should it accidentally separate from drawbar while transporting. A runaway machine can cause serious injury or death to you or others. Using appropriate adapter parts, attach chain to tractor drawbar support. Provide only enough slack in chain to permit turning. See your FAST dealer for a chain with a strength rating equal to or greater than gross weight of towed machine.**

Prior to operating implement, insure all electrical harnesses, hydraulic hoses and safety chain are routed properly to avoid damage.

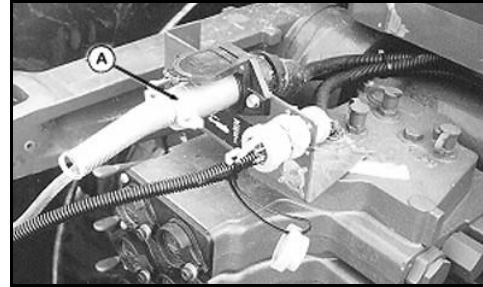
When storing machine, keep safety chain up off ground and hook to machine support assembly on hitch. Always replace a safety chain if one or more links or end fittings are broken, stretched or otherwise damaged.

Verify all chains for towed implements are adequately sized for safe transport.

## Attach Warning Light Plug



**CAUTION: When transporting machine on a road or highway at night or during day, use warning lights and devices for adequate warning to operators of other vehicles. In this regard, check local governmental regulations. Various safety lights and devices are available from your FAST dealer.**



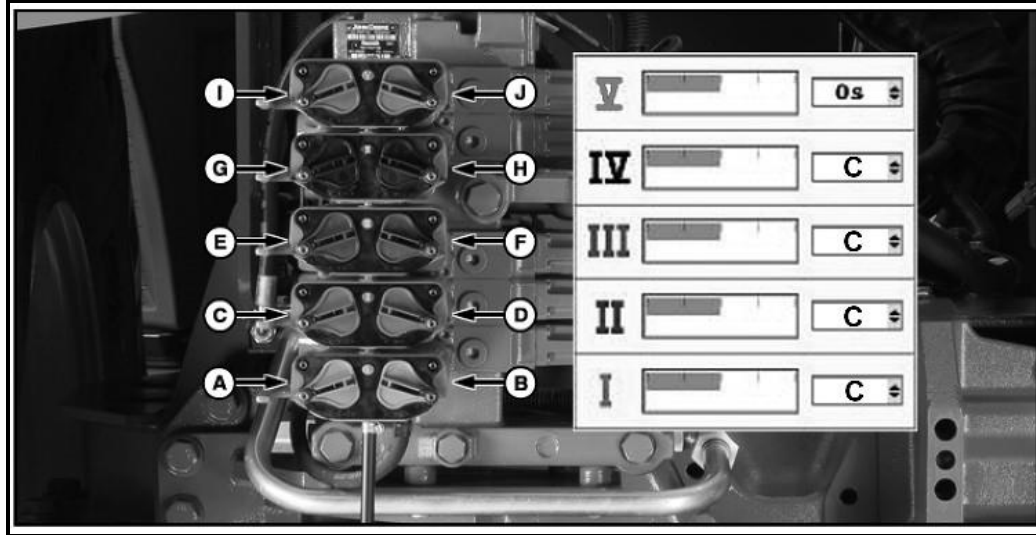
A - 7-Pin Connector Warning Light Plug

Attach warning light plug (A) to tractor outlet socket.

Be sure warning lights, reflectors, and SMV emblem are clean.

## Connect Rate Controller or Nutrient Applicator System Wiring

See manufacturer's manuals for connecting controller cables to tractor.



Legend	SCV Identifier	Tractor Flow Type	Hose Color	SCV Usage
A	I	Pressure	Gray	Main Lift/Wing Kick Pressure (Raise) \ Gage Wheels
B	I	Return	Orange	Main Lift/Wing Kick Return (Lower) - Run in Constant Flow \ Gage Wheels
C	II	Return	Brown	Hydraulic Block Return
D	II	Pressure	Purple	Hydraulic Block Pressure
E	III	Return	Yellow	Pump Return
F	III	Pressure	Red	Pump Pressure
G	IV	Return	Green	Steerable Hitch Return
H	IV	Pressure	Blue	Steerable Hitch Pressure

**IMPORTANT: Hose colors do not match SCV color**





# ATTACHING and DETACHING

## Hydraulic System Requirements

Tractor hydraulic system with ISO hydraulic couplers is required.

Four tractor control valves at the listed flow and pressure rates are required for following:

SCV Function	Flow Rate	Pressure
Toolbar Lift Cylinders and Wing Kick	68 lpm (18 gpm)	20,684 kPa (206.8 bar) (3000 psi)
Wing Fold Valve Block	45 lpm (12 gpm)	20,684 kPa (206.8 bar) (3000 psi)
Chemical/Fertilizer Pump Drive Motor	30 lpm (8 gpm)	20,684 kPa (206.8 bar) (3000 psi)
Flip Wing Down Pressure	34 lpm (9 gpm)	20,684 kPa (206.8 bar) (3000 psi)
Latch Cylinders	15 lpm (4 gpm)	20,684 kPa (206.8 bar) (3000 psi)
Steerable Gooseneck Hitch	15 lpm (4 gpm)	20,684 kPa (206.8 bar) (3000 psi)

## HYDRAULIC HOSE KEY

COLOR	DESCRIPTION OF USE
Red	Pump Pressure
Yellow	Pump Return
Grey	Main Lift \ Wing Kick Pressure (Raise)
Orange	Main Lift \ Wing Kick Return (Lower) - Run in Constant Flow
Purple	Hydraulic Block Pressure
Brown	Hydraulic Block Return

## SPRAY PUMP HYDRAULIC FLOW

### REGULATING HYDRAULIC FLOW TO THE SPRAYER PUMP

Locate your tractor model and follow the appropriate setup instructions.

**WARNING:** FAILURE TO REGULATE OIL FLOW WILL CAUSE MOTOR FAILURE.

**WARNING:** NOT SUITABLE FOR PUMPING FLAMMABLE LIQUIDS.

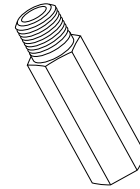
#### LOAD SENSING CLOSED CENTER SYSTEM (LS CLOSED)

Regulate oil flow with tractor's **FLOW CONTROL** and **FLOW LIMITER**. (Do not use restrictor orifice.) Setup Instructions:

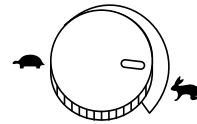
1. (Optional) Remove adapter and install flow limiter in motor inlet port (marked **I**).
2. Close motor needle valve: loosen jam nut, screw needle valve clockwise until seated, and lock jam nut. (factory setting)
3. Shut off sprayer boom and agitation valves.
4. Adjust tractor flow control to minimum flow setting (turtle).
5. Move hydraulic lever to "Lower/Retract" position to start pump.
6. Adjust tractor flow control until sprayer shut-off pressure is below maximum shown in table on page 3.

Note: If the flow limiter stops oil flow to the motor:

- 6a) Move hydraulic lever to "Float" or "Neutral" to remove oil pressure from the flow limiter.
  - 6b) Adjust tractor flow control to a lower flow position.
  - 6c) Repeat steps 5 and 6.
7. Open the sprayer agitation valve to get desired spraying pressure.



FLOW LIMITER

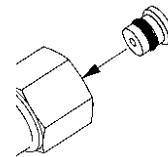


FLOW CONTROL

#### PRESSURE COMPENSATING CLOSED CENTER SYSTEM (PC CLOSED)

Regulate oil flow by using a **RESTRICTOR ORIFICE**. (Do not use flow limiter.) Setup Instructions:

1. Install restrictor orifice insert inside the adapter/restrictor body in the motor inlet port (marked **I**).
2. Close motor needle valve: loosen jam nut, screw needle valve clockwise until seated, and lock jam nut. (factory setting)
3. Set "Rabbit/Turtle" flow control to "Turtle".
4. Move hydraulic lever to the "Lower/Retract" position to start pump.
5. Adjust "Rabbit /Turtle" flow control and sprayer agitation valve to get desired spraying pressure.



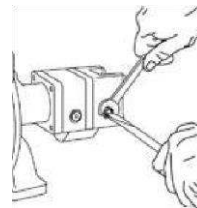
RESTRICTOR ORIFICE

#### OPEN CENTER SYSTEM (OPEN)

Select motor size closest to tractor's hydraulic system capacity. Regulate oil flow with motor **NEEDLE VALVE**.

(Do not use restrictor orifice or flow limiter.) Setup Instructions:

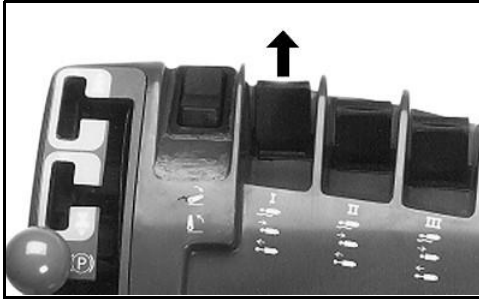
1. Shut off sprayer boom and agitation valves.
2. Loosen jam nut on motor and back out needle valve 3 or 4 turns counter clockwise.
3. Set tractor throttle to sprayer operating speed.
4. Move hydraulic lever to "Lower/Retract" position to start pump.
5. Screw needle valve clockwise until sprayer shut-off pressure is below maximum shown in table on page 3 and lock jam nut.
6. Open the sprayer agitation valve to get desired spraying pressure.



NEEDLE VALVE

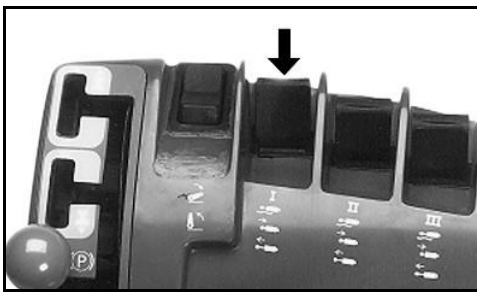
## Quick Reference for Tractor SCV Functions

<https://www.youtube.com/watch?v=YCYqRj-eGIA>



*SCV I Pushed Forward* When tractor SCV I is pushed forward, the following functions are enabled:

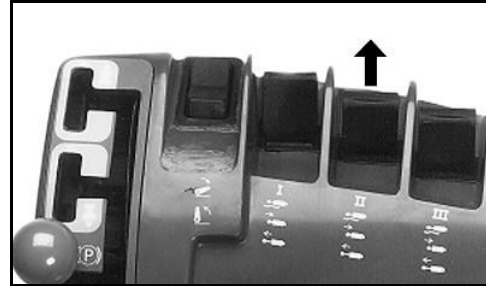
1. Lowers main lift
2. Lowers wings
3. Lowers wing kicks
4. Engages Downpressure (Must leave tractor SCV engaged whenever toolbar is in ground)



*SCV I Pulled Backward*

When tractor SCV I is pulled backward, the following functions are enabled:

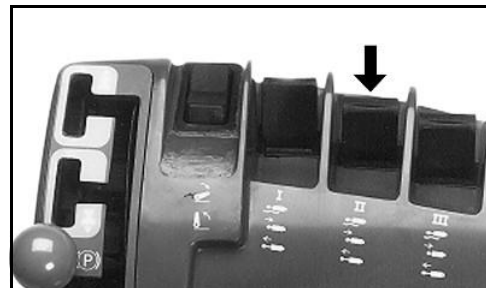
1. Raises main lift
2. Raises wings
3. Raises wing kicks



*SCV II Pushed Forward*

When tractor SCV II is pushed forward, the following functions are enabled:

1. Supplies hydraulic oil flow to operate cab box folding functions.
2. Once folding functions are complete, tractor SCVII may be returned to neutral position.



