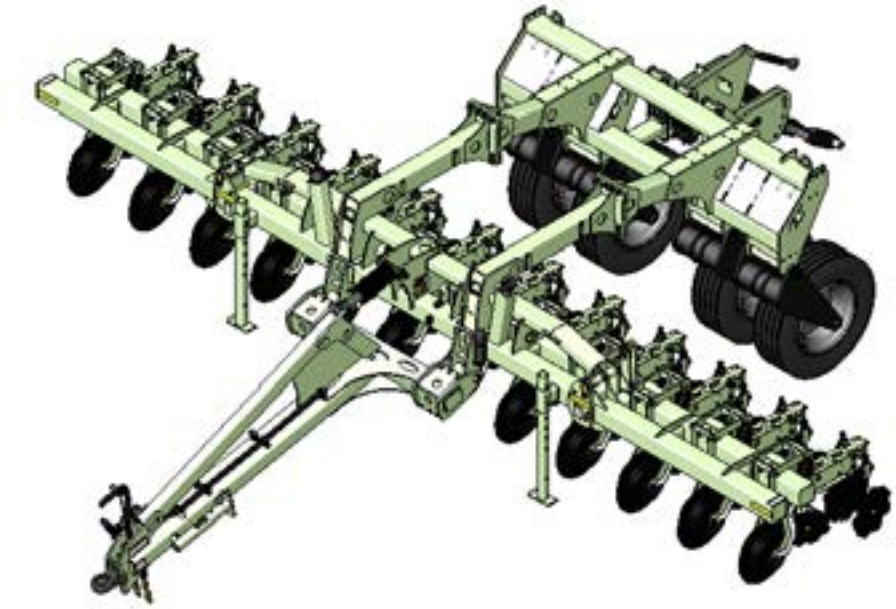
ORTHMAN

1tRIPr XD Combo
Operator's Manual

Part #125-030-01

Built for today's larger farms, the drawn *Orthman 1tRIPr® XD Combo* offers the additional efficiency of fertilizer carrying capacity integrated in large-frame drawn designs, combined with a planter attachment feature to enable a true single-pass operation. The *Orthman 1tRIPr® XD Combo* is a great addition to the modern high horsepower farms.



12 row 1tRIPr® XD Combo

The *Orthman 1tRIPr® XD Combo* comes standard with Orthman *1tRIPr®* row units and can be equipped with dual 500 gallon fertilizer tanks to fully utilize the *1tRIPr® XD Combo* as a true single-pass machine. The Orthman *1tRIPr®* XD Combo is available in four and six wheel configurations to carry a wide variety of implement sizes. A wide stance creates stability in the field as well as during transport. High lift clearance allows for adequate clearance in rough terrain. To increase lifting capacity, optional lift wheels (2) are available for addition to four-lift wheel machines.

For information regarding the *1tRIPr®* row units, refer to the *1tRIPr®* operator's manual provided with the machine.

This manual is considered to be an integral component of the *1tRIPr® XD Combo* and is designed to educate the owner and/or operator(s) regarding safety, operation, maintenance, troubleshooting, and component identification. All personnel involved in the operation of this implement are responsible for reading and understanding entire manual content. This manual is designed to keep the operator safe and knowledgeable as well as prolong the life of the implement and maximize field efficiency. This manual should accompany the implement if it were ever to be sold.

We would like to thank you for placing your confidence in Orthman Mfg., Inc. Your *1tRIPr® XD Combo* is manufactured to meet the highest standards and is built with precision and strength to increase your agricultural operation's dependability and profitability.

Thank you for choosing Orthman.

To The Dealer:
Inspect the implement thoroughly after assembly to be certain it is functioning properly before delivering it to the customer. The following checklist is a reminder of points to cover. Check off each item as it is found satisfactory or after proper adjustment is made.

Pre-Delivery Checklist

- [ ] 1. All Hardware properly tightened.
- [ ] 2. Lubrication of grease fittings.
- [ ] 3. All decals properly located and readable.
- [ ] 4. All implement tools and options are installed and set.
- [ ] 5. Check overall condition of implement.
- [ ] 6. Make sure Operator's manual is included.

Date Set Up. _____ Signature. _____

Delivery

Review the operator's manual with the customer. Explain the following:

1. Introduce the machine to the customer. Give the customer this manual and encourage them to read it.
2. Make the customer aware of all the safety precautions that must be exercised when using and transporting this machine.
3. Make customer aware of the different tooling options available.
4. This machine does not come set to run in the field from the factory. The Field settings section in this manual is meant to help set the machine for optimal performance. Explain all operating adjustments.
5. Explain to the customer that the life expectancy of this machine depends on regular maintenance as directed in this manual.
6. Tell the customer to use the proper tools for service and make them aware of Orthman parts availability.
7. Write machine model number and serial number in the spaces provided below.

Date delivered. _____ Signature. _____

Model Number. _____

Serial Number. _____

WARRANTY

Orthman warrants each new wholegood product to be free from defects in manufactured components and workmanship. This warranty is applicable only for the normal service life expectancy of the product or components, not to exceed twenty-four (24) consecutive months from date of purchase of the new Orthman product to the original purchaser.

Purchased components installed by Orthman (blades, bearings, controls, hoses, wheels, coulters, cylinders, fittings, etc.) shall be warranted by the respective manufacturer for a period of twelve (12) consecutive months from date of delivery of the new Orthman product to the original purchaser.

A completed online Warranty Registration for the original purchaser must be received by Orthman to activate warranty coverage. Non-receipt of warranty registration may void warranty coverage. The Orthman warranty is non-transferable.

Genuine Orthman replacement parts and components will be warranted for ninety (90) days from date of purchase, or the remainder of the original equipment warranty period, whichever is greater.

All warranty work is to be performed by an authorized Orthman dealer at the repairing dealer's location, unless otherwise approved by Orthman.

Under no circumstances, will this warranty cover any merchandise or component thereof, which, in the opinion of Orthman, has been subjected to misuse, unauthorized modifications or alteration, accident, collision with obstruction/ground, or if repairs have been made with parts other than those obtainable through Orthman.

Orthman warranty policies do not cover travel expenses, after-hours field/service time, overnight expenses, or expenses not related to regular shop labor rates or parts replaced during actual warranty repair. Orthman reserves the right to adjust warranty labor credits to believed normal repair times as directed by state law(s).

This warranty shall be limited to repairing or replacing, free of charge to the purchaser, any part, which Orthman's judgment shows evidence of such defect. Additionally, the defective part(s) shall be returned within thirty (30) days from the date of failure to Orthman through the dealer or distributor from whom the product was purchased or repaired; transportation charges prepaid.

This warranty shall not be interpreted to render Orthman liable for injury or damages of any kind or nature to person or property. This warranty does not extend to the loss of crops, loss of delay in harvesting/planting, or any expense or loss incurred for labor, substitute machinery, rental, or any subsequent reasons thereof.

Except as set forth above, Orthman shall have no obligation or liability of any kind on account of its equipment and shall not be liable for special or consequential damages. **Orthman makes no other warranty, expressed or implied, and, specifically disclaims any implied warranty or merchantability or fitness for a particular purpose**. Some states or provinces do not permit limitations or exclusions of implied warranties or incidental or consequential damages, so the limitations or exclusion in this warranty may not apply. This warranty is subject to any existing conditions of supply, which may directly affect ability to obtain materials or manufacture replacement parts.

Orthman reserves the right to make improvements in design or changes in specifications at any time, without incurring any obligation to owners of units previously sold; to include, but not limit to engineering prototype machines. No one is authorized to alter, modify, or enlarge this warranty nor the exclusions, limitations, and reservations.

Orthman provides this manual without warranty of any kind, expressed or implied. This manual reflects the product at the time of publication. All information within is based upon current information on the publication date. Orthman assumes no responsibility for damages incurred due to the use of the illustrations, information, and specifications within this publication.

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PARTS IDENTIFICATION

Farm Safety

Contrary to the popular image of fresh air and peaceful surroundings, a farm is not a hazard-free work setting.
Every year, thousands of farm workers are injured and hundreds more die in farming accidents. According to the National Safety Council, agriculture is the most hazardous industry in the nation.

How You Can Improve Farm Safety

You can start by increasing your awareness of farming hazards and making a conscious effort to prepare for emergency situations including fires, vehicle accidents, electrical shocks from equipment and wires, and chemical exposures. Be especially alert to hazards that may affect children and the elderly. Minimize hazards by carefully selecting the products you buy to ensure that you provide good tools and equipment. Always use seat belts when operating tractors, and establish and maintain good housekeeping practices. Here are some other steps you can take to reduce illnesses and injuries on the farm:

- Read and follow instructions in equipment operator's manuals and on product labels.
- Inspect equipment routinely for problems that may cause accidents.
- Discuss safety hazards and emergency procedures with your workers.
- Install approved rollover protective structures, protective enclosures, or protective frames on tractors.
- Make sure that guards on farm equipment are replaced after maintenance.
- Review and follow instructions in material safety data sheets (MSDSs) and on labels that come with chemical products and communicate information on these hazards to your workers.

Health and Safety Hazards on Farms

Farm workers including farm families and migrant workers are exposed to hazards such as the following:

Danger	Potential Effect or Injury	Prevention
Chemicals/Pesticides	Skin and respiratory injury or death	MSDS and proper Personal Protective Equipment. Review Manufacturers data sheets
Cold	Illness, Frostbite or death	Dress properly for the day.
Dust	Respiratory injury or explosive combinations	Be aware of your surroundings and activity
Electricity	Shock, burns, fire, death	Use a qualified professional for wiring dangerous electrical devices. Never overload a circuit. Replace damaged electrical devices or cords. Electrical tape will not insulate you from injury.
Grain bins, Silos	Entrapment, Suffocation, Explosion from formation of dangerous gases and poisoning.	Make sure the bin is properly ventilated and maintained. Never walk the grain.
Hand tools	Injury including cuts abrasions, electrocution, strains, sprains and death	Make sure you hand tools are in good condition. Never leave a damaged tooling accessible for someone else to use.
Highway traffic	Collisions resulting in injury or death	Follow regulations, stay alert. Avoid alcohol and use of communication devices while driving
Lifting & lifting devices	Back injury, sprains, strains. Falling material resulting in being struck or crushed by heavy material	Use proper lifting technique. Get help when the load is too heavy. Inspect chains, straps or cables routinely to make sure they are in good condition.
Livestock handling	Serious injury or death resulting from being pinned struck or trampled.	Always make sure you have adequate room and an escape route
Machinery/Equipment	Cuts, abrasions, amputations, death.	Thoroughly read and understand your Owners Equipment Manual. Never operate the equipment without guards in place. Make sure the equipment can not be energized or otherwise put into operation while you are working on it.
Manure pits	Explosion from formation of dangerous gases. Suffocation. Poisoning	Proper maintenance.
Mud	Sprains, strains, entrapment and suffocation. Eye injury and skin irritation.	Proper Personal Protective Equipment. In some conditions a "Spotter" may be needed.
Noise	Hearing damage	Personal Protective Equipment.
Ponds	Drowning	Wear a life preserver and make sure help is readily available.
Slips/Trips/Falls	Sprains, strains, back and neck injury, bone breaks or death	Keep work area free from clutter and organized. If working on anything elevated make sure you have appropriate guarding and/or fall protection such as a harness and lanyard.
Sun/Heat	Sun burn, Heat Stroke, shock, death	Use common sense on excessively hot days, use sun screen, wear a hat and stay hydrated.
Toxic gases	Skin and respiratory injury or death. Explosion.	MSDS and proper Personal Protective Equipment. Review Manufacturers data sheets
Tractors	Cuts, abrasions, amputations, death.	Thoroughly read and understand your Owners Equipment Manual. Never operate the equipment without guards in place. Anti-roll over devices.
Wells	Electrocution, amputation, death	Avoid contact with water while working on an electrical device. Always be sure the equipment can/will not be energized during repair or maintenance. Make sure all guarding is in place.
Severe Weather	Electrocution, "struck by" injuries, death	Move to a safe place. Lightening, hail and tornadoes are unpredictable.

Orthman Manufacturing, Inc. does not limit the potential effects or injuries nor prevention measures to those listed above. They are provided solely as a guideline to making your farm life safer. Always consult your Owner/Operators Manual for specific tool and equipment safety requirements.

High Risk Factors on Farms

The following factors may increase risk of injury or illness for farm workers:

•Age – Injury rates are highest among children age 15 and under and adults over 65.

•Equipment and Machinery – Most farm accidents and fatalities involve machinery. Proper machine guarding and doing equipment maintenance according to manufacturers' recommendations can help prevent accidents.

•Protective Equipment – Using protective equipment, such as seat belts on tractors, and personal protective equipment (such as safety gloves, coveralls, boots, hats, aprons, goggles, face shields) could significantly reduce farming injuries.

•Take precautions to prevent entrapment and suffocation caused by unstable surfaces of grain storage bins, silos, or hoppers. Never "walk the grain."

•Be aware that methane gas, carbon dioxide, ammonia, and hydrogen sulfide can form in unventilated grain silos and manure pits and can suffocate or poison workers or explode.

•Take advantage of safety equipment, such as bypass starter covers, power take-off master shields, and slow-moving vehicle emblems.

•Medical Care – Hospitals and emergency medical care are typically not readily accessible in rural areas near farms.

The Benefits of Improved Safety and Health Practices

Orthman Manufacturing Provides this document in the hope that everyone that has a job to do, does it SAFELY. Our goal and yours should be to end each day in the best possible health. Better safety and health practices reduce fatalities, injuries, and illnesses as well as associated costs such as workers' compensation insurance premiums, lost production, and medical expenses. A safer and more healthful workplace improves morale and productivity.

⚠ FOR YOUR PROTECTION

READ AND UNDERSTAND THE ENTIRE CONTENT OF THIS MANUAL BEFORE OPERATING OR SERVICING IMPLEMENT. Read and understand all operator manuals for the machinery used in conjunction with your Orthman equipment.

- Carefully **READ ALL SAFETY DECALS** in this manual as well as on the implement. Keep implement clean so decals are easily visible. Keep all safety decals in good, clean, and legible condition. Immediately replace damaged and/or missing decals. Replacement decals are available from your Orthman dealer.

- Learn to operate the implement and all components properly. Do not let others operate implement without proper instruction. Unauthorized implement modifications may impair function and safety. If you do not understand any content in this manual or need assistance, contact your Orthman dealer.

⚠ EQUIPMENT SAFETY GUIDELINES

Operator safety is the primary concern when designing an Orthman implement. Orthman integrates as many safety features into the implement as possible. You can avoid many hazards and possible accidents by observing precautions in this safety section.

- Insist that yourself and personnel working with and around you follow all safety precautions. Be cautious when working with or around implement to avoid injury.

SAFETY ALERT SYMBOL

The **SAFETY ALERT SYMBOL** warns of potential hazards to personal safety and that extra precautions must be taken. When you see this symbol, carefully read the message(s) that follow. Follow all recommended precautions and safe operating practices in this manual.

NOTE: Hazard control and accident prevention are dependent upon the safety awareness and proper training of personnel involved in the operation of this implement.

⚠ BE AWARE OF SIGNAL WORDS

SIGNAL WORDS designate a degree or level of **HAZARD** seriousness. These signal words include:

DANGER
RED

DANGER indicates a hazardous situation that, if not avoided, will result in death or serious injury. **DANGER** is limited to extreme situations, typically for machine components which for functional purposes, cannot be guarded.

WARNING
ORANGE

WARNING indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury. **WARNING** includes hazards that are exposed when safety guards are removed. Warning may also be used to alert against unsafe practices.

CAUTION
YELLOW

CAUTION indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. **CAUTION** may also be used to alert against unsafe practices.

⚠ SHUTDOWN AND STORAGE

AVOID CRUSHING. Make sure all personnel are clear of the implement. Lower implement to the ground, place tractor in park, turn off engine, and remove key.

USE BAR STANDS AND CYLINDER STOPS TO SUPPORT THE IMPLEMENT.
Store implement on a clean, dry, and level surface. An uneven surface could cause implement to shift or fall, resulting in injury or death, as well as implement damage. Securely support all implement components that must be raised. Store implement away from human activity.

⚠ SAFE TRANSPORT

- Engage transport locking devices prior to transport.
- Plan your route to avoid traffic. Yield to traffic in all situations.
- Maximum transport speed is 20 mph (32 kph). Various conditions will require reduced speed. Travel at speeds that allow for adequate control of stopping and steering.

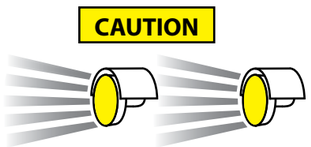
AVOID ELECTROCUTION. Be aware of overhead power lines. Contact or close proximity to power lines can result in injury or death. Use extreme care when operating implement near power lines.

- Know implement transport height and gross weight. Avoid overhead obstructions not allowing your transport height. Do not use bridges rated below combined implement and tractor weight.

- Make sure a slow moving vehicle (SMV) placard is mounted to the implement and is easily visible to other motorists.
- Make allowances for implement size when transporting. Sudden braking can cause a towed load to swerve and/or rollover. Never use independent braking with implement in tow as loss of control and/or rollover can result. Reduce speed if towed implement is not equipped with brakes.

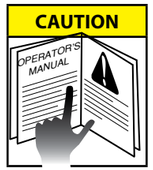
- Do not coast. Always keep tractor or towing device in gear to provide engine braking when traveling downhill.
- Comply with state and local laws governing implement transport.

⚠ WARNING AND SAFETY LIGHTS



- Oversized implements and slow moving vehicles create a hazard when transported on public roads.
- Make sure all warning, safety lights, and turning signals are working and clean. Use safety lighting when using public roads day and night. Replace missing or damaged lights immediately. Comply with state and local laws governing implement safety lighting.
- A safety lighting package, conforming to implement lighting standard ANSI/ASAE S279.12, if not supplied with, is available for addition to your equipment. Contact your Orthman dealer for safety lighting package information. Refer to toolbar operator's manual for safety lighting package installation and adjustment.

⚠ SAFE OPERATION



READ AND UNDERSTAND THE ENTIRE CONTENT OF THIS MANUAL BEFORE OPERATING OR SERVICING IMPLEMENT. Implement is to be operated by qualified personnel only. Never let children operate implement. A complete understanding of safety precautions, operation, and maintenance is mandatory before implement use.

AVOID ELECTROCUTION. Be aware of overhead power lines. Contact or close proximity to power lines can result in injury or death. Use extreme care when operating implement near power lines.

- Know implement transport height and gross weight. Avoid overhead obstructions not allowing your transport height. Do not use bridges rated below combined implement and tractor weight.

AVOID ROLLOVER. Do not fold or unfold implement and avoid sharp turns when on a hillside, as shift of weight could cause rollover. Operate implement at a safe distance from terrain irregularities and other obstructions that could cause rollover.

AVOID CRUSHING. Make sure all personnel are clear of implement at all times implement is in motion. Be aware of obstructions above, below, and around implement when in operation or transport. Injury or death can result from being struck by the implement.

⚠ NO RIDERS

NEVER ALLOW RIDERS ON TRACTOR OR IMPLEMENT. Riders hinder operator visibility and can be thrown from the implement and/or be struck by foreign objects resulting in injury or death.

⚠ PRACTICE SAFE MAINTENANCE

Proper maintenance is your responsibility. Maintenance neglect and/or poor maintenance practices can result in injury or death. Always use the proper tools to maintain implement.

AVOID CRUSHING. Make sure all personnel are clear of the implement. Lower implement to the ground, place tractor in park, turn off engine, and remove key.

USE BAR STANDS AND CYLINDER STOPS TO SUPPORT THE IMPLEMENT.
Store implement on a clean, dry, and level surface. An uneven surface could cause implement to shift or fall, resulting in injury or death, as well as implement damage. Securely support all implement components that must be raised. Store implement away from human activity.

AVOID ENTANGLEMENT. Never lubricate or service implement in motion. Keep away from power driven parts when in motion. Disengage power sources prior to maintaining implement. Injury or death can result from contact with power driven parts when in motion.

AVOID CRUSHING. Do not stand between the tractor and implement when connecting or disconnecting implement. Injury or death can result from being trapped between the tractor and implement.

Escaping pressurized hydraulic fluid can penetrate skin, resulting in injury or death. Relieve hydraulic system pressure before connecting or disconnecting tractor. Use cardboard or wood, **NOT BODY PARTS,** to check for suspected hydraulic leaks. Wear protective gloves and safety glasses or goggles when working with hydraulic systems. If an accident occurs, see a doctor immediately for proper treatment.

⚠ PRACTICE SAFE MAINTENANCE

• Never operate a combustion engine in an enclosed area. Make sure there is adequate ventilation. Exhaust fumes can cause asphyxiation.

• Service tires safely. Tire and rim separation can result in serious injury or death. Do not over inflate tires. Only mount or dismount tires if you possess the proper equipment, otherwise contact a trained professional. Always maintain correct tire pressure. Inspect tires and wheels daily. Do not operate tires with inadequate pressure, cuts, visible damage, or missing hardware.

• Be extremely careful working around unshielded sharp edges. Injury may result from contact with sharp edges.

• Keep all parts in good condition and properly installed. Replace damaged or missing parts immediately.

• Remove tools and unused parts prior to implement operation.

⚠ PREPARE FOR EMERGENCIES

• Be prepared for a fire. Keep a readily accessible fire extinguisher at all times.

• Keep a readily accessible stocked first aid kit and emergency phone numbers for your doctor, hospital, ambulance, and fire department.

• Wear protective clothing and equipment. Wear clothing appropriate for the situation. Protect your eyes, ears, hands, and feet with the use of protective goggles, ear plugs, gloves, boots, etc.

⚠ ANHYDROUS AMMONIA - NH_3 LIQUID FERTILIZER

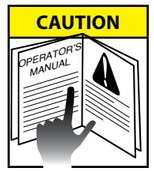
ANHYDROUS AMMONIA (NH_3) AND LIQUID FERTILIZER APPEARS HARMLESS. DIRECT EXPOSURE TO NH_3 OR LIQUID FERTILIZER IS EXTREMELY DANGEROUS AND CAN RESULT IN INJURY AND/OR DEATH.

• Keep a clean supply of water readily accessible in case of exposure to NH_3 or liquid fertlizer.

• Wear protective goggles and gloves when working with NH_3 or liquid fertilizer. Be sure all persons involved in the operation are properly trained concerning the dangers and precautions involved in the application of NH_3 or liquid fertilizer.

• If you choose to apply NH_3 or liquid fertilizer, it is advisable to consult documented information regarding safe handling and application of NH_3 or liquid fertilizer. Information is available from the following recognized sources:

1. American National Standards Institute - www.ansi.org - (212) 642-4900
2. Material Safety Data Sheets - MSDS - www.msdsonline.com
3. National Safety Council - www.nsc.org/necas
4. The Fertilizer Institute - www.tfi.org
5. United States Department of Transportation - D.O.T. - www.dot.gov
6. Compressed Gas Association - www.cganet.com



⚠ SAFETY NEVER HURTS

READ AND UNDERSTAND THE ENTIRE CONTENT OF THIS MANUAL BEFORE OPERATING OR SERVICING IMPLEMENT.

• Understand all implement functions.
• Never stand between tractor and implement when connecting or disconnecting implement.
• Be aware of all surroundings before moving implement.
• Operate implement from operator's seat only.
• Never mount or dismount a moving tractor.
• Never leave engine running when implement is unattended.
• Keep away from power driven parts when in motion.
• Make sure all personnel are clear before lowering implement to the ground.

SAFETY DECALS

DANGER
RED

WARNING
ORANGE

CAUTION
YELLOW

Safety decals promote awareness and knowledge concerning safe operation and maintenance of the implement.

Carefully **READ ALL SAFETY DECALS** in this manual as well as on the implement. Keep implement clean so decals are easily visible. Keep all decals in good and legible condition. Immediately replace damaged and/or missing decals. Replacement decals are available from your Orthman dealer.
To install decals: Thoroughly clean area where decal is to be placed and attach decal void of bubbles. Refer to this safety information section for proper decal placement.