*SCV II Pulled Backward* When

tractor SCV II is pulled backward, the following functions are enabled:

1. Turns off hydraulic block pressure.



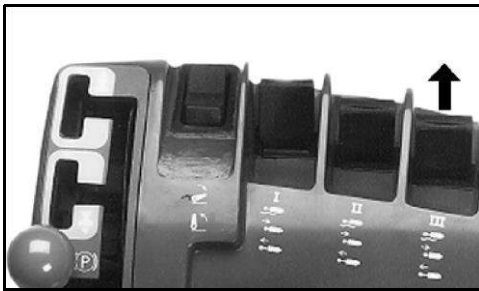
*SCV III Pushed Forward* When tractor SCV III is pushed forward, the following functions are enabled:

1. Engages solution pump when applying



*SCV IV Pushed Forward* When tractor SCV IV is pushed forward, the following functions are enabled:

1. Engages steering hydraulics.



*SCV III Placed in **FLOAT** Position* When tractor SCV III is pushed all the way forward into **FLOAT** mode, the following functions are enabled:

1. Disengages solution pump for transport.



*SCV IV Pulled Backward* When tractor SCV IV is pulled backward, the following functions are enabled:

1. Disengages steering hydraulics for transport.

## Detach Machine from Tractor



A - Pin

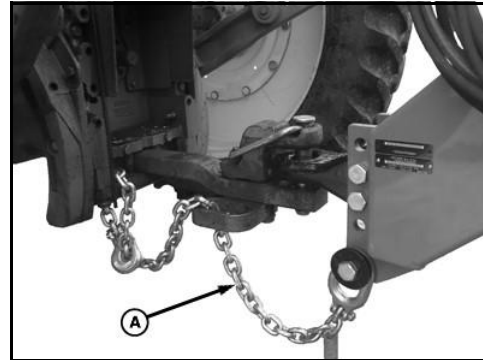
1. Secure jack as shown using pin (A). Remove weight from hitch by turning crank handle to lower jack.



**CAUTION:** Prevent serious injury or death.

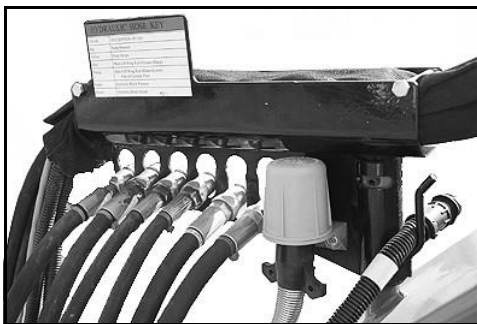
Relieve hydraulic system pressure before disconnecting hydraulic hoses.

3. Disconnect hydraulic hoses and place in storage position.



A - Safety Chain

4. Disconnect safety chain (A).

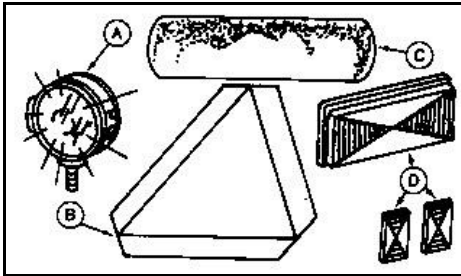


*Wiring Harness and Hoses in Storage Position*

2. Disconnect wiring harness and place in storage position.

## TRANSPORTING

Following Safe Transport Procedures



- A - Lights
- B - SMV Emblem
- C - Reflector Tape
- D - Reflectors



**CAUTION:** When transporting machine on a road or highway at night or during day, use warning lights and devices for adequate warning to operators of other vehicles.

**IMPORTANT:** Transport applicator only with tank **EMPTY** to prevent applicator damage.

**Check local governmental regulations. Various safety devices are available from your FAST dealer. Keep safety items in good condition. Replace missing or damaged items.** Upward force on hitch may cause instability when transporting. Add ballast to tractor as required.

**BEWARE** of overhead wires and narrow gates. **KNOW** transport height and width of your machine. (See SPECIFICATIONS section.)

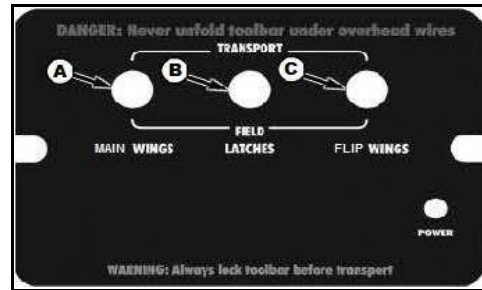
Travel at a reasonable and safe speed; **REDUCE** speed over rough or uneven terrain, slopes, and when turning.

**BE SURE** SMV emblem, reflectors, and warning lights are clean, visible, and in good condition.

**BE SURE** your safety chain has a strength rating greater than gross weight of machine.

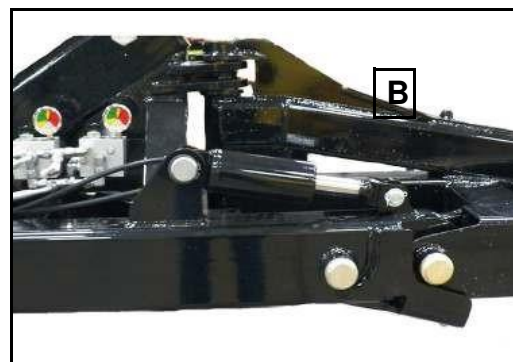
## Preparing Machine For Transport

### Fold Toolbar For Transport



- A - Main Wings Toggle Switch
- B - Latches Toggle Switch
- C - Flip Wings Toggle Switch

1. Pull SCV I backward to raise toolbar and kick wings up.
2. Push SCV II forward in continuous mode to supply oil to the fold valve functions.
3. Hold flip wings toggle switch (C) to transport position until flip wings are fully folded.
4. Move and hold latches switch (B) to transport position to raise wing latches.



5. Move and hold main wings toggle switch (A) to transport position until main wings are seated in transport rest.

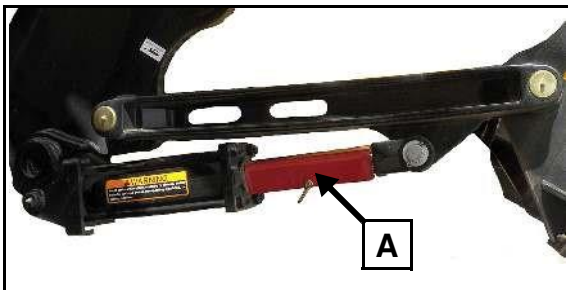
### Fold Toolbar For Transport (continued)

6. Move and hold latch switch (B) to field position until transport latches fully engage inner wings.



7. Disengage SCV II and install transport cylinder locks on both main lift cylinders.

### Preparing Applicator For Transport



A - Cylinder Transport Lock (2 Used)

 **CAUTION:** Be sure all bystanders are clear of applicator.

**IMPORTANT:** Transport applicator only with tank **EMPTY** to prevent applicator damage.

 **CAUTION:** See “Observe Maximum Transport Speed” in the Safety section for towing information.

Be sure that applicator is properly connected to the tractor. Always attach safety chain between the applicator and the tractor and install a retainer through drawbar pin.


Install cylinder locks (A) on main lift cylinders before transporting. **NOTE:** Add more spacers if needed to ensure the tool bar is fully raised and stays fully raised.

Ensure the transport latches are fully engaged. If not fully engaged, push SCV I backwards to ensure the toolbar is fully raised. Then hold the LATCHES switch on cab switch box in FIELD position until transport latches are fully engaged.

**IMPORTANT:** Gauge wheels may need to be reversed to meet transport width requirements.

Depending on machine configuration, wheels may need to be moved in, inverted or duals removed to reduce machine transport width to 12 feet or less.

### Using Warning Lights

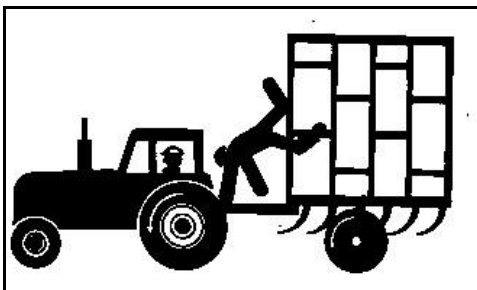
 **CAUTION:** When transporting machine on a road or highway at night or during day, use accessory lights and devices for adequate warning to operators of other vehicles. Check local governmental regulations. Various safety lights and devices are available from FAST dealer. Keep safety items in good condition. Replace missing or damaged items.


During periods of limited visibility, use pilot vehicles and use extra lights on machine.

During normal transport, both amber warning lights will flash in unison at high intensity and both red lamps will illuminate steady at low intensity.

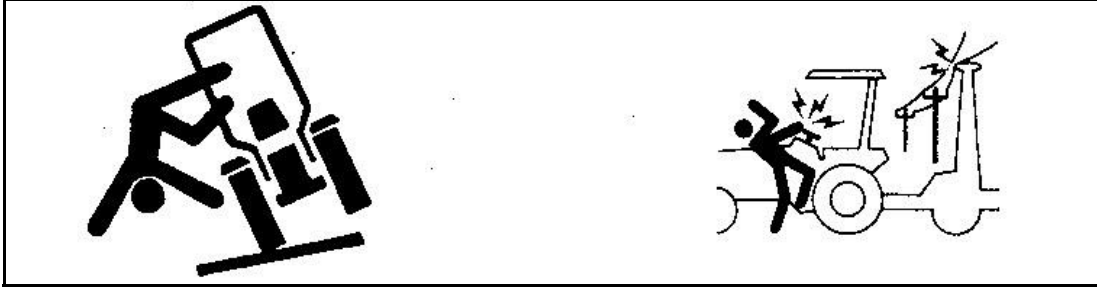
When a turn is signaled, red and amber tail lamps in direction of turn will flash at high intensity and in unison. Opposite side amber and red lamps will illuminate steady at high intensity.