⚠ IMPORTANT

Equipment operators should understand the enclosed manual before operating this equipment. Replacement manual, call 308-324-4654

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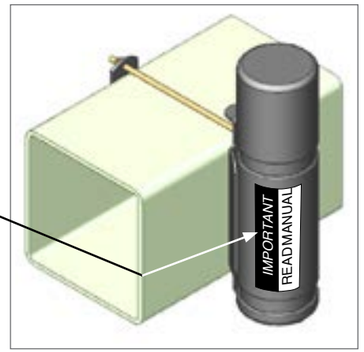
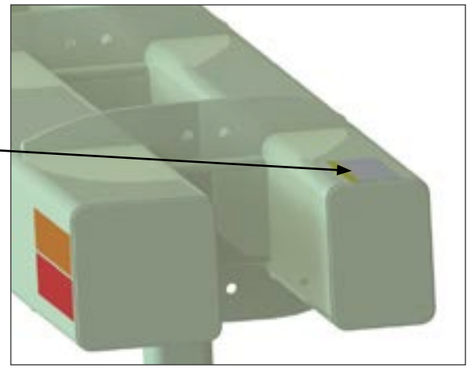


MANUAL ENCLOSURE

⚠ CAUTION

1. Read and understand all operator manuals before implement use.
2. Follow all tractor or towing device operating procedures and safety guidelines.
3. Do not allow riders on implement.
4. Lower implement to the ground, place tractor in park, turn off engine, and remove key. Wait for all moving parts to come to a complete stop before working on implement.
5. Be extremely careful working around unshielded sharp edges.
6. Make sure all safety lighting and decals are clean. Use hazard lights when in transport.
7. Engage all safety devices before transporting or working beneath implement.
8. Contact or close proximity to power lines can result in electrocution.
9. Review all safety instructions with all operators on a frequent basis. 153-044

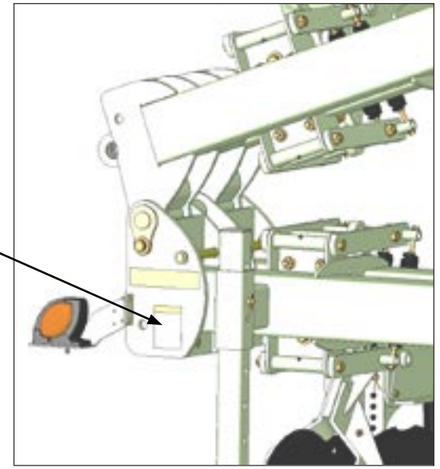

END OF WING

SAFETY DECALS

⚠ WARNING

1. **Stay clear of wing sections when raising and lowering.**
2. **Engage all transport locking devices prior to transport. (see operator's manual)**
3. **Use extreme caution when in transport. Be aware of over-head power lines and any other obstructions.**
4. **Reduce speed as raised implement reduces tractor maneuverability.**

153-013


FRONT OF HINGE

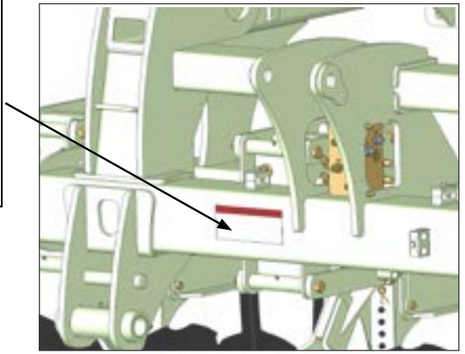
⚠ DANGER

HIGH-PRESSURE FLUID HAZARD

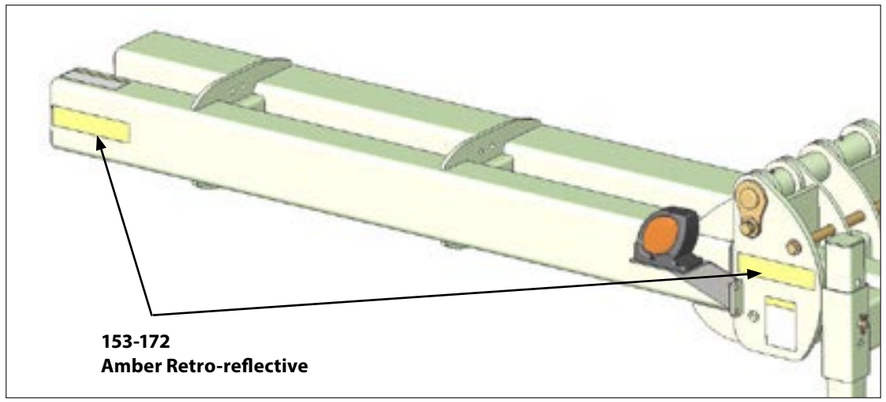
To prevent serious injury or death:

- Relieve pressure on hydraulic system before servicing or disconnecting hoses.
- Wear proper hand and eye protection when searching for leaks. Use wood or cardboard instead of hands.
- Keep all components in good repair.

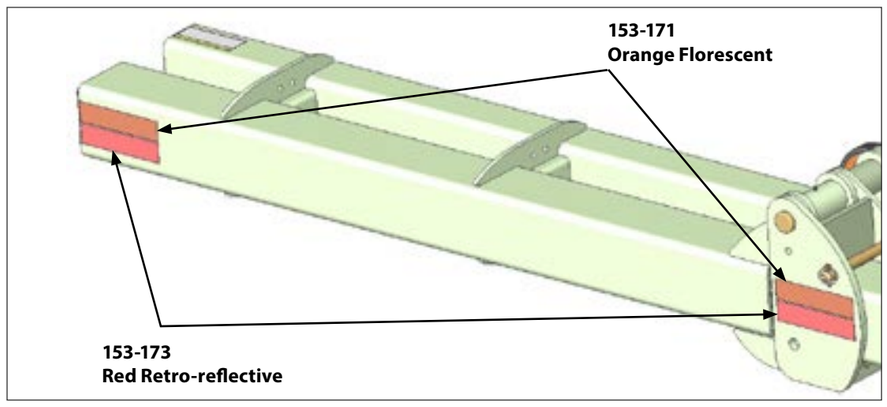
153-528


FRONT CENTER OF BAR

SAFETY DECALS

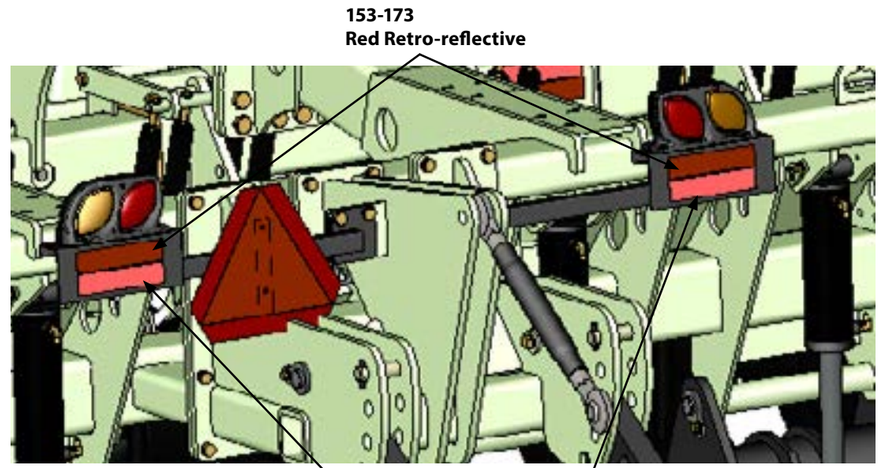


FRONT OF TOOLBAR, END OF WING, END OF CENTER SECTION

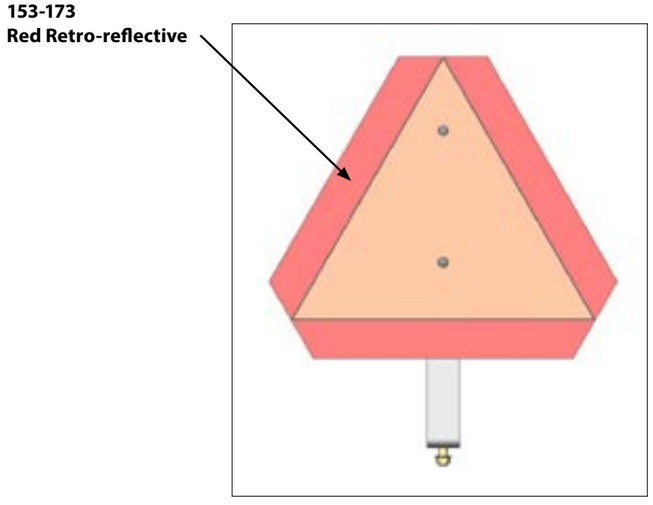


REAR OF TOOLBAR, END OF WING, END OF CENTER SECTION

SAFETY DECALS



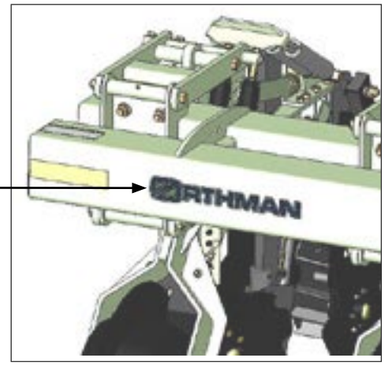
REAR OF MACHINE



SMV SIGN

ORTHMAN DECALS

ORTHMAN
153-430



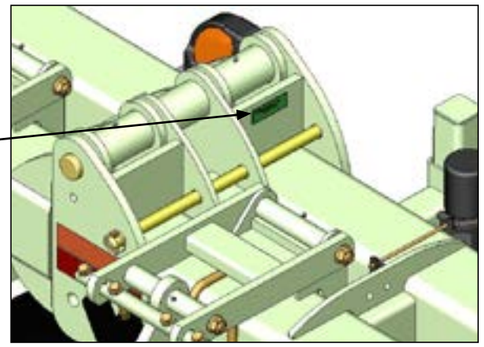
RIGHT FRONT AND LEFT REAR OF TOOLBAR

ORTHMAN SERIAL TAG

The Orthman serial tag contains valuable information. The model and serial numbers provide Orthman dealers and the Orthman Service Department with the exact specifications of your implement if any warranty or service issues need to be addressed.

ORTHMAN MFG., INC.
LEXINGTON, NEBRASKA
308-324-4654
MODEL# SERIAL#

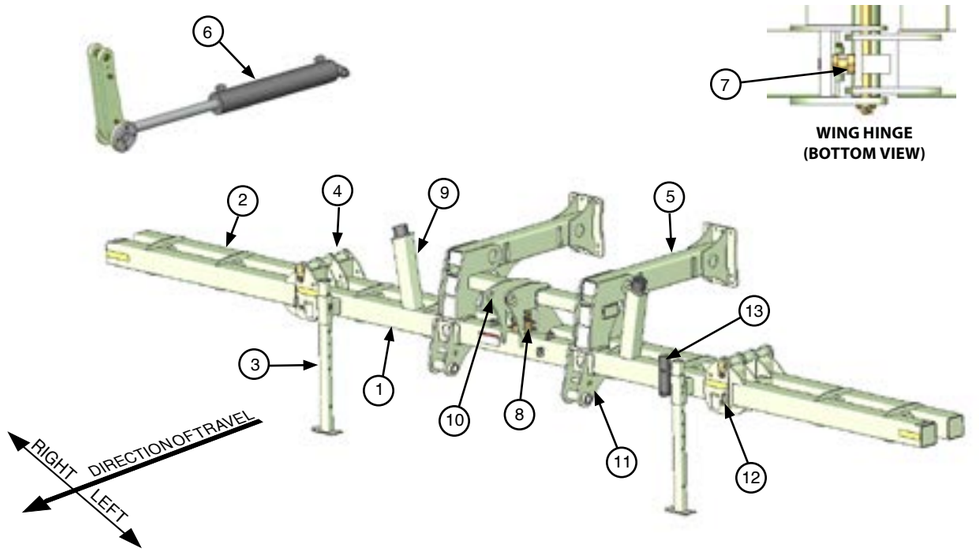
153-011



LEFT TOOLBAR HINGE

PREPARATION AND SETUP

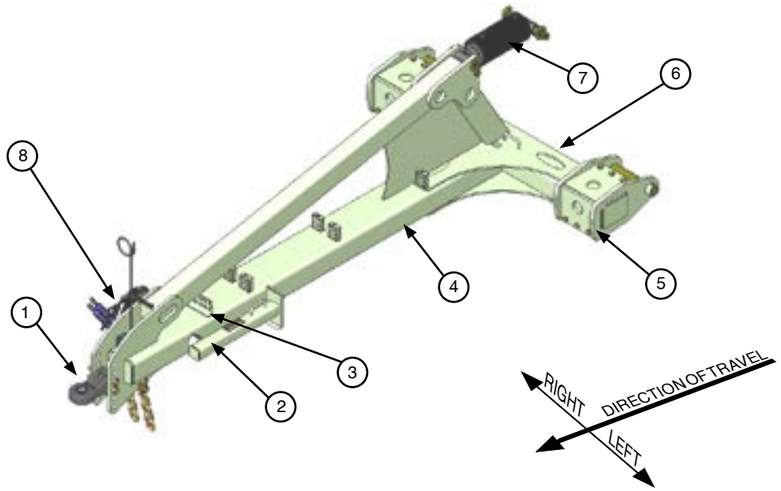
TOOLBAR COMPONENT IDENTIFICATION



NOTE: Right and left as illustrated above and referenced from this point on, is determined by facing the same direction the toolbar will travel while in use.