### Keep Riders Off Machine



 **CAUTION:** Keep riders off. Riders are subject to injury such as being struck by foreign objects and being thrown off machine. Riders obstruct operator's view resulting in machine being operated in an unsafe manner.



**Transporting Machine**

**CAUTION: ALL MACHINES** —When transporting machine on a smooth surface road, do not exceed maximum transport speed of 20 mph (32 km/h). Reduce speed considerably when traveling over rough ground.

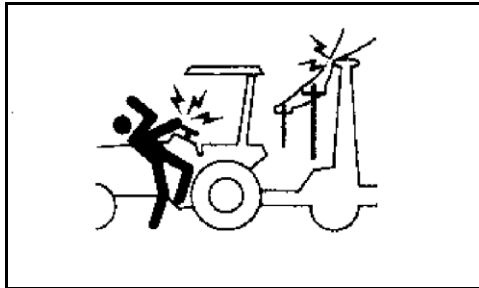
Reduce speed when turning. Do not uncouple tractor brake pedals and apply individually in an attempt to make a tighter turn.

Serious injury or death can result from contact with electric lines. Use care when moving or operating this machine near electric lines to avoid contact. Know transport height and width of machine. Check local regulations before transporting. (See SPECIFICATION section for transport height and width of machine.)

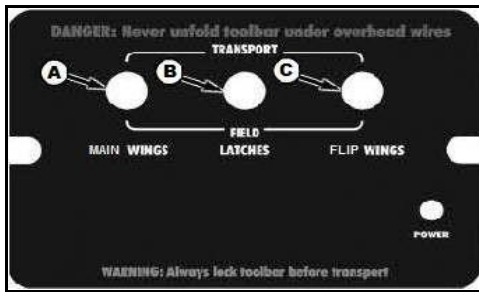
Transport with wings fully folded. Never raise or lower center section or wings when moving. After folding, ALWAYS place the fold valve SCV (SCV II) in the neutral position for transport.

If wing-fold cylinders are removed, chain wings together to prevent injury or death caused by accidental falling of wings on you or others.

## Unfolding/Extending Tool Bar



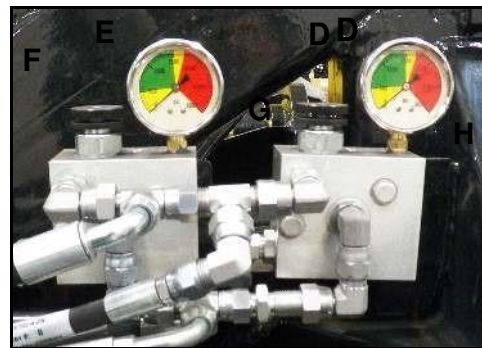
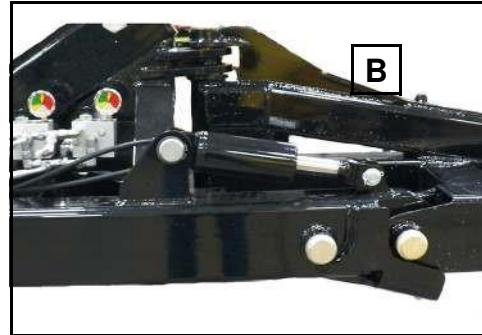
**CAUTION:** Prevent serious injury or death. Machine coming near or contacting power lines can cause electrocution. Electrocution can occur without contact. Fully lower wings before moving or transporting



- A - Main Wing Toggle Switch
- B - Latches Toggle Switch
- C - Flip Wings Toggle Switch

8. Push SCV I backward to raise center section and inner wings.
9. Verify tool bar is fully raised.
10. Remove and store the cylinder locks on the main lift cylinders.
11. Push SCV II forward to detent to supply continuous oil flow to fold valve functions.
12. Move latches switch (B) to transport position and hold until transport latches completely disengage inner wings.

13. Move main wings switch (A) to field position and hold until wings are unfolded. Wings will be laterally in line with center section when fully unfolded.



- A - Main Wing Switch
- B - Latches Switch
- C - Flip Wings Switch
- D - Gauge
- E - Knob
- F - Lock Ring
- G - Down Pressure Valve for Main Wings
- H - Down Pressure Valve for Flip Wings (if equipped).

**Unfolding/Extending Tool Bar (continued)**

**14.** Move flip wing switch (C) to field position and hold to unfold flip wings.

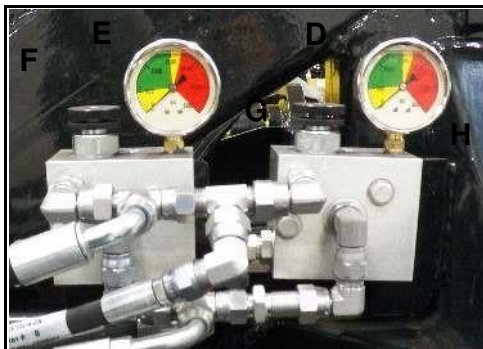
**15.** SCV II may now be disengaged and returned to neutral until a wing folding function is required.

**16.** Check the amount of down pressure to inner wings by lowering the coulters to the ground while sitting still and setting SCV I to continuous down.

Hydraulic down pressure gauge (D) should read between 700 and 1000 psi but see step 10 below. Down pressure may be adjusted by turning knob (E) on down pressure valve (G) but see step 11 below.

**17.** Use only as much down pressure as needed to maintain a level toolbar and consistent coulters depth across the entire toolbar. Excess pressure could cause damage to toolbar. Turn knob clockwise to increase pressure and counterclockwise to decrease down pressure. To change pressure, loosen lock ring (F) and turn adjustment knob a 1/4 turn at a time. Do not exceed 1500 PSI. Pull SCV I backward to fully raise toolbar and kick wings up.

Toolbar is now ready for field application.



## **ADJUST DEPTH CONTROL**

### **Adjust Application Depth**

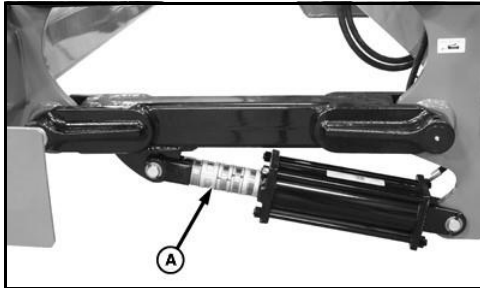
Depth of material placement can vary depending on type of application. Check with fertilizer or chemical manufacturer for information regarding application depth. Set tool bar, coulter or nozzle to required depth.

Once desired field location of application is reached, center section and main wing kick may be lowered by pushing SCV I forward. Even after coulters are in ground, SCV I must be constantly engaged providing oil supply to and from down pressure circuit.

Failure to keep SCV I engaged and supply a constant oil flow to down pressure system may result in coulter riding out of the ground, and could result in structural failure of the toolbar and/or hydraulic cylinder components.

**IMPORTANT: DO NOT exceed SCV I flow setting of 90%.**

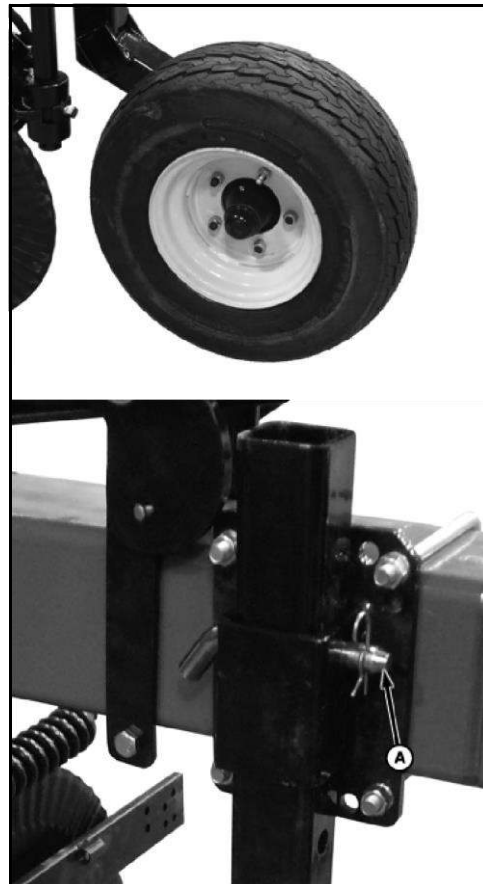
## ADJUST DEPTH CONTROL



### A - Spacer

Install spacers (A) on tool bar lift cylinder ram to give required machine depth. Tool bar can then be fully lowered and always return to same depth

## Adjust Gauge Wheels



### A - Pin

Each inner wing and outer wing is equipped with a gauge wheel that helps to maintain application depth. Lower gauge wheels if soil conditions are soft and raise if hard to obtain the same application depth.

1. Remove pin (A) and adjust gauge wheel height as desired.
2. Install pin and lock pin.
3. Repeat for other side.

## ADJUST GROUND SPEED

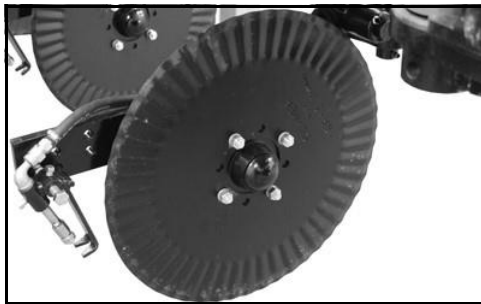
It will be necessary to establish travel speed and then set flow to give desired application rate. Always run at established travel speed.

However, best results are obtained ground speed is 8 - 13 kph (5 - 8 mph). Ground speed variations in the field will automatically be compensated.

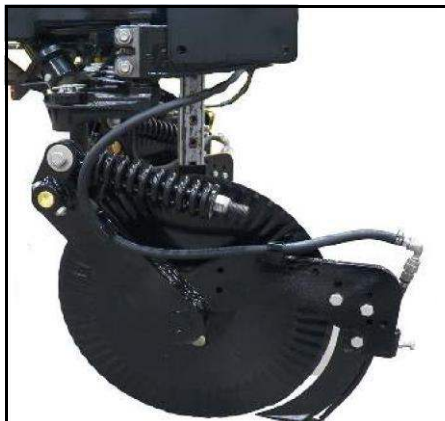
Always operate at a comfortable speed. Do not operate so fast that tool bar or tank bounce while going through field.

Effective results require that liquid be applied at a consistent depth in a consistent manner. Machine bouncing will prevent this required consistency.

### Inspect Coulters



### Coulter with Injector



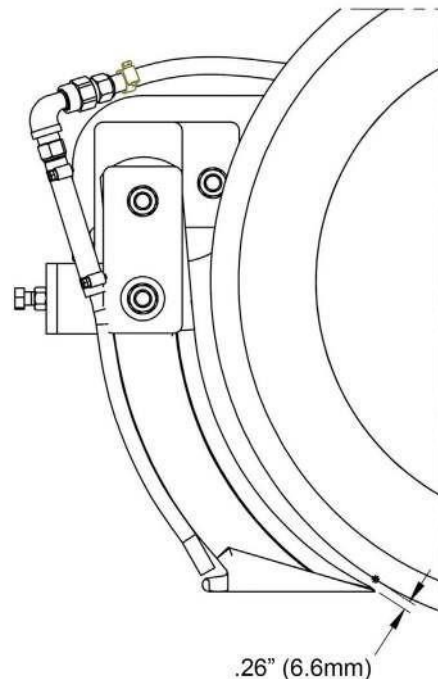
## Coulter with Knife

Coulters are used to cut crop residue on surface, penetrate ground and part the soil to accept liquid from nozzle. Coulter depth is controlled by spacers on lift cylinder ram and gauge wheel position.

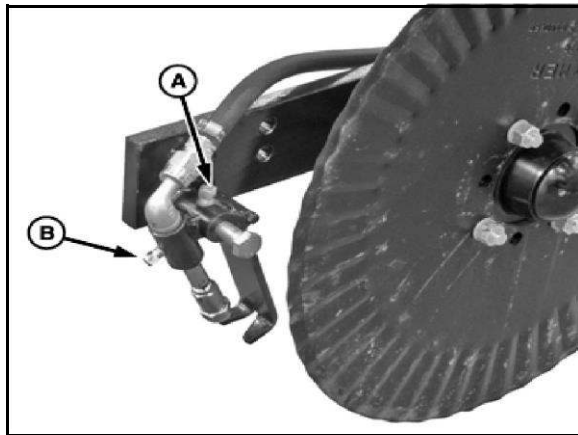
Inspect coulters frequently if operating in rocky conditions. Bent, chipped or broken coulters will not penetrate soil properly. Always remove entangled material from any component.

### Adjust Knives

The gap between the knife tip and the blade should be .26" (6.6mm). After the knife is properly adjusted, spin the blade to ensure the knife misses the blade, adjust as necessary.



## ADJUST NOZZLES



A - Setscrew

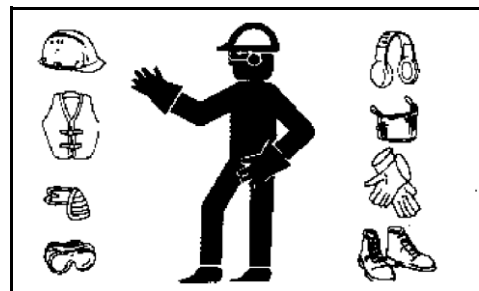
B - Setscrew

1. Extend wings and raise tool bar to its fully up position.
2. Place safety stands under center tool bar or install cylinder transport locks on lift cylinders.
3. To adjust nozzle angle:
  - The best results are obtained when nozzle directs liquid approximately 1 inch (25 mm) behind coulters.
  - Loosen setscrew (A) to set nozzle at required angle and centered behind coulters.
4. To adjust nozzle spray pattern:
  - Sight along nozzle and coulters. Nozzle should direct liquid directly behind coulters.
  - Loosen setscrew (B) to adjust nozzle spray parallel with furrow.
  - As a general guideline, tip of nozzle should be slightly above ground as unit moves over the field. This will insure that liquid enters soil via furrow and is retained in soil as the furrow closes.

Check chemical or fertilizer M/SDS for proper handling instructions.

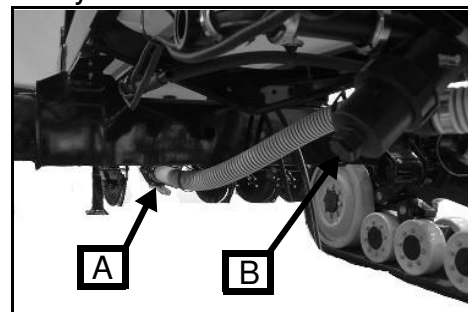
Toxic chemicals can enter the body by breathing spray or contact with bare skin.

## Clean Filter



**CAUTION: Prevent serious injury or death.**

Do not take a chance with your health and safety.



A - Sump Valve

B - Cap

Clean the filter at the start of each day when tank is empty or dirt is detected in system.

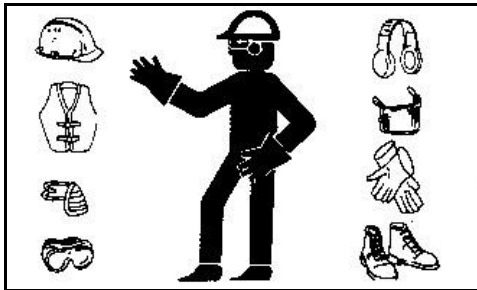
1. Clear area of bystanders.
2. Close sump valve (A) if there is liquid in tank.
3. Relieve pressure in liquid circuit.
4. Remove cap (B) to access screen.
5. Use clear water to clean screen.

**IMPORTANT: Do not over tighten canister and crack head.**

6. Install screen in canister and tighten by hand.
7. Open sump valve if there is liquid in tank.

## PREPARE LIQUID SYSTEM

### Clean System Screen




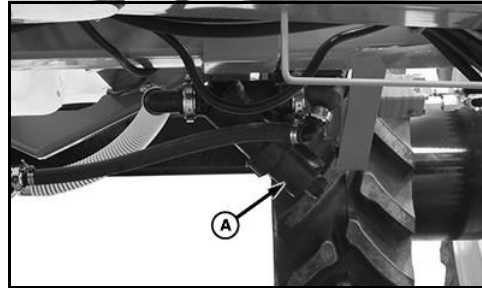
 **CAUTION: Prevent serious injury or death.**

Check chemical or fertilizer M/SDS for proper handling instructions.

Toxic chemicals can enter the body by breathing, spray or contact with bare skin.

Do not take a chance with your health and safety.

 **CAUTION: Do not run pump dry, damage may occur.**



A - Screen


**NOTE: Always turn sump valve off whenever working on liquid circuit components to isolate the liquid in tank.**

The liquid system is equipped with a screen (A) in suction line to remove dirt and impurities.

Close valve, remove screen and wash with clear water daily. Clean liquid is required to prevent nozzle plugging.

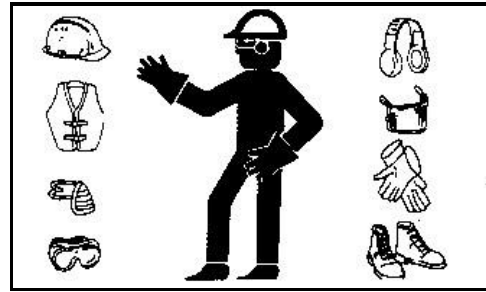


## FILLING TANK

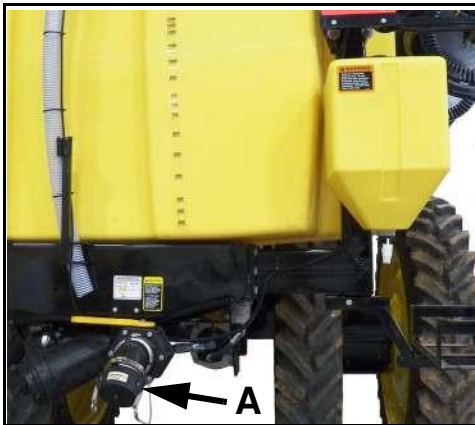
 **CAUTION: Prevent serious injury or death.** Check chemical or fertilizer M/SDS for proper handling instructions.

Toxic chemicals can enter the body by breathing spray or contact with bare skin.

Do not take a chance with your health and safety.



### Filling Tank



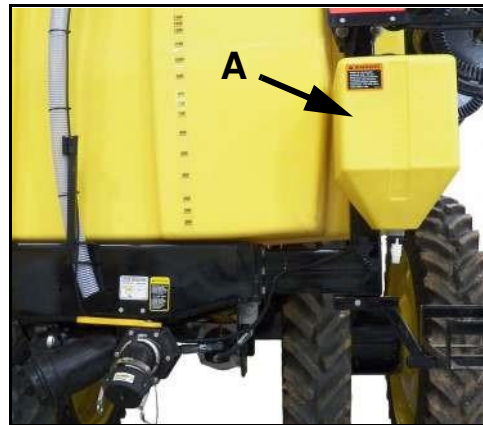
A - Fill Line

**IMPORTANT: Transport machine with tank EMPTY to prevent machine damage.**

**NOTE: Add only the amount of liquid to the tank that is required for the job.**

1. Pull up to tender truck or drive truck to machine.
2. Connect transfer hose to bottom fill line (A).
3. Start pump on tender truck and open valve on input line.
4. Pump until tank is filled to desired level. Do not over-fill.
5. Close input valve and stop pump on tender truck.
6. Remove and stow fill line.
7. Install and fasten input line covers.

### Filling Fresh Water Rinse Tank



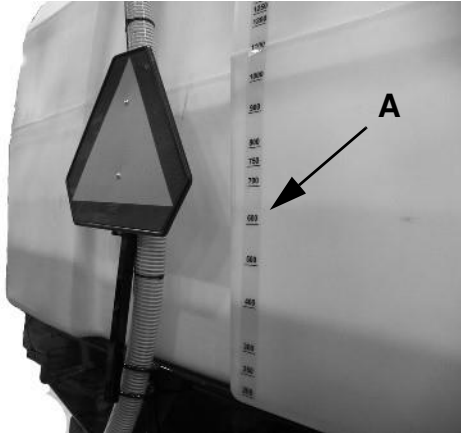
A - Rinse Tank

Each machine is equipped with a fresh water rinse tank (A) on rear frame. Fill rinse tank with clean fresh water whenever rinse water has been used. Do not allow tank to run low on fresh water. Use water from rinse tank to clean, rinse or wash anything that has become contaminated.

 **WARNING: Do not drink the water from the rinse tank.**

**The rinse tank water may become contaminated with sprayer chemicals or other contaminants.**

## Use Tank Fill Marker



A - Scale

The back end of tank has a fill marker decal (A) on it to assist operator when filling tank.