1. CENTER SECTION. A solid, heavy-duty center section provides a robust toolbar foundation.
2. WINGS. Dual tube wings provide strength to the very end of the toolbar.
3. BAR STANDS. Support machine frontal weight during storage and maintenance.
4. TOOLBAR WING HINGE. Orthman's own wing hinge design is built to allow the center section to couple with the wings while not giving up strength and versatility.
5. CARRIER STRINGER. Connects the toolbar to the carrier and is designed to allow for easy access to row units beneath.
6. INTERNAL CYLINDER ASSEMBLY. Orthman developed the internal fold cylinder many years ago and it continues to be a trademark feature of our toolbars. Some larger toolbars will utilize two cylinder assemblies to fold each wing, tied together with a hydraulic manifold.
7. WING LEVEL BOLTS. These bolts serve as the down-stop for the wing and can be fine-tuned to accuratley level the bar when unfolded.
8. HYDRAULIC MANIFOLD. Directs hydraulic fluid to the proper cylinders per specific function.
9. WING RESTS. 170 degree, welded on wing rests for most toolbars.
10. TOP LINK CENTER MAST PLATES. Connection point between tongue top link and toolbar.
11. LOWER HITCH MOUNT. Connection point between lower hitch clamps on tongue and toolbar.
12. RIGID WING LOCK PIN. Use this pin to lock down the toolbar to a rigid machine. When not in use, storage for these pins are at the end of the center section near the hinge pin.
13. MANUAL STORAGE TUBE. A place to safely store this manual, and will also house the manual for any row unit that is on the toolbar if you purchased a full machine.

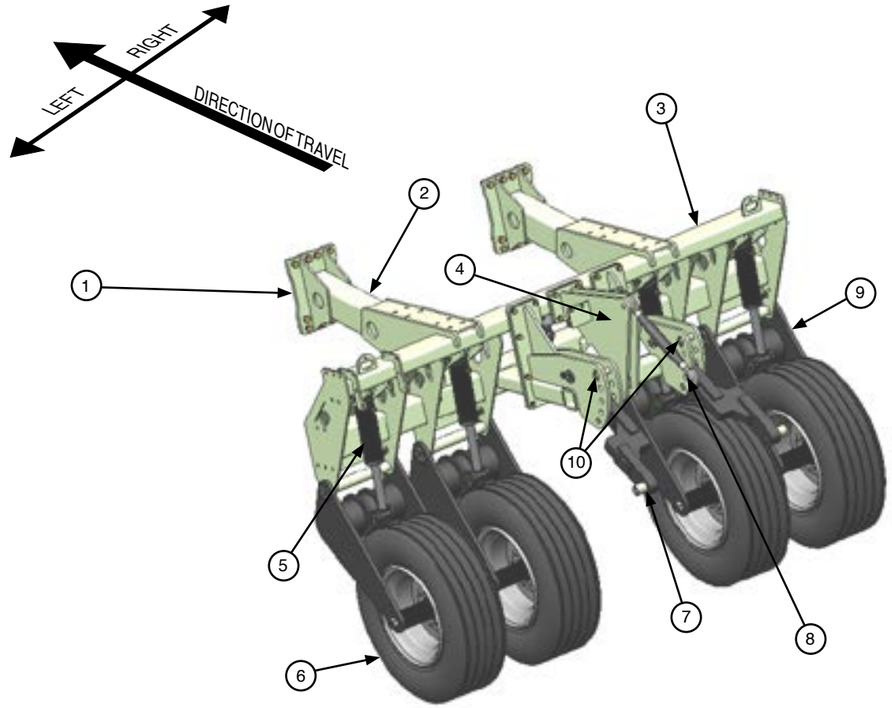
TONGUE
COMPONENT IDENTIFICATION



NOTE: Right and left as illustrated above and referenced from this point on, is determined by facing the same direction the toolbar will travel while in use.

1. **TRACTOR HITCH TAB.** Socket swivel tab eliminates hitch pin fore and aft movement.
2. **TONGUE BAR STAND.** Keeps the tongue from resting on the ground, but does not support machine weight. Always use bar stands to support machine.
3. **HYDRAULIC LINE BULK-HEAD.** For assembly ease, and in case of damaged hoses, the hydraulic lines for the 1tRIPr® XD are all routed to an organized front bulkhead where they terminate and seperate hydraulic hoses make their way to the tractor.
4. **TONGUE FRAME.** T-shape design offers excellent strength and good turning radius.
5. **HITCH MODULES.** Line-bored connections for increased strength and durability.
6. **HITCH CROSS BAR.** 5″ x 7″ bar to support hitch modules.
7. **LIFT CYLINDER.** 6″ bore cylinder powers the front lift of the implement.
8. **COURTESY PALETTE.** Designed to offer the convenience of hydraulic hose storage while the machine is not in use. Also serves as the mounting location for the safety lights logic module.

MACHINE LIFT
COMPONENT IDENTIFICATION



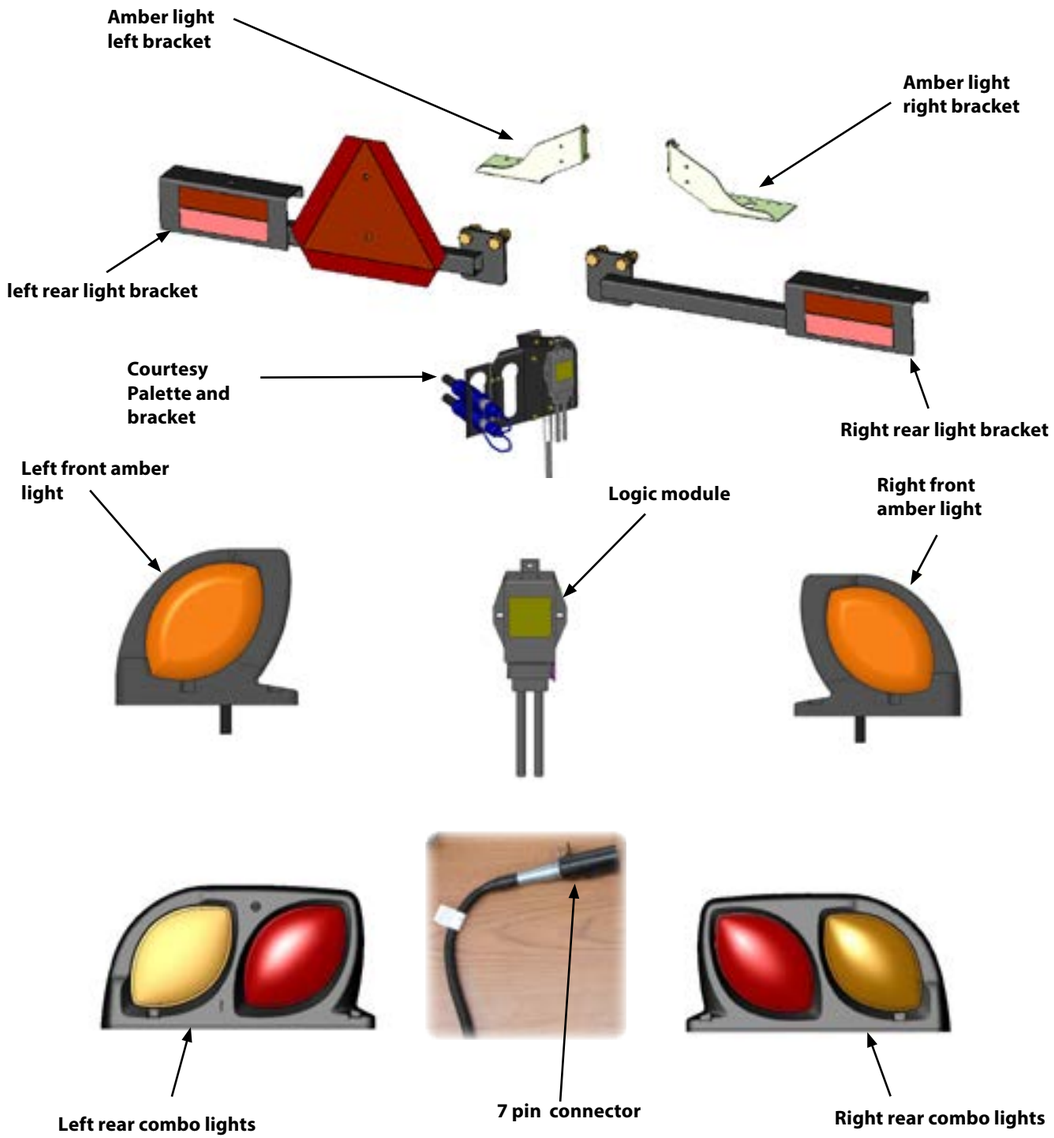
NOTE: Right and left as illustrated above and referenced from this point on, is determined by facing the same direction the toolbar will travel while in use.

1. **FRAME CONNECTION PLATE.** Area of connection between toolbar stringers and combo lift arms.
2. **FRAME ARM.** Combines strength and the versatility to raise and lower both machines.
3. **COMBO LIFT MAINFRAME.** Support frame for the combo lift wheels.
4. **SECONDARY IMPLEMENT HITCH.** Category III, 3-point hitch.
5. **HYDRAULIC LIFT CYLINDER.** Lifts and lowers the machine vertically.
6. **FLOTATIONAL LIFT WHEEL.** Large 385/65R22.5 tire.
7. **LOWER HITCH TUG ARM.** Directly connects to the lower hitch bracket of the secondary implement.
8. **TOP LINK.** Adjustable turnbuckle top link to stabalize the secondary implement.
9. **LIFT WHEEL YOKE FRAME.** Stabalizes each lift wheel.
10. **LOWER HITCH TUG ARM SUPPORT PINS.** These pins provide upper support of the tug arms to keep the lower hitch tub arm in place.

HYDRAULIC MANIFOLD NOT SHOWN

LIGHT KIT COMPONENT IDENTIFICATION

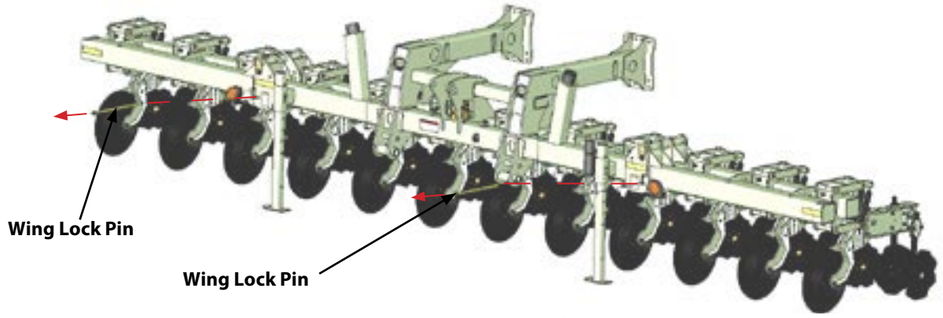
An un-assembled light kit will come with 1tRIPr® XD. The light kit will come in a box that has Orthman manufactured components in it, as well as an ag light kit from COBO light company. Below is an example of what will typically be found in a light kit. **For installation instructions, refer to the 1tRIPr® XD pre-delivery manual.**



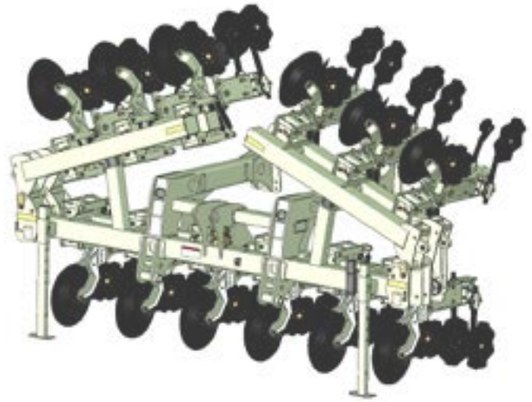
SHIPPING CONFIGURATION

The majority of the *1tRIPr® XD Combo* is assembled at Orthman Mfg., Inc. The *1tRIPr XD Combo* is assembled in an appropriate shipping configuration to ensure transport safety and efficiency from the manufacturer.