## CHEMICAL EDUCTOR



**CAUTION:** Read the operating instructions completely before using the Cleanload.

- Always read and follow the chemical label instructions exactly. Understand safe practices for chemical handling, mixing, loading, cleaning and first aid.
- Always wear proper Personal Protective Equipment when handling chemicals, including gloves, eye protection, respirator and safety shoes.
- Always pay attention to wind conditions when dumping chemicals into the Cleanload hopper tank. Always stand up wind when dumping in windy conditions. Also make sure that there are no other persons downwind prior to dumping.
- Always check to make sure that there are no loose objects surrounding the Cleanload that could cause damage to the hopper tank or hoses.
- When operating the Cleanload at night, ensure lighting of 200 to 300 Lux is present.



**NOTE:** IMMEDIATELY close the hopper lid and SHUT DOWN the system if leaks, errant spray, operation error, or malfunction occur.

### Before Operation

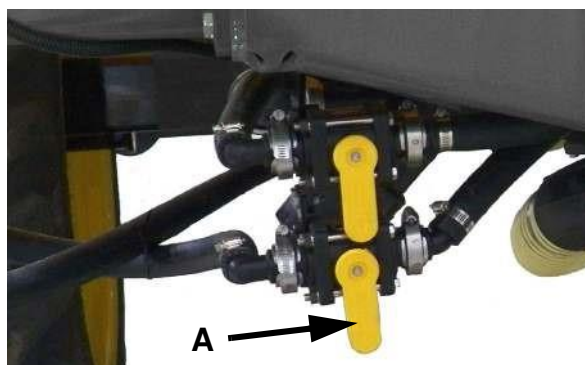
- 1.Ensure all Cleanload valves are closed prior to starting, and inspect for leaks.
- 2.Unlock the lid by turning it counterclockwise, and open it. Inspect the hopper for cleanliness, remove foreign

objects, and ensure the optional hopper outlet screen is properly seated.

- 3.Close the lid and lock it by turning it clockwise. Gently lift on the lid to ensure it is locked closed. If the lid will not close, will not lock, or is damaged, STOP and repair it before further use.

### Start-Up

- 4.Divert pump flow to the Cleanload inlet line.



- 5.Open the INLET VALVE (A).



- 6.Open the HOPPER OUTLET VALVE (B).

- 7.Unlock the lid by turning it counterclockwise. Open the lid slowly,

taking care to check that no errant spray is detected before fully opening the lid.

### **Pouring Chemical into the Hopper**



8. Open the SIDEWALL RINSE VALVE (C).

9. Measure the required amount of chemical using an accurate measuring vessel, scale, or flow meter. The hopper should not be used as a measurement vessel.

10. Carefully pour the chemical into the hopper taking care to not splash or spill.

11. The Cleanload is equipped with a ProClean Container Rinse System. It can be used to rinse empty liquid containers using steps 11 through 13.

12. Place the container to be rinsed upside down over the nozzle in the bottom of the hopper. Holding the container securely with two hands, press down to activate the CONTAINER RINSE VALVE (D) for 30 seconds or longer until container is visibly clean.

13. When the container is visibly clean, stop pressing down. The CONTAINER RINSE VALVE (D) will close and the spray will stop. Let the container drain until empty, then set it aside for proper recycling or disposal.

14. Operate the SIDEWALL RINSE SYSTEM for 30 additional seconds or longer to flush residues, and then close the SIDEWALL RINSE VALVE (C). **Using the optional Cleanload Suction Lance allows for loading of liquid chemicals and powders without lifting or pouring containers.**

15. Ensure the hopper has been rinsed of chemical residue. Remove the hopper outlet screen by pulling it straight up from the outlet and set it aside.

16. Insert the lance body into the eductor until the o-ring seals on the hopper drain.

17. Use the end of the lance to pierce the bag or foil seal, and suction up the chemical.

18. When the desired amount of chemical has been suctioned up, raise the end of the lance slightly out of the chemical but keep it in the container to let the lance drain out.

19. Place the end of the lance into a container of clean rinse water. Suction for 30 seconds or more to clean the lance, and then raise the end slightly out of the water to let the lance drain back into the water container.

20. Point the end of the lance up and raise it above the hopper to drain any remaining water into the eductor. Ensure the hose is fully emptied into the eductor, then remove the lance from the eductor, and pour the container of rinse water into the hopper.

21. Reinstall the optional hopper outlet screen.

## Shutdown

Ensure chemical residue has been flushed from the hopper, and the rinse system valves are closed.



**NOTE:** Before shutdown, follow steps 8-14 using clean water to rinse the container and sidewall. For sprayers equipped with a clean water rinse tank, follow the sprayer manufacturer's instructions for pumping from the clean water tank during the final rinse. For transfer and tender truck installations, the final rinse should be made while transferring clean water.

23. Close the lid and lock it by turning it clockwise. Gently lift on the lid to ensure it is locked closed.

24. Close the HOPPER OUTLET VALVE (B).

25. Close the INLET VALVE (A).

26. If pump flow has been diverted to the Cleanload, divert it back for normal spraying or transfer.

## Maintenance and Servicing

### Information

**ATTENTION:** Divert or stop all flow to and from the Cleanload system before performing any service or maintenance procedures.

**ATTENTION:** Always wear proper Personal Protective Equipment when handling chemicals including gloves, eye protection, respirator and safety shoes.

**ATTENTION:** Always dispose of chemicals and contaminated water in

accordance with national and local laws and statutes.

### Cleaning

Always flush the Cleanload with clean water after each day's use, if switching chemicals, or if the system is going to be inactive for an extended period of time. Ensure that the components of the Cleanload are free of any chemical buildup or residue, both inside and out. Failing to properly clean the system could lead to reduced performance and component life. Be sure to thoroughly clean the eductor, ball valves and hopper. Cycle the ball valves open and close during rinsing to ensure they are clean.

### Maintenance

#### Daily Maintenance

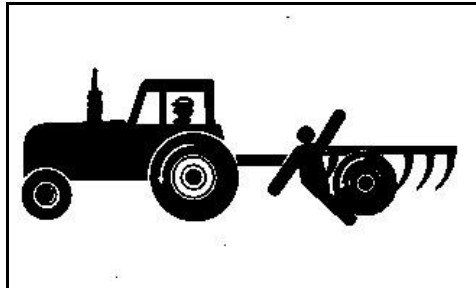
Inspect all components for excessive wear, leaks or any other damage prior to each use. Careful inspection is required before using the system after long periods of inactivity.

#### Yearly Maintenance:

Your Cleanload will last longer and give best performance when properly taken care of. Proper Cleanload care depends on the fluid/chemical being used and when the Cleanload will be used again. At the end of the spraying season, flush the Cleanload with a neutralizing solution for the fluid/chemical just used. Follow with a clean water rinse. This is especially important for corrosive chemicals. Drain Cleanload thoroughly, open all drain plugs, and plug all ports until Cleanload is used again.

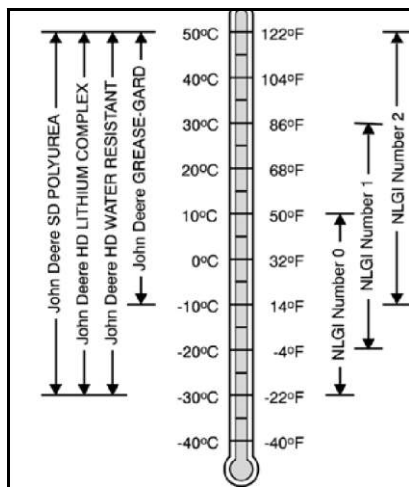
## LUBRICATION AND MAINTENANCE

### Lubricating and Maintaining Machine Safely



**CAUTION:** To help prevent serious injury or death to you or others caused by unexpected movement, be sure to service machine on a level surface. If machine is connected to tractor, engage parking brake and place transmission in PARK, shut off engine and remove key. If machine is detached from tractor, block wheels and use safety stands to prevent movement.

### Grease



Greases for Air Temperature Ranges Use grease based on NLGI consistency numbers and the expected air temperature range during the service interval.

**IMPORTANT:** Some types of grease thickeners are not compatible with others. Consult your grease supplier before mixing different types of grease.

### Alternative and Synthetic Lubricants

Conditions in certain geographical areas may require lubricant recommendations

different from those printed in this manual. Synthetic lubricants may be used if they meet the performance requirements as shown in this manual.

The temperature limits and service intervals shown in this manual apply to both conventional and synthetic lubricants.

Re-refined base stock products may be used if the finished lubricant meets the performance requirements.



# LUBRICATION AND MAINTENANCE

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## **Lubricant Storage**

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Equipment can operate at top efficiency only when clean lubricants are used.

Use clean containers to handle all lubricants.

Whenever possible, store lubricants and containers in an area protected from dust, moisture, and other contamination. Store containers on their side to avoid water and dirt accumulation.

Make certain all containers are properly marked to identify their contents.

Properly dispose of all old containers and any residual lubricant they may contain.

## **Lubrication and Maintenance Intervals Beginning and End of Season**

**Perform each lubrication and service illustrated in this section. 10 Hours -**

### **Daily**

- Toolbar Parallel Linkages
- Clean Strainer
- Inner Wing Lift Cylinder
- Inner Wing Lift Pins
- Hitch
- Coulter
- Gauge Wheel

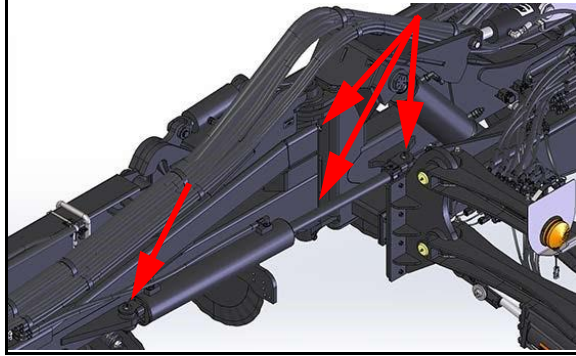
### **50 Hours - Weekly**

- Inner Wing Fold Pins
- Wheel pivot
- Flip Wing Fold Hinge
- Fold Latch
- Wheel pivot

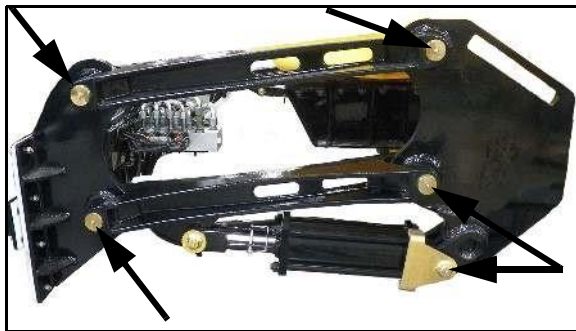
### **Before and After Each Season**

- Wheel Bearings
- Jack

## Inner Wing Fold Pins



Grease Inner Wing Fold Pins Weekly.  
**Toolbar Parallel Linkage**

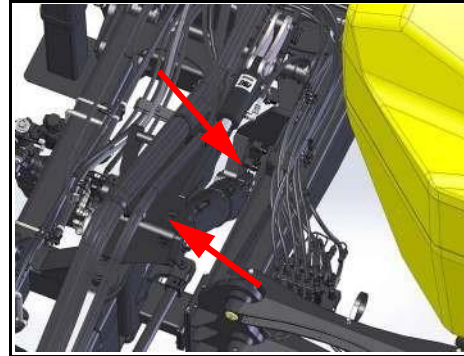


Grease Parallel Linkages daily.  
**Strainer**



Strainer  
Remove and wash the fertilizer strainer screen using clean water every 8 hours.