Unfolded Shipping Configuration



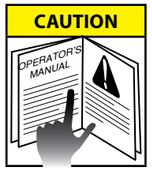
Folded Shipping Configuration



The *1tRIPr® XD Combo* may ship folded or unfolded, depending on configurations. If the toolbar ships unfolded (shown picture above) it will most likely have the rigid wing lock pins installed. These pins will need to be removed prior to folding the toolbar. (see pg. 5 - 1)

The *1tRIPr® XD Combo* will also come from the factory without the safety lights or the SMV installed, due to the potential for damage to those items during shipment. These items will also need to be installed prior to use or transport of the *1tRIPr® XD Combo.*

CAUTION! BE EXTREMELY CAREFUL WORKING AROUND UNSHIELDED SHARP EDGES. INJURY MAY RESULT FROM CONTACT WITH SHARP EDGES.



PREPARING THE TOOLBAR

Tooling options available for added *1tRIPr® XD Combo* versatility are illustrated and explained in the tooling options section of this manual. Field adjustments are illustrated and explained in the field settings section of this manual.

Tooling options available for the *1tRIPr®* row units are illustrated and explained in the tooling options section of the *1tRIPr®* row unit operator's manual.

Be sure to consult the *1tRIPr®* row unit operator's manual before attempting to operate the implement. Read and understand operator manuals for machinery used in conjunction with the *1tRIPr® XD Combo*.

Before each use, check hardware for wear and proper torque. Replace damaged or missing hardware with hardware of an identical grade to restore implement to original specifications.

MACHINE TO TRACTOR CONNECTION

AVOID CRUSHING. Do not stand between tractor and implement when connecting or disconnecting implement. Injury or death can result from being trapped between the tractor and implement.

AVOID CRUSHING. Make sure all personnel are clear of the implement. Lower implement to the ground, place tractor in park, turn off engine, and remove key.

USE BAR STANDS TO SUPPORT THE IMPLEMENT. Park implement on a clean, dry, and level surface. An uneven surface could cause implement to shift or fall, resulting in injury or death, as well as implement damage. Securely support all implement components that must be raised.

CONNECT TRACTOR DRAWBAR TO XDR TONGUE TAB:

1. Position the rear of the tractor in front of the tongue tab on the XD Combo tongue.
2. Connect machine lift hydraulic hoses to a tractor hydraulic SCV remote to enable the tongue to raise up or lower down to align the XD Combo tongue tab with the tractor drawbar.
3. Move tractor into the position that will enable the hitch pin to be inserted through both the tractor drawbar and XD Combo tongue tab.
4. Place tractor in park.
5. Insert hitch pin

CAUTION! Escaping pressurized hydraulic fluid can penetrate skin, resulting in injury or death. Relieve hydraulic system pressure before connecting or disconnecting tractor. Use cardboard or wood, **NOT BODY PARTS,** to check for suspected hydraulic leaks. Wear protective gloves and safety glasses or goggles when working with hydraulic systems. If an accident occurs, see a doctor immediately for proper treatment.

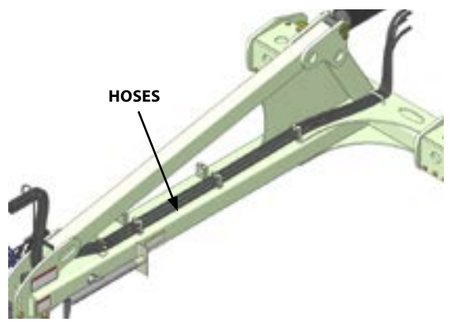
MACHINE TO TRACTOR CONNECTION (CONTINUED)

DANGER! Escaping pressurized hydraulic fluid can penetrate skin, resulting in injury or death. Relieve hydraulic system pressure before connecting or disconnecting tractor. Use cardboard or wood, **NOT BODY PARTS,** to check for suspected hydraulic leaks. Wear protective gloves and safety glasses or goggles when working with hydraulic systems. If an accident occurs, see a doctor immediately for proper treatment.

CONNECT HYDRAULIC HOSES TO TRACTOR:

1. Four (4) hydraulic hoses are located on the machine tongue. Two (2) hoses possess blue colored handles. Two (2) hoses possess green colored handles. The hoses with blue handles are the wing fold hoses. The hoses with green handles are the machine lift and lower hoses.

2. Each hose also possesses an "extend" symbol or a "retract" symbol. (See illustration) Connect the "extend" labeled hoses to the pressure port of a tractor SCV remote. Connect the "retract" labeled hoses to the retract port of a corresponding tractor SCV remote.



MACHINE TONGUE

HOSE SYMBOL IDENTIFICATION

MACHINE TO SECONDARY IMPLEMENT CONNECTION

AVOID CRUSHING. Do not stand between tractor and implement when connecting or disconnecting implement. Injury or death can result from being trapped between the tractor and implement.

AVOID CRUSHING. Make sure all personnel are clear of the implement. Lower implement to the ground, place tractor in park, turn off engine, and remove key.

USE BAR STANDS TO SUPPORT THE IMPLEMENT. Park implement on a clean, dry, and level surface. An uneven surface could cause implement to shift or fall, resulting in injury or death, as well as implement damage. Securely support all implement components that must be raised.

TO CONNECT MACHINE TO SECONDARY IMPLEMENT:

1. The secondary implement should be staged on a level ground surface, free of obstacles.

2. The XD Combo machine should be completely attached to the tractor (i.e. all hydraulic lines hooked up and bar stands in the upright position).

3. All three hitch pins in the secondary implement hitch should be removed.

4. The lower hitch tug arm support pins should be in the desired position above the lower hitch tug arms.

5. Position the XD Combo in front of the secondary implement, and within a distance that allows the XD Combo secondary implement connection arms to be connected to the secondary implement.

6. Lower the XD Combo to the ground surface

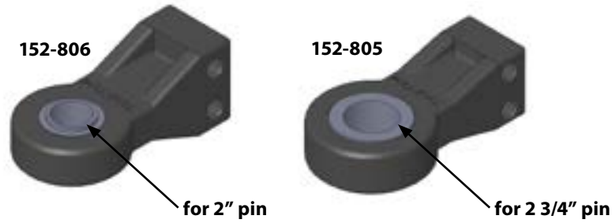
7. Place each of the lower secondary implement connecting arms into the secondary implement's lower hitch brackets. Insert each hitch pin.

8. Connect the top link to the secondary implement's top link hitch bracket and insert pin.

9. Connect secondary implement hydraulic hoses to the XD Combo secondary implement quick connect couplers at the rear of the machine lift frame.

TONGUE TAB

The 1tRIPr® XD Combo comes standard with a Category 3/Category 4 tongue tab (152-806) with an insert for a 1 1/2" tractor hitch pin size (Cat. 3) and an additional tab insert for a 2" (5.08 cm) tractor hitch pin size (Cat 4), which can replace the Category 3 tab insert by removal of the snap ring above the tab insert and then removing the tab insert from the internal socket. Also available is a Category 5 tongue tab (152-805) with a tab insert for a 2 3/4" (6.99 cm) tractor hitch pin size. These tongue tabs have an internal socket that fits the pin closely. This eliminates implement backlash and improves control.



MOUNTING OF TONGUE TAB

AVOID CRUSHING. Make sure all personnel are clear of the implement. Lower implement to the ground, place tractor in park, turn off engine, and remove key.

USE BAR STANDS TO SUPPORT THE IMPLEMENT. Park implement on a clean, dry, and level surface. An uneven surface could cause implement to shift or fall, resulting in personal injury or death, as well as implement damage. Securely support all implement components that must be raised. Remove buildup of grease, oil, or debris prior to installing row unit mounts.

1. Determine level mounting location. see page 5 - 3. Tractor drawbar heights vary.
2. Insert Tonge Tab in-between Tongue Tab mountin plates on Tongue.
3. Align bolts in correct holes, and fasten using nuts and lockwashers.
4. After tightening, tongue tab mount plates should clamp tight on Tongue tab. If gap exists it may be necessary to shim inside with a flat or machined washer.

NOTE: IT IS IMPORTANT THAT THE TONGUE TAB MOUNT PLATES CLAMP TIGHT ON THE TONGUE TAB. RECOMMENDED TOOLS: IMPACT WRENCH, 1 1/2" IMPACT SOCKET, 1 1/2" END WRENCH.

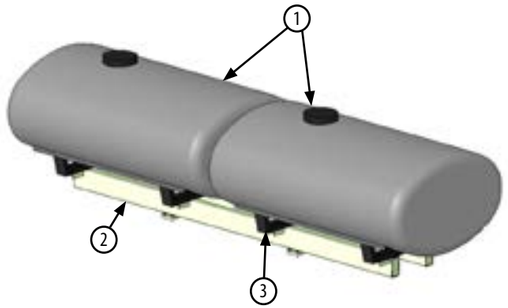
LIQUID FERTILIZER TANK PACKAGE

The *1tRIPr® XD Combo* can be equipped with dual 500 gallon nutrient application tanks. These tanks rest in a saddle frame which is mounted to the combo lift frame as shown.

NOTE: THE XD COMBO FERTILIZER PACKAGE DOES NOT INCLUDE PUMPS, HOSES, AND OTHER WETWARE.

FERTILIZER TANK PACKAGE IDENTIFICATION:

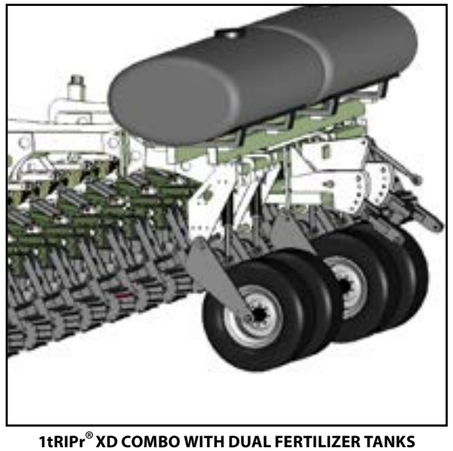
1. **DUAL 500 GALLON TANKS**
2. **TANK PACKAGE FRAME**
3. **TANK SADDLE**



INSTALLATION:

AVOID CRUSHING. Make sure all personnel are clear of the implement. Lower implement to the ground, place tractor in park, turn off engine, and remove key.

USE BAR STANDS TO SUPPORT THE IMPLEMENT. Park implement on a clean, dry, and level surface. An uneven surface could cause implement to shift or fall, resulting in personal injury or death, as well as implement damage. Securely support all implement components that must be raised. Remove buildup of grease, oil, or debris prior to installing row unit mounts.



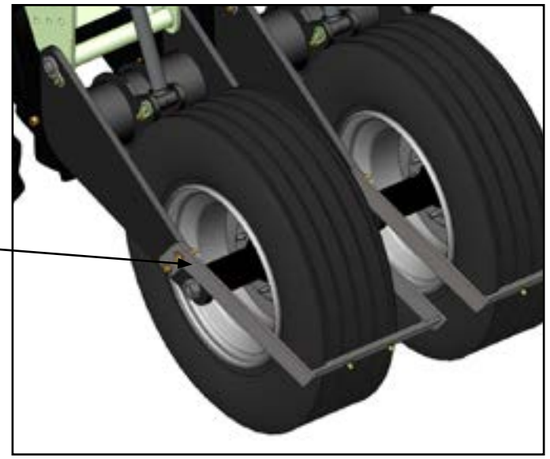
1tRIPr® XD COMBO WITH DUAL FERTILIZER TANKS

1. The fertilizer tank package frame rests atop the combo lift frame. There are 16 sloted bolt holes for securing the tank frame.

2. Rest the tank frame squarely onto the combo lift frame and secure with provided hardware.

LIFT TIRE SCRAPER PACKAGE

The lift tire scraper package is an additional component used to control residue build up on the lift tires. Excessive buildup of field residue can adversely affect the operating height of the machine. Each scraper mounts to the lift wheel yolk frame with provided hardware.