## Inner Wing Lift Cylinder



Grease Inner Wing Lift Cylinder daily.

## Inner Wing Lift Pins



Grease Inner Wing Lift Pins daily.



## Hitch



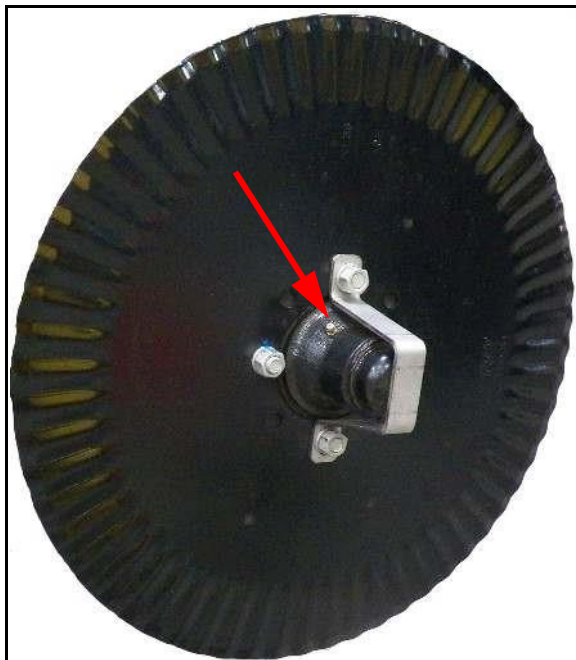
Grease Hitch daily.

## Gauge Wheel



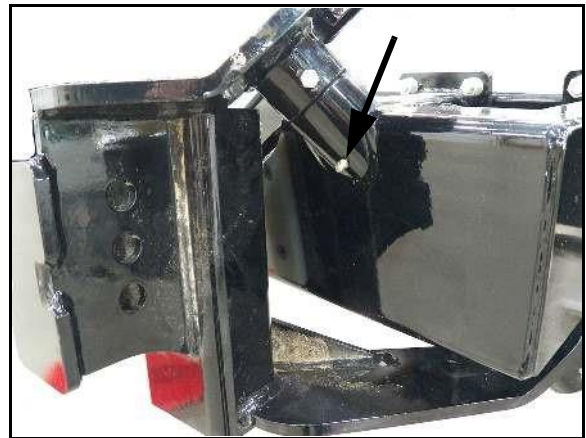
Grease Coulter Wheel Daily.

## Coulter



Grease Coulters daily.  
**Flip Wing Fold Hinge**

## Wheel Pivot



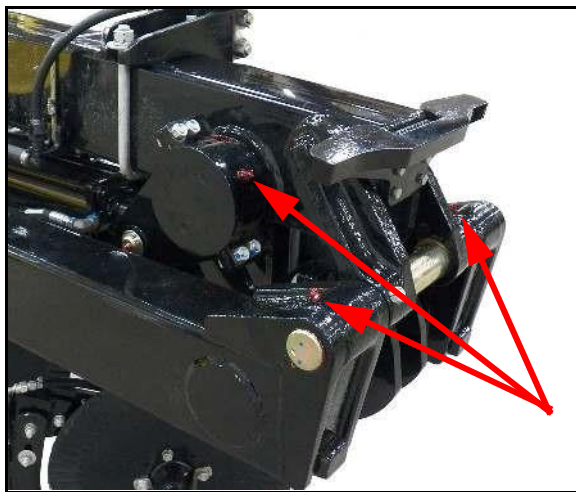
Grease Wheel Pivot weekly.



## Wheel Bearing



Grease wheel bearings annually.



## Jack



Grease flip wing fold hinges weekly.

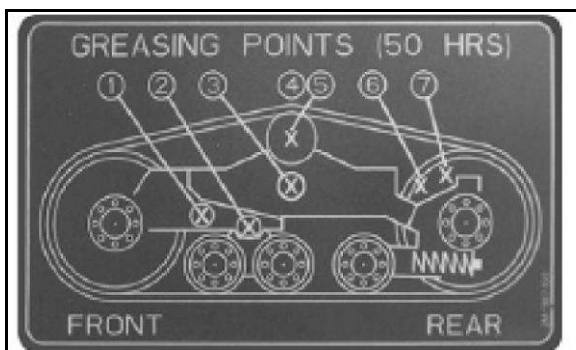
## Top Cover (A)

## Mid Wheel, Wedges, Idler, and Mid-Roller Cap Screws

1. Remove jack from mount.

2. Remove top cover (A) and check grease level.

3. Install cover and install jack on the machine.



Lubricate with general-purpose grease at hourly interval indicated on decal (A).

**SERVICE****Practice Safe Maintenance**

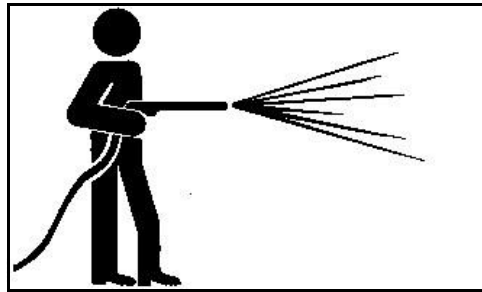
Understand service procedure before doing work. Keep area clean and dry.

Never lubricate, service, or adjust machine while it is moving. Keep hands, feet, and clothing from power-driven parts. Disengage all power and operate controls to relieve pressure. Lower equipment to the ground. Stop the engine. Remove the key. Allow machine to cool. Securely support any machine elements that must be raised for service work.

Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Remove any buildup of grease, oil, or debris.

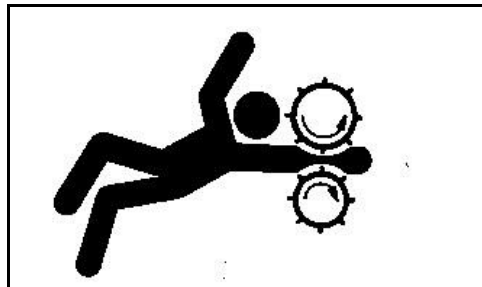
On self-propelled equipment, disconnect battery ground cable (-) before making adjustments on electrical systems or welding on machine.

On towed implements, disconnect wiring harnesses from tractor before servicing electrical system components or welding on machine.

**Work in Clean Area**

Before starting a job:

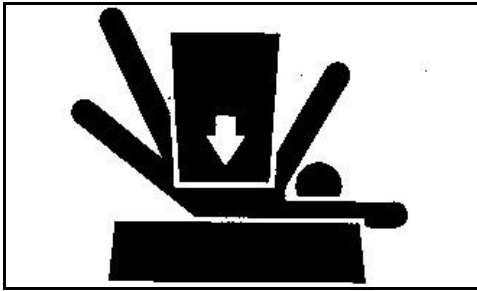
- Clean work area and machine.
- Make sure you have all necessary tools to do your job.
- Have the right parts on hand.
- Read all instructions thoroughly; do not attempt shortcuts.

**Service Machines Safely**

Tie long hair behind your head. Do not wear a necktie, scarf, loose clothing, or necklace when you work near machine tools or moving parts. If these items were to get caught, severe injury could result.

Remove rings and other jewelry to prevent electrical shorts and entanglement in moving parts.

### Support Machine Properly



Always lower the attachment or implement to the ground before you work on the machine. If the work requires that the machine or attachment be lifted, provide secure support for them. If left in a raised position, hydraulically supported devices can settle or leak down. Do not support the machine on cinder blocks, hollow tiles, or props that may crumble under continuous load. Do not work under a machine that is supported solely by a jack. Follow recommended procedures in this manual.

When implements or attachments are used with a machine, always follow safety precautions listed in the implement or attachment operator's manual.

### Avoid High-Pressure Fluids



Inspect hydraulic hoses periodically – at least once per year – for leakage, kinking, cuts, cracks, abrasion, blisters, corrosion, exposed wire braid or any other signs of wear or damage.

Replace worn or damaged hose assemblies immediately with FAST approved replacement parts.

Escaping fluid under pressure can penetrate the skin causing serious injury.

Avoid the hazard by relieving pressure before disconnecting hydraulic or other 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. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source.

## Replace Hydraulic Hoses



**CAUTION: Avoid hazards due to escaping fluid under pressure. See AVOID HIGH PRESSURE FLUIDS in this manual.** Hydraulic hoses between the lift cylinders and hydraulic lock-up valve should be inspected frequently for leakage, kinking, cuts, cracks, abrasion, blisters, corrosion, exposed wire braid or any other signs of wear or damage.

Worn or damaged hose assemblies can fail during use and should be replaced immediately.

See your FAST Dealer for replacement hoses.



**CAUTION: If incorrectly rated hose is used, machine damage, injury or death could occur.**

If hoses are to be fabricated, ensure hoses are rated at no less than 82,737 kPa (827 bar) (12,000 psi) burst pressure according to SAE standard J517, 100R17 hose specification.

Incorrect hose length or routing can increase chance of hose wear or damage. Use old hose as guide for length and hose routing.

Incorrect fittings can damage mating parts or cause leaks. Make sure to use steel fittings approved for use with hose manufacturer. Use correct size and thread type as replaced hose.

## Tightening Hardware

Check tightness of ALL BOLTS, U-BOLTS and CAP SCREWS after first 10-15 hours of operation and again at end of first week (50 hours) of operation.

Tighten all bolts to torques specified in Service section unless otherwise noted.

Check tightness of hardware periodically.

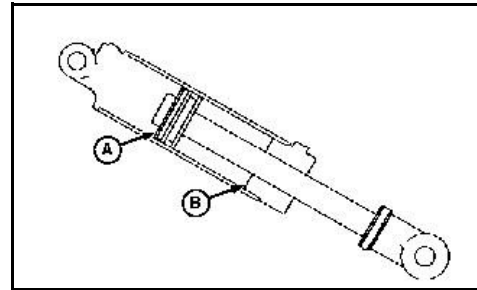
### Adjust Hitch Height

1. Verify machine is parked safely before performing hitch adjustment to avoid injury or death caused by uncontrolled machine movement.
2. Remove and retain cap screws.
3. Lower hitch assembly and retain using existing cap screws in holes shown.
4. Tighten cap screws to 873 N-m (644 ftlbs).
5. Remove and retain cap screws.