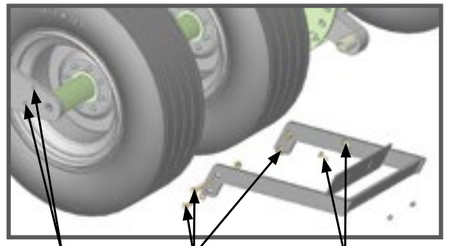


COMBO LIFT WHEELS

INSTALLATION:

AVOID CRUSHING. Make sure all personnel are clear of the implement. Lower implement to the ground, place tractor in park, turn off engine, and remove key.

USE BAR STANDS TO SUPPORT THE IMPLEMENT. Park implement on a clean, dry, and level surface. An uneven surface could cause implement to shift or fall, resulting in personal injury or death, as well as implement damage. Securely support all implement components that must be raised. Remove buildup of grease, oil, or debris prior to installing row unit mounts.



1. Mount tire scraper bracket to lift wheel with mounting bolts, lock washers, and flange nuts (4).

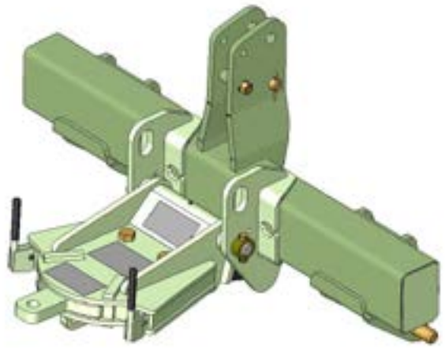
2. Mount tire scraper to scraper bracket with carriage mounting bolts and flange nuts (2).

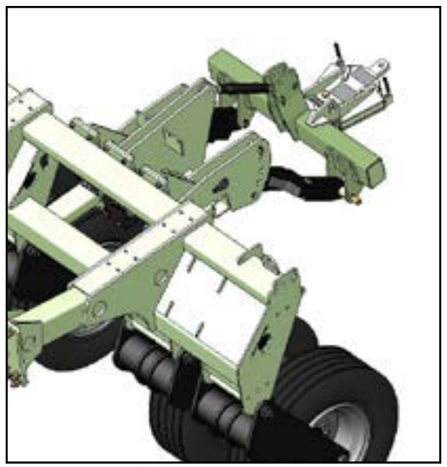
3. Tighten all hardware to proper torque specifications.

NOTE: WHEN INSTALLING THE TIRE SCRAPER, DO NOT ALLOW TIRE SCRAPER TO COME INTO CONTACT WITH THE TIRE. TIRE TO SCRAPER CONTACT WILL CAUSE PREMATURE TIRE WEAR.

NURSE TANK HITCH

For situations in which the secondary implement is separated from the 1tRIPr® *XD Combo*, and only nutrient application and seedbed preparation is needed, an optional nurse tank hitch is available. The 1tRIPr® XD Combo nurse tank hitch attaches to the secondary implement draft links at the rear of the machine.





NURSE TANK HITCH MOUNTED

INSTALLATION:

AVOID CRUSHING. Make sure all personnel are clear of elevated objects during installation.

1. Remove draft pins in the upper third link and lower draft tugs of the nurse tank hitch.

2. Raise the hitch up to the secondary implement hitch, align the pin slots, and re-insert the pins.

FIELD OPERATION

PLACE MACHINE TOOLBAR COMPONENTS IN "FIELD READY" POSITION:

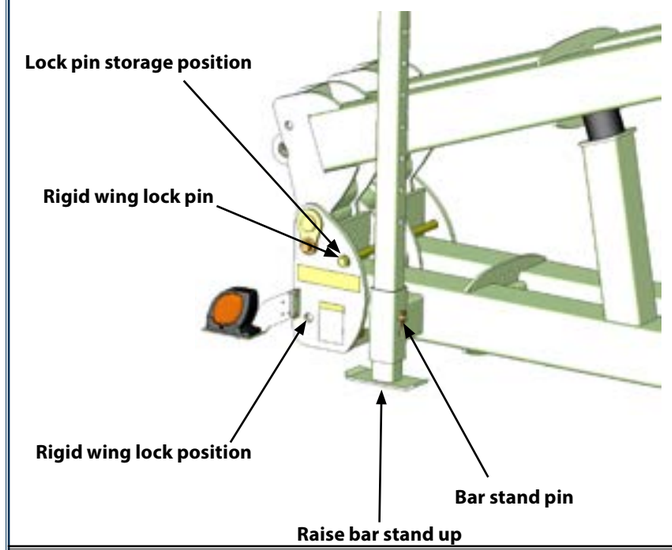
AVOID CRUSHING. Do not stand between tractor and implement when connecting or disconnecting implement. Injury or death can result from being trapped between the tractor and implement.

AVOID CRUSHING. Make sure all personnel are clear of the implement. Lower implement to the ground, place tractor in park, turn off engine, and remove key.

USE BAR STANDS TO SUPPORT THE IMPLEMENT. Park implement on a clean, dry, and level surface. An uneven surface could cause implement to shift or fall, resulting in injury or death, as well as implement damage. Securely support all implement components that must be raised.

PLACE TRACTOR IN PARK AND REMOVE KEY BEFORE DISMOUNTING TRACTOR TO ADJUST IMPLEMENT.

NEVER ALLOW RIDERS ON TRACTOR OR IMPLEMENT. Riders hinder operator visibility and can be thrown from the implement and/or be struck by foreign objects resulting in injury or death.



1. Make sure machine is attached securely to tractor drawbar.

2. Make sure cab hydraulic control configuration is easily accessible and to the preference of the primary operator.

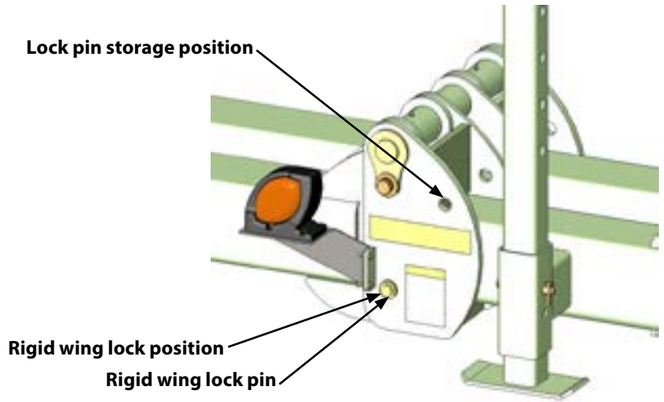
3. Make sure tractor is adequately ballasted for safe operation. Refer to owner's manual for proper ballasting instructions.

4. After tractor hook-up raise the machine and remove Bar stand pin and raise bar stand to raised position, and replace bar stand pin.

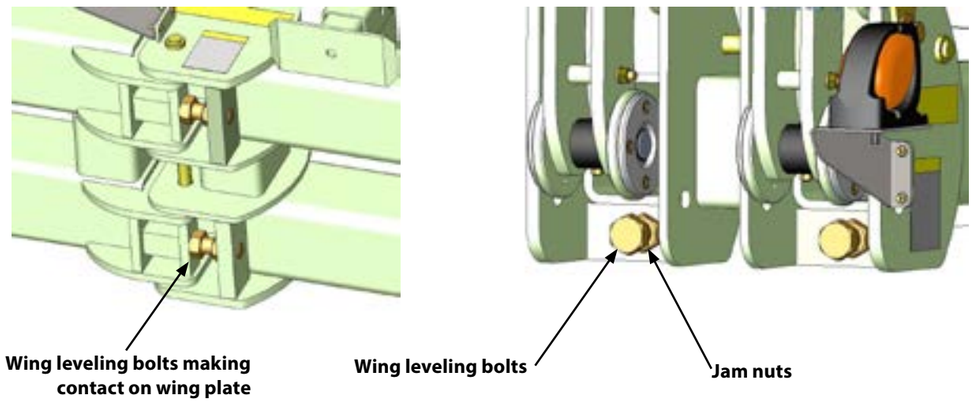
5. Move Rigid wing lock pin from Rigid wing lock position to Lock pin storage position. The toolbar will not fold with the Rigid wing lock pins installed in the Rigid lock position.

FIELD OPERATION

RIGID OPERATION. For Rigid operation in the field: With wings completely unfolded, move Rigid wing lock pin from Lock pin storage position and install into Rigid wing lock position. This will keep wing from floating up. **NOTE:** TOOLBAR WILL NOT BE ABLE TO FOLD WITH WINGS LOCKED DOWN.



WING LEVELING. Factory setting for wing level bolts allows no downward wing position from level. If wings become out of adjustment, these bolts can be moved. Wing leveling bolts can also be adjusted so that wings will float down below factory setting. Smaller *1tRIPr® XD Combo* machines will have 1 wing level bolt on each wing. Larger *1tRIPr® XD Combo* machines will have 2 wing level bolts for each wing (shown below). If there are two wing level bolts per wing it is important that these bolts are adjusted so that both of them make contact with the wing so the load is distributed evenly.



To adjust Wing leveling bolts: 1. Loosen Jam nut. 2. Adjust bolt or bolts. 3. Tighten Jam nut. Recommended Tools: 1 13/16 end wrench.

NOTE: JAM NUTS ARE IMPORTANT FOR PROTECTING THE THREADS IN THE TAPPED PLATE AND SHOULD NOT EVER BE REMOVED FROM THE ASSEMBLY.

TOOLBAR HEIGHT AND ORIENTATION

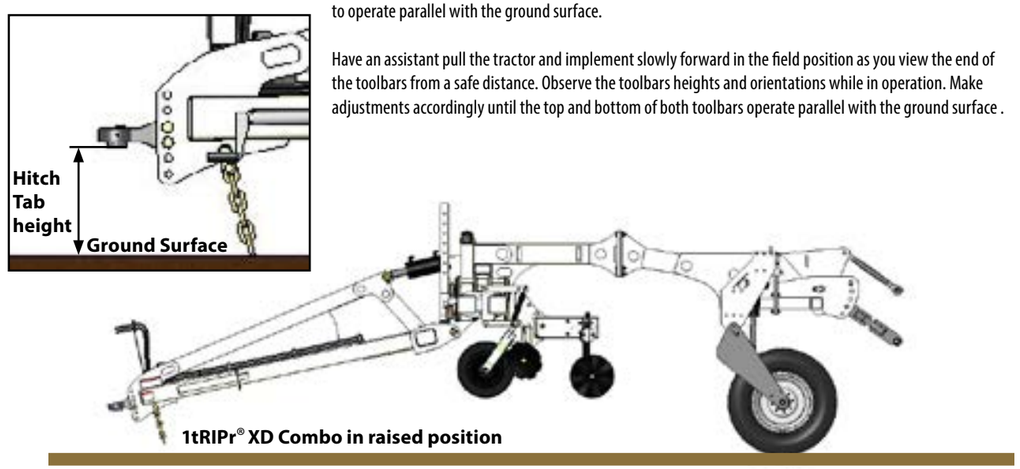
⚠ PLACE TRACTOR IN PARK AND REMOVE KEY BEFORE DISMOUNTING TRACTOR TO ADJUST IMPLEMENT.

NEVER ALLOW RIDERS ON TRACTOR OR IMPLEMENT. Riders hinder operator visibility and can be thrown from the implement and/or be struck by foreign objects resulting in injury or death.

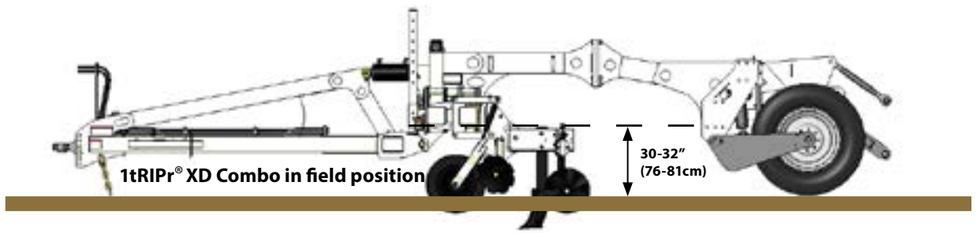
NOTE: WHEN SETTING TOOLBAR HEIGHT AND ORIENTATION, DISREGARD ROW UNIT PERFORMANCE. TOOLBAR HEIGHT AND ORIENTATION MUST BE ESTABLISHED PRIOR TO TOOLING ADJUSTMENT. FOR 1TRIPR® TOOLING ADJUSTMENT, REFER TO THE 1TRIPR® ROW UNIT OPERATOR'S MANUAL.

The top and bottom of the toolbar must operate parallel with the ground surface. Adjustment of tractor hitch tab height, tongue lift cylinder stops, and/or lifting gauge wheel cylinder stops, will allow the toolbar to operate parallel with the ground surface.

Have an assistant pull the tractor and implement slowly forward in the field position as you view the end of the toolbars from a safe distance. Observe the toolbars heights and orientations while in operation. Make adjustments accordingly until the top and bottom of both toolbars operate parallel with the ground surface .



In the rasied position, there should be adequate clearance between the ground surface and the 1tRIPr® shank.



1. **In the field position, the 1tRIPr® XD Combo toolbar should run 30"-32" above the ground surface.**
2. **Row unit parallel linkage should run parallel with the ground surface and not be resting on the toolbar.**

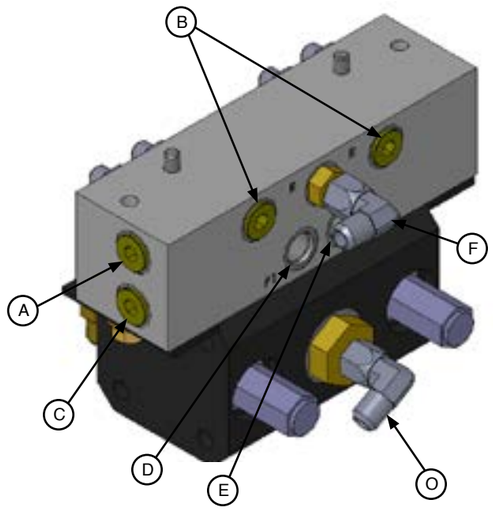
MAIN HYDRAULIC MANIFOLD BLOCK PORT IDENTIFICATION

The *1tRIPr® XD Combo* is equipped with a hydraulic manifold block located near the top link center mast plates, which directs oil to multiple cylinders that must perform together to accomplish a specific function. The hydraulic manifold block may be unique to the configuration of your machine. Refer to the parts section of this manual to determine which hydraulic manifold block is equipped on your machine. Below is a port identification chart of the hydraulic manifold block.

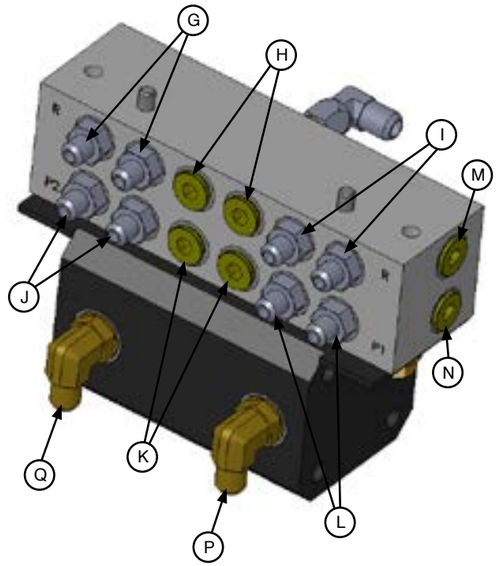
HYDRAULIC MANIFOLD BLOCK #180-332		
PORT	**HOSE ASSIGNMENT**	**FUNCTION**
FOLD	TRACTOR TO MANIFOLD PRESSURE I	SUPPLIES OIL TO MANIFOLD TO EXTEND WING FOLD CYLINDERS
UNFOLD	TRACTOR TO MANIFOLD RETRACT I	SUPPLIES OIL TO MANIFOLD TO RETRACT WING FOLD CYLINDERS
LAWP	TRACTOR TO MANIFOLD PRESSURE II	SUPPLIES OIL TO MANIFOLD TO LIFT MACHINE
LAWR	TRACTOR TO MANIFOLD RETRACT II	SUPPLIES OIL TO MANIFOLD TO LOWER MACHINE
LP1	MANIFOLD TO LEFT WING FOLD CYLINDER1 (BASE END)	SUPPLIES OIL TO LEFT WING FOLD CYLINDER 1 DURING FOLDING
LP2*	MANIFOLD TO LEFT WING FOLD CYLINDER 2 (BASE END)	SUPPLIES OIL TO LEFT WING FOLD CYLINDER 2 DURING FOLDING
LR1	MANIFOLD TO LEFT WING FOLD CYLINDER 1 (ROD END)	SUPPLIES OIL TO LEFT WING FOLD CYLINDER 1 DURING UNFOLDING
LR2*	MANIFOLD TO LEFT WING FOLD CYLINDER 2 (ROD END)	SUPPLIES OIL TO LEFT WING FOLD CYLINDER 2 DURING UNFOLDING
RP1	MANIFOLD TO RIGHT WING FOLD CYLINDER 1 (BASE END)	SUPPLIES OIL TO RIGHT WING FOLD CYLINDER 1 DURING FOLDING
RP2*	MANIFOLD TO RIGHT WING FOLD CYLINDER 2 (BASE END)	SUPPLIES OIL TO RIGHT WING FOLD CYLINDER 2 DURING FOLDING
RR1	MANIFOLD TO RIGHT WING FOLD CYLINDER 1 (ROD END)	SUPPLIES OIL TO RIGHT WING FOLD CYLINDER 1 DURING UNFOLDING
RR2*	MANIFOLD TO RIGHT WING FOLD CYLINDER 2 (ROD END)	SUPPLIES OIL TO RIGHT WING FOLD CYLINDER 2 DURING UNFOLDING
TP	TONGUE CYLINDER TO MANIFOLD (BASE END)	SUPPLIES OIL TO TONGUE CYLINDER DURING MACHINE LIFTING
TR	TONGUE CYLINDER TO MANIFOLD (ROD END)	SUPPLIES OIL TO TONGUE CYLINDER DURING MACHINE LOWERING
P3	MANIFOLD TO COMBO LIFT FLOW DIVIDER	SUPPLIES OIL TO COMBO LIFT WHEELS DURING MACHINE LIFTING
R3	MANIFOLD TO COMBO LIFT MANIFOLD	SUPPLIES OIL TO COMBO LIFT WHEELS DURING MACHINE LOWERING
P4	NOT USED	PORT SHOULD BE PLUGGED
R4	NOT USED	PORT SHOULD BE PLUGGED

***NOTE: PORT IS NOT USED ON TOOLBARS WITH ONLY 2 WING FOLD CYLINDERS (12R30 and smaller configurations)**

COMBO LIFT HYDRAULIC MANIFOLD BLOCK AND FLOW DIVIDER PORT IDENTIFICATION



HYDRAULIC MANIFOLD BLOCK AND FLOW DIVIDER (REAR VIEW)



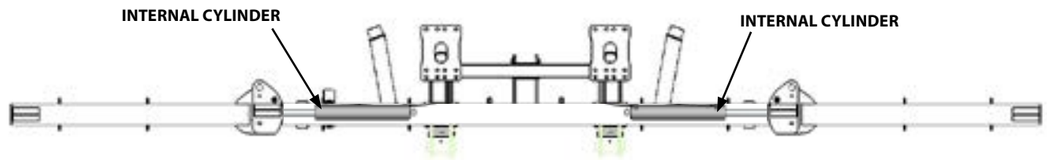
HYDRAULIC MANIFOLD BLOCK AND FLOW DIVIDER (FRONT VIEW)

PORT	IDENTIFICATION	NOTES
A*	Aux. Lift Wheel Retract	Rod end of lift wheel cylinder
B	Auxiliary Retract Ports	Ports are normally plugged
C*	Aux. Lift Wheel Pressure	Base end of lift wheel cylinder
D	Lift Wheel Pressure inlet 1	Routes to flow divider port P
E	Lift Wheel Pressure inlet 2	Routes to flow divider port Q
F	Main Retract Port	Routes to main manifold block port R3
G	Lift Wheel Retract	Rod end of LH lift wheel cylinders
H	Auxiliary Ports	Ports normally plugged
I	Lift Wheel Retract	Rod end of RH lift wheel cylinders

PORT	IDENTIFICATION	NOTES
J	Lift Wheel Pressure	Base end of LH lift wheel cylinders
K	Auxiliary Ports	Ports normally plugged
L	Lift Wheel Pressure	Base end of RH lift wheel cylinders
M*	Aux. Lift Wheel Retract	Rod end of lift wheel cylinder
N*	Aux. Lift Wheel Pressure	Base end of lift wheel cylinder
O	Main Pressure Port	Routes to main manifold block port P3
P	Flow Divider Pressure 1	Routes to manifold port E
Q	Flow Divider Pressure 2	Routes to manifold port D
-	---	----

Ports only used on 6 wheel configurations. Ports plugged on 4 wheel configurations.

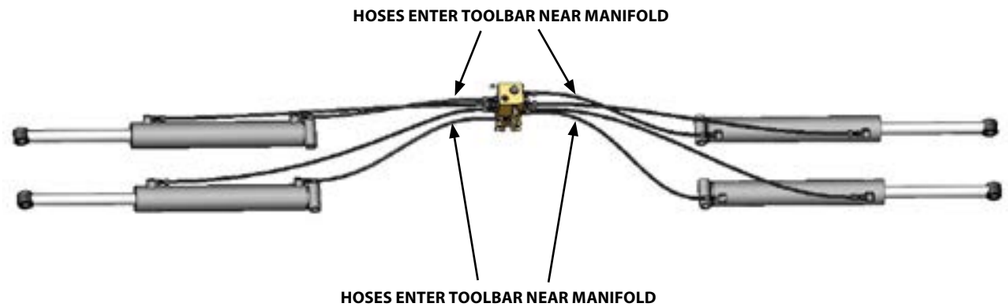
MACHINE FOLD HYDRAULIC HOSE ROUTING



2 CYLINDER FOLDING TOOLBARS
(*12R30 AND SMALLER CONFIGURATIONS*)

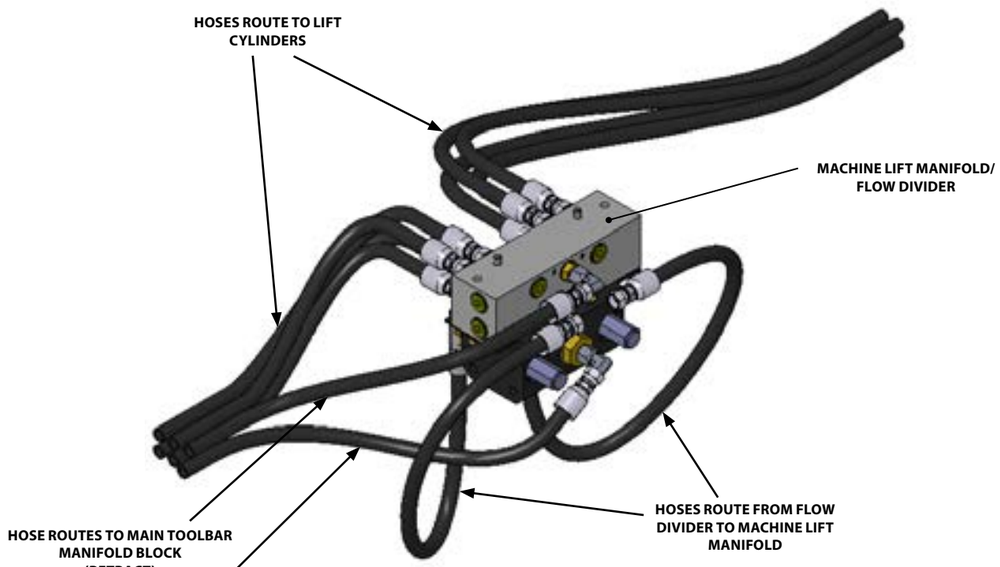
For individual hose identification, refer to the Hydraulic Manifold Block Port Identifcation and Toolbar Hydraulic Hose parts identification .

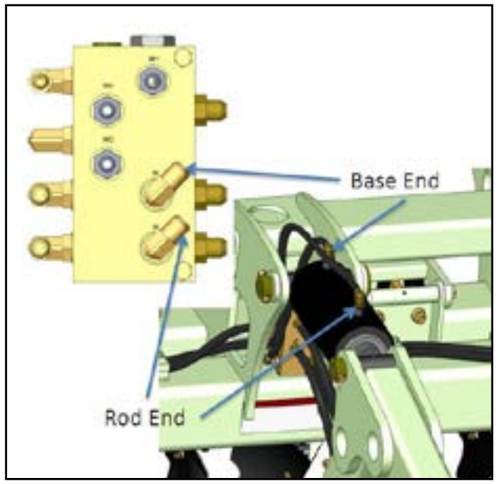
4 CYLINDER FOLDING TOOLBARS
(*12R36 AND LARGER CONFIGURATIONS*)



For individual hose identification, refer to the Hydraulic Manifold Block Port Identifcation and Toolbar Hydraulic Hose parts identification .