### Preventing Hydraulic System Contamination

**IMPORTANT: Cleanliness is very important when working on hydraulic system. Prevent contamination by assembling cylinders, hoses, couplers, and valves in a clean area of shop.**

Leave protective caps on fluid openings until ready to make connection. When charging system, use a tractor or other source that contains clean oil, free of abrasive materials. Keep couplers clean. Abrasive particles, like sand or metal fragments, can damage seals, barrels, and pistons causing internal leakage.



A - Piston  
B - Rod Guide

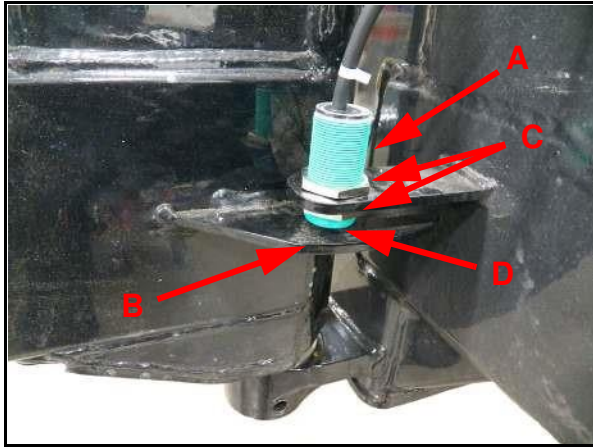
NOTE: In order to help keep couplers clean, always place in storage position when not attached to tractor.

**IMPORTANT: To prevent contaminants from entering hydraulic system, filters must be installed at tip of supply hose (cylinder depth stop systems). Additional filters are not recommended as they will restrict oil flow and adversely affect lift time due to pressure drop.**

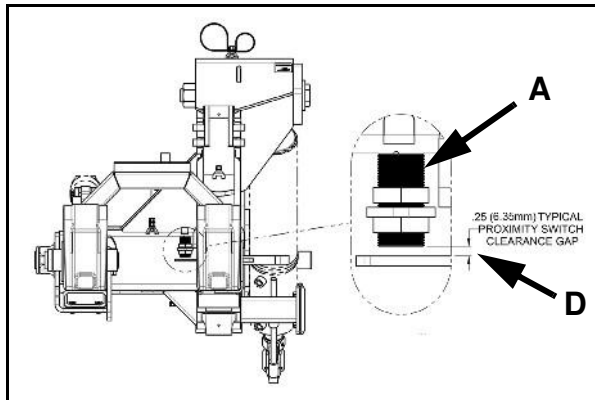
Without filter, large dirt particles can enter cylinder and settle against top side of piston (A) where they can cut piston seal as cylinder retracts.

No filter is needed on rod end port because dirt particles entering cylinder from here will settle harmlessly against rod guide (B), away from piston seal.

## PROXIMITY SWITCHES



Proximity Switch (A)  
Plate (B)  
Jam nuts (C)  
Clearance Gap (D) .25" (6.38mm)



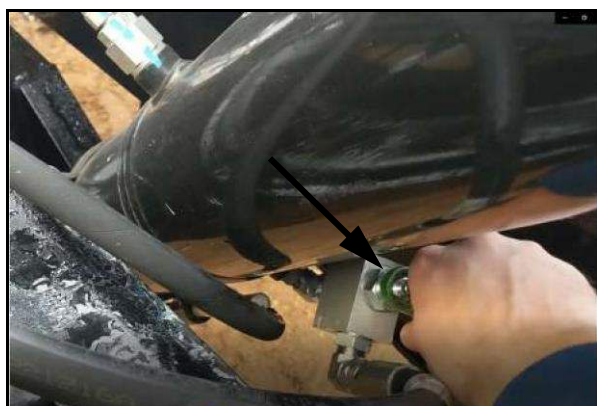
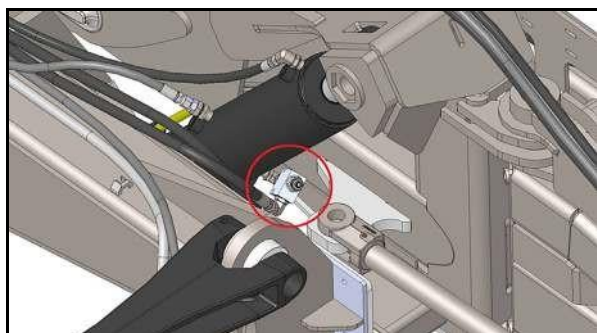
Proximity Switch Clearance Gap

1. The clearance gap (D) is typically set with .25" (6.38mm) between the proximity switch (A) and the plate (B).
2. Snug the jam nuts (C) with a wrench, do not over tighten.

## INNER WING ORIFICE ADJUSTMENT

If the toolbar main wings do not lower at the same rate as the center section, the inner wing orifices can be adjusted.

1. Verify that the main lift hydraulic flow setting in the tractor is set to 9 or 90%. If set correctly and problem persists proceed to step 2.
2. Unfold the toolbar into field position and lower toolbar fully to the ground.



3. On the adjustable orifice valves on the inner wing cylinders loosen jam nut with an 11/16" box wrench.



4. Using a 3/16" Allen wrench, turn the adjuster screw in (clockwise) 1/4" to slow down the wing speed or out (counterclockwise) 1/4" to speed up the wing speed. Do this to both sides of the toolbar.
5. Raise the toolbar fully, then lower the toolbar to see if the entire toolbar hits the ground at the same time.
6. Continue to adjust the set screws until the toolbar lowers evenly.
7. Tighten jam nuts when finished.

<https://youtu.be/xxbfBXLgabE>



## PREPARING FOR STORAGE



**CAUTION: Store unit in an area away from human activity. Do not permit children to play on or around stored applicator.**

At end of season, thoroughly inspect and prepare applicator for storage. Repair or replace any worn or damaged components to prevent any unnecessary down time at beginning of next season.

1. Empty remaining liquid from tank. Flush system with water.
2. Open all liquid line connections, end cap screen canister and pump. Drain all fluids out of system.
3. Add approximately 38 L (10 gal) of RV antifreeze per 3 m (10 ft.) of toolbar.
4. Remove 90° elbow and recap valve block end.
5. Flush the system, then pump through screens, valve, nozzles/check valves and orifices/tips.
6. Thoroughly wash machine using a pressure washer to remove all dirt, mud, debris or residue to protect against corrosion.
7. Lubricate all grease points. Make sure all grease cavities have been filled with grease to remove any water residue from washing.
8. Inspect all hydraulic hoses, couplers and fittings. Tighten any loose fittings. Replace any hose that is damaged or separating from crimped end of a fitting.
9. Inspect all liquid lines and connections. Tighten any loose fittings. Replace any line that is cut, nicked or abraded.
10. Touch up all paint nicks and scratches to prevent rusting.
11. Fold inner and outer wings to transport configuration.
12. Install spacers on lift cylinder rams.

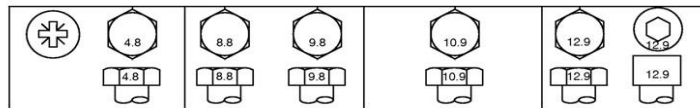
13. Move machine to a storage position.
14. Select an area that is dry, level and free of debris.
15. Place planks under jack for added support if required.
16. Unhook applicator from tractor.

## Removing from Storage

1. Clear area of bystanders, especially small children, and remove foreign objects from machine and working area.
2. Attach tractor to applicator.
3. Check:
  - Attach and secure all liquid lines.
  - Coulters and Nozzles.
  - All hardware. Tighten as required.
  - Tire pressure.
  - All hydraulic lines, fittings and connections. Tighten as required
4. Lubricate all grease fittings.
5. Replace any defective parts.
6. Add a small amount of liquid to tank. Turn metering pump on momentarily and check that liquid comes out of each nozzle.
7. Follow pre-operation checklist before using.

## TIGHTENING HARDWARE

Check tightness of ALL BOLTS, U-BOLTS and CAP SCREWS after first 10-15 hours of operation and again at end of first week (50 hours) of operation. Tighten all bolts to torques specified in Service section unless otherwise noted. Check tightness of hardware periodically.





# TIGHTENING HARDWARE

## Metric Bolt and Screw Torque Values

Bolt or Screw Size	Class 4.8				Class 8.8 or 9.8				Class 10.9				Class 12.9			
	Lubricated <sup>1</sup>		Dry <sup>2</sup>		Lubricated <sup>1</sup>		Dry <sup>2</sup>		Lubricated <sup>1</sup>		Dry <sup>3</sup>		Lubricated <sup>1</sup>		Dry <sup>2</sup>	
	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.
M6	4.7	42	6	53	8.9	79	11.3	100	13	115	16.5	146	15.5	137	19.5	172
									N·m	lb.-ft.	N·m	lb.-ft.	N·m	lb.-ft.	N·m	lb.-ft.
M8	11.5	102	14.5	128	22	194	27.5	243	32	23.5	40	29.5	37	27.5	47	35
			N·m	lb.-ft.	N·m	lb.-ft.	N·m	lb.-ft.								
M10	23	204	29	21	43	32	55	40	63	46	80	59	75	55	95	70
	N·m	lb.-ft.														
M12	40	29.5	50	37	75	55	95	70	110	80	140	105	130	95	165	120
M14	63	46	80	59	120	88	150	110	175	130	220	165	205	150	260	190
M16	100	74	125	92	190	140	240	175	275	200	350	255	320	235	400	300
M18	135	100	170	125	265	195	330	245	375	275	475	350	440	325	560	410
M20	190	140	245	180	375	275	475	350	530	390	675	500	625	460	790	580
M22	265	195	330	245	510	375	650	480	725	535	920	680	850	625	1080	800
M24	330	245	425	315	650	480	820	600	920	680	1150	850	1080	800	1350	1000
M27	490	360	625	460	950	700	1200	885	1350	1000	1700	1250	1580	1160	2000	1475
M30	660	490	850	625	1290	950	1630	1200	1850	1350	2300	1700	2140	1580	2700	2000
M33	900	665	1150	850	1750	1300	2200	1625	2500	1850	3150	2325	2900	2150	3700	2730
M36	1150	850	1450	1075	2250	1650	2850	2100	3200	2350	4050	3000	3750	2770	4750	3500

Torque values listed are for general use only, based on the strength of the bolt or screw. DO NOT use these values if a different torque value or tightening procedure is given for a specific application. For stainless steel fasteners or for nuts on U-bolts, see the tightening instructions for the specific application. Tighten plastic insert or crimped steel type lock nuts by turning the nut to the dry torque shown in the chart, unless different instructions are given for the specific application.

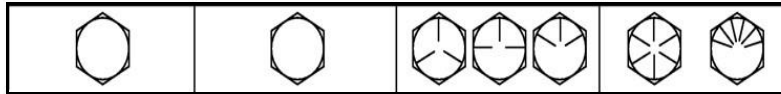
Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical property class. Replace fasteners with the same or higher property class. If higher property class fasteners are used, tighten these to the strength of the original. Make sure fastener threads are clean and that you properly start thread engagement. When possible, lubricate plain or zinc plated fasteners other than lock nuts, wheel bolts or wheel nuts, unless different instructions are given for the specific application.

<sup>1</sup> "Lubricated" means coated with a lubricant such as engine oil, fasteners with phosphate and oil coatings, or M20 and larger fasteners with JDM F13C, F13F or F13J zinc flake coating.

<sup>2</sup> "Dry" means plain or zinc plated without any lubrication, or M6 to M18 fasteners with JDM F13B, F13E or F13H zinc flake coating.

<sup>3</sup> "Dry" means plain or zinc plated without any lubrication, or M6 to M18 fasteners with JDM F13B, F13E or F13H zinc flake coating.

## Unified Inch Bolt and Screw Torque Values



Bolt or Screw Size	SAE Grade 1				SAE Grade 2 <sup>1</sup>				SAE Grade 5, 5.1 or 5.2				SAE Grade 8 or 8.2			
	Lubricated <sup>2</sup>		Dry <sup>3</sup>		Lubricated <sup>2</sup>		Dry <sup>3</sup>		Lubricated <sup>4</sup>		Dry <sup>3</sup>		Lubricated <sup>2</sup>		Dry <sup>3</sup>	
	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.
1/4	3.7	33	4.7	42	6	53	7.5	66	9.5	84	12	106	13.5	120	17	150
													N·m	lb.-ft.	N·m	lb.-ft.
5/16	7.7	68	9.8	86	12	106	15.5	137	19.5	172	25	221	28	20.5	35	26
									N·m	lb.-ft.	N·m	lb.-ft.				
3/8	13.5	120	17.5	155	22	194	27	240	35	26	44	32.5	49	36	63	46
			N·m	lb.-ft.	N·m	lb.-ft.	N·m	lb.-ft.								
7/16	22	194	28	20.5	35	26	44	32.5	56	41	70	52	80	59	100	74
	N·m	lb.-ft.														
1/2	34	25	42	31	53	39	67	49	85	63	110	80	120	88	155	115
9/16	48	35.5	60	45	76	56	95	70	125	92	155	115	175	130	220	165
5/8	67	49	85	63	105	77	135	100	170	125	215	160	240	175	305	225
3/4	120	88	150	110	190	140	240	175	300	220	380	280	425	315	540	400
7/8	190	140	240	175	190	140	240	175	490	360	615	455	690	510	870	640
1	285	210	360	265	285	210	360	265	730	540	920	680	1030	760	1300	960
1-1/8	400	300	510	375	400	300	510	375	910	670	1150	850	1450	1075	1850	1350
1-1/4	570	420	725	535	570	420	725	535	1280	945	1630	1200	2050	1500	2600	1920
1-3/8	750	550	950	700	750	550	950	700	1700	1250	2140	1580	2700	2000	3400	2500
1-1/2	990	730	1250	930	990	730	1250	930	2250	1650	2850	2100	3600	2650	4550	3350
Torque values listed are for general use only, based on the strength of the bolt or screw. DO NOT use these values if a different torque value or tightening procedure is given for a specific application. For plastic insert or crimped steel type lock nuts, for stainless steel fasteners, or for nuts on U-bolts, see the tightening instructions for the specific application. Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical grade.									Replace fasteners with the same or higher grade. If higher grade fasteners are used, tighten these to the strength of the original. Make sure fastener threads are clean and that you properly start thread engagement. When possible, lubricate plain or zinc plated fasteners other than lock nuts, wheel bolts or wheel nuts, unless different instructions are given for the specific application.							

<sup>1</sup> Grade 2 applies for hex cap screws (not hex bolts) up to 6 in. (152 mm) long. Grade 1 applies for hex cap screws over 6 in. (152 mm) long, and for all other types of bolts and screws of any length.

<sup>2</sup> "Lubricated" means coated with a lubricant such as engine oil, fasteners with phosphate and oil coatings, or 7/8 in. and larger fasteners with JDM F13C, F13F or F13J zinc flake coating.

<sup>3</sup> "Dry" means plain or zinc plated without any lubrication, or 1/4 to 3/4 in. fasteners with JDM F13B, F13E or F13H zinc flake coating.

<sup>4</sup> "Lubricated" means coated with a lubricant such as engine oil, fasteners with phosphate and oil coatings, or 7/8 in. and larger fasteners with JDM F13C, F13F or F13J zinc flake coating.

## Face Seal Fittings Assembly and Installation—All Pressure Applications

### Face Seal O-Ring to Stud End Installation

1. Inspect the fitting surfaces. They must be free of dirt and/or defects.
2. Inspect the O-ring. It must be free of damage and/or defects.
3. Lubricate O-rings and install into groove using petroleum jelly to hold in place.
4. Push O-ring into groove with petroleum jelly so O-ring is not displaced during assembly.
5. Index angle fittings and tighten by hand pressing joint together to insure O-ring remains in place.
6. Tighten fitting or nut to torque value shown on the chart per dash size stamped on the fitting. **DO NOT** allow hoses to twist when tightening fittings.

### Face Seal Adjustable Stud End O-Ring Installation

1. Back off lock nut (jam nut) and washer to full exposed turned down section of the fitting.
2. Install a thimble over the fitting threads to protect the O-ring from nicks.
3. Slide the O-ring over the thimble into the turned down section of the fitting.
4. Remove thimble.

### Face Seal Straight Stud End O-Ring Installation

1. Install a thimble over the fitting threads to protect the O-ring from nicks.
2. Slide the O-ring over the thimble into the turned down section of the fitting.
3. Remove thimble.

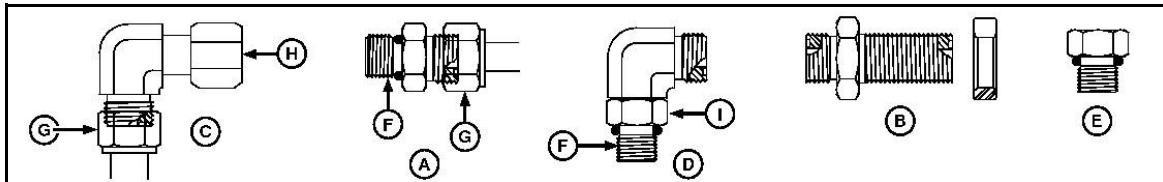
### Fitting Installation

1. Install fitting by hand until snug.
2. Position adjustable fittings by unscrewing the fitting no more than one turn.

### Assembly Torque

1. Use one wrench to hold the connector body and one wrench to tighten nut.
2. For a hydraulic hose, it may be necessary to use three wrenches to prevent twist; one on the connector body, one on the nut, and one on the body of the hose fitting.

## SAE Face Seal and O-Ring Stud End Fitting Torque Chart—Standard Pressures



- A - Stud Straight and Tube Nut      F - Stud End  
 B - Bulkhead Union and Bulkhead Lock Nut      G - Tube Nut  
 C - 90° Swivel Elbow and Tube Nut      H - Swivel Nut  
 D - 90° Adjustable Stud Elbow      I - Lock Nut  
 E - Port Plug



# TIGHTENING HARDWARE

## SAE Face Seal and O-Ring Stud End Fitting Torque Chart

SAE Face Seal and O-Ring Stud End Fitting Torque Chart—Standard Pressure-Below 27.6 MPA (4,000 PSI)																	
Nominal Tube OD Hose ID				O-Ring Face Seal/ Tube Swivel Nut				Bulkhead Jam Nut Torque <sup>A</sup>			O-Ring Straight, Adjustable, and External Port Plug Stud Ends <sup>A</sup>						
Metric Tube OD	Inch Tube OD			Thread Size	Swivel Nut Hex Size	Tube Nut Swivel Nut Torque		Jam Nut Hex Size	Jam Nut Torque		Thread Size	Straight Hex Size <sup>B</sup>	Adj Lock Nut Hex Size	Steel or Gray Iron Torque		Aluminum or Brass Torque <sup>C</sup>	
						N·m	lb-ft		N·m	lbft				N·m	lbft	N·m	lbft
5	-3	0.188	4.78	—	—	—	—	—	—	—	3/8-24	5/8	9/16	12	9	8	6
6	-4	0.250	6.35	9/1618	11/16	16	12	13/16	32	24	7/1620	5/8	5/8	16	12	11	8
8	-5	0.312	7.92	—	—	—	—	—	—	—	1/2-20	3/4	11/16	24	18	16	12
10	-6	0.375	9.53	11/1616	13/16	24	18	1	42	31	9/1618	3/4	3/4	37	27	25	18
12	-8	0.500	12.70	13/1616	15/16	50	37	1-1/8	93	69	3/4-16	7/8	15/16	50	37	33	25
16	-10	0.625	15.88	1-14	1-1/8	69	51	1-5/16	118	87	7/8-14	1-1/16	1-1/16	69	51	46	34
20	-12	0.750	19.05	13/16-12	1-3/8	102	75	1-1/2	175	129	11/16-12	1-1/4	1-3/8	102	75	68	50
22	-14	0.875	22.23	13/16-12	—	102	75	—	175	129	13/16-12	1-3/8	1-1/2	122	90	81	60
25	-16	1.000	25.40	17/16-12	1-5/8	142	105	1-3/4	247	182	15/16-12	1-1/2	1-5/8	142	105	95	70
32	-20	1.25	31.75	1-11/16-12	1-7/8	190	140	2	328	242	1-5/812	1-3/4	1-7/8	190	140	127	93
38	-24	1.50	38.10	2-12	2-1/4	217	160	2-3/8	374	276	1-7/812	2-1/8	2-1/8	217	160	145	107
50.8	-32	2.000	50.80	—	—	—	—	—	—	—	2-1/212	2-3/4	2-3/4	311	229	207	153

<sup>A</sup> Tolerance is +15%, minus 20% of mean tightening torque unless otherwise specified.

<sup>B</sup> The straight hex wrench sizes listed apply to connectors only and may not be the same as the corresponding plug of the same thread size.

<sup>C</sup> These torques were established using steel plated connectors in aluminum and brass.



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## NOTES



## NOTES





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