MACHINE LIFT HYDRAULIC HOSE ROUING





HOSE ROUTING FROM MAIN MANIFOLD BLOCK TO TONGUE CYLINDER

AVOID CRUSHING. Make sure all personnel are clear of the implement. Lower implement to the ground, place tractor in park, turn off engine, and remove key.

USE BAR STANDS TO SUPPORT THE IMPLEMENT. Park implement on a clean, dry, and level surface. An uneven surface could cause implement to shift or fall, resulting in injury or death, as well as implement damage. Securely support all implement components that must be raised. Remove buildup of grease, oil, or debris prior to adjusting implement.

PROBLEM:

Wings do not fold or unfold.

SOLUTION OPTIONS:

1. Rigid wing lock pins installed.

   • Remove wing lock pins.

2. Hydraulic tips installed incorrectly in tractor SCV.

   • Refer to to tractor operator's manual or dealer for tractor hydraulic specifications.

3. Tractor hydraulic pressure is insuffficient.

   • Refer to tractor operator's manual or dealer for tractor hydraulic specifications.

NOTE: TO AVOID FOREIGN OBJECTS IN HYDRAULIC OIL, ALWAYS CLEAN HYDRAULIC TIPS AND OUTLETS. FOREIGN MATERIAL CAN RUIN CYLINDERS AND PLUG RESTRICTORS.

AVOID CRUSHING. Make sure all personnel are clear of the implement. Lower implement to the ground, place tractor in park, turn off engine, and remove key.

USE BAR STANDS TO SUPPORT THE IMPLEMENT. Park implement on a clean, dry, and level surface. An uneven surface could cause implement to shift or fall, resulting in injury or death, as well as implement damage. Securely support all implement components that must be raised. Remove buildup of grease, oil, or debris prior to adjusting implement.

PROBLEM:

Wings do not fold or unfold. (cont.)

SOLUTION OPTIONS:

4. Hydraulic flow divider is faulty or plugged.

- Refer to (pg. 9 - 9) for hydraulic manifold breakdown.
- Flow divider may need to be removed and cleaned or possibly replaced.

5. Hydraulic cylinder restrictors could be plugged.

- Refer to (pg. 7 - 3 & 7 - 4) for removall process of cylinder assembly.
    1. Remove hose from cylinder.
    2. Remove adaptor that goes in-between hose and cylinder port.
    3. Restrictor is located inside the adaptor and can be removed with allen wrench.
    4. Restrictor is made from a set screw with a .055 hole drilled in it.
    5. Check to see if hole is plugged.
    6. Clean and re-install.
- Refer to (pg. 9 - 10) for cylinder component identification and replacement parts.

6. Cylinder seal kit is bad.

- Refer to (pg. 7 - 3 & 7 - 4) for removal process of cylinder assembly.

- Refer to (pg. 9 - 21) for cylinder internal component identification and seal kit part number.

NOTE: TO AVOID FOREIGN OBJECTS IN HYDRAULIC OIL, ALWAYS CLEAN HYDRAULIC TIPS AND OUTLETS. FOREIGN MATERIAL CAN RUIN CYLINDERS AND PLUG RESTRICTORS.

ORTHMAN
TROUBLESHOOTING TROUBLESHOOTING

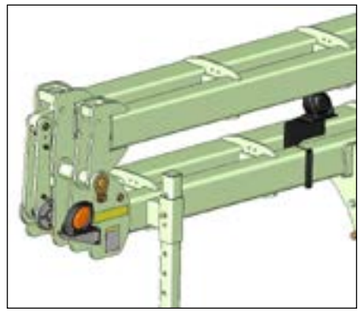
AVOID CRUSHING. Make sure all personnel are clear of the implement. Lower implement to the ground, place tractor in park, turn off engine, and remove key.

USE BAR STANDS TO SUPPORT THE IMPLEMENT. Park implement on a clean, dry, and level surface. An uneven surface could cause implement to shift or fall, resulting in injury or death, as well as implement damage. Securely support all implement components that must be raised. Remove buildup of grease, oil, or debris prior to adjusting implement.

REMOVAL OF INTERNAL CYLINDER

FOLD TOOLBAR:

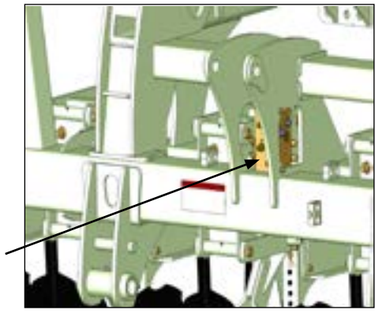
1. Be sure rigid locking pin is in storage position.
2. Fold wings over until they hit wing stops so weight of wings are on stops.



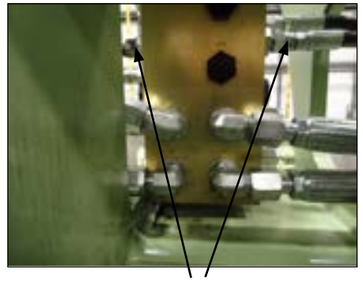
DISCONNECT HYDRAULIC HOSES:

1. Relive hydraulic system pressure in tractor.

2. Unhook hydraulic hoses and store in courtsey palette.



3. Locate cylinder hoses on the hydraulic manifold and disconnect. The wing hoses will be located on the sides of the hydraulic manifold block.



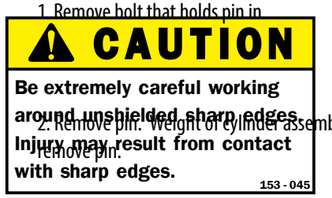
AVOID CRUSHING. Make sure all personnel are clear of the implement. Lower implement to the ground, place tractor in park, turn off engine, and remove key.

USE BAR STANDS TO SUPPORT THE IMPLEMENT. Park implement on a clean, dry, and level surface. An uneven surface could cause implement to shift or fall, resulting in injury or death, as well as implement damage. Securely support all implement components that must be raised. Remove buildup of grease, oil, or debris prior to adjusting implement.

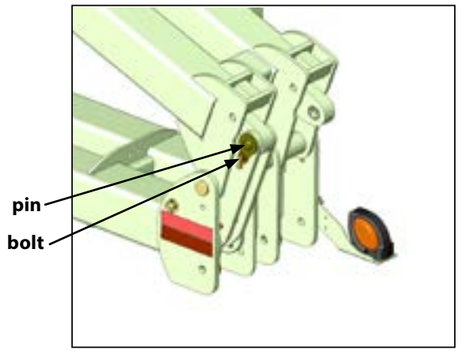
DISCONNECT STRAPS:

REMOVAL OF INTERNAL CYLINDER (CONTINUED)

1. Remove bolt that holds pin in



2. Remove pin. Weight of cylinder assembly may need to be supported to remove pin.

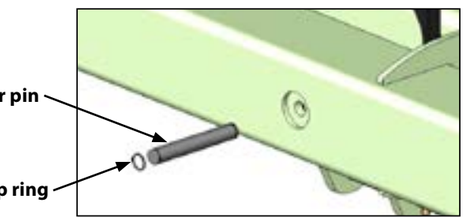


REMOVE CYLINDER PIN:

1. With snap ring pliers, remove snap ring from pin (in-between bars).

2. Remove pin from toolbar. (cylinder should be loose at this point).

(for re-assembly use alignment punch to align cylinder and pin)



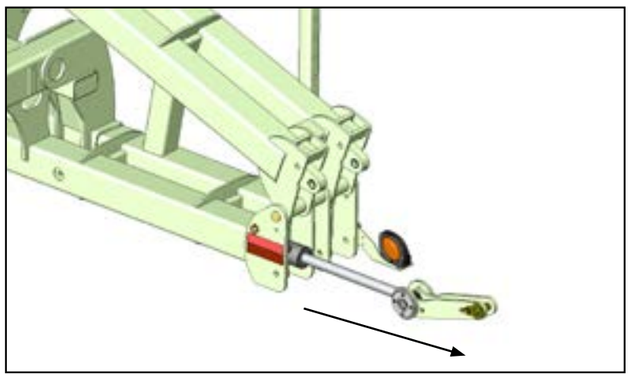
REMOVE CYLINDER:

1. Make sure hose ends are covered.

2. Tie twine or wire to hoses to aid in re-assembly.

3. Pull cylinder out of toolbar tube.

Reverse process for re-assembly.



AVOID CRUSHING. Make sure all personnel are clear of the implement. Lower implement to the ground, place tractor in park, turn off engine, and remove key.

USE BAR STANDS TO SUPPORT THE IMPLEMENT. Park implement on a clean, dry, and level surface. An uneven surface could cause implement to shift or fall, resulting in injury or death, as well as implement damage. Securely support all implement components that must be raised. Remove buildup of grease, oil, or debris prior to adjusting implement.

PROBLEM:

Machine will not raise or lower

SOLUTION OPTIONS:

1. Hydraulic hoses may be connected to the wrong hydraulic remotes on tractor.

   - It is important that hydraulic hoses are connected to the correct hydraulic remotes (pressure or retract) on the tractor.

   - Locate the machine lift hoses on the tongue of the machine. (Refer to pg 6 - 1 for identification information.)

   - Locate the “extend” and “retract” symbols on the green handles of the lift hydraulic hoses.

   - “Extend” labeled hose should be in pressure tractor hydraulic remote and “Retract” labeled hose should be in retract tractor hydraulic remote.

HOSE SYMBOL IDENTIFICATION

2. Machine safety transport lock may be installed.

   - The “red” safety transport lock, which installs on the lift cylinder rod, prevents the machine from lowering during transport.

   - Remove safety transport lock and place in storage position.

NOTES

⚠ PRACTICE SAFE MAINTENANCE

Proper maintenance is your responsibility. Maintenance neglect and/or poor maintenance practices can result in injury or death. Always use the proper tools to maintain implement.

AVOID CRUSHING.
Make sure all personnel are clear of the implement.
Lower implement to the ground, place tractor in park, turn off engine, and remove key.

USE BAR STANDS AND CYLINDER STOPS TO SUPPORT THE IMPLEMENT. Park implement on a clean, dry, and level surface. An uneven surface could cause implement to shift or fall, resulting in injury or death, as well as implement damage. Securely support all implement components that must be raised. Remove buildup of grease, oil, or debris prior to maintaining implement.

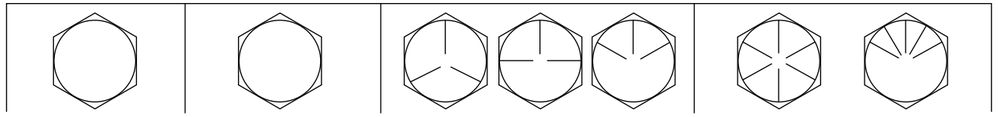
AVOID ENTANGLEMENT. Never lubricate or service implement in motion. Keep away from power driven parts when in motion. Disengage power sources prior to maintaining implement. Injury or death can result from contact with power driven parts when in motion.

AVOID CRUSHING. Do not stand between the tractor and implement when connecting or disconnecting implement. Injury or death can result from being trapped between the tractor and implement.

Escaping pressurized hydraulic fluid can penetrate skin, resulting in injury or death. Relieve hydraulic system pressure before connecting or disconnecting tractor. Use cardboard or wood, **NOT BODY PARTS**, to check for suspected hydraulic leaks. Wear protective gloves and safety glasses or goggles when working with hydraulic systems. If an accident occurs, see a doctor immediately for proper treatment.

TORQUE SPECIFICATIONS

Unified Inch Bolt and Screw Torque Values



Bolt or Screw Size	SAE Grade 1				SAE Grade 2[a]				SAE Grade 5, 5.1 or 5.2				SAE Grade 8 or 8.2			
	Lubricated[b]		Dry[c]		Lubricated[b]		Dry[c]		Lubricated[b]		Dry[c]		Lubricated[b]		Dry[c]	
	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	308	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.

[a] 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.

[b] "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 zinc flake coating.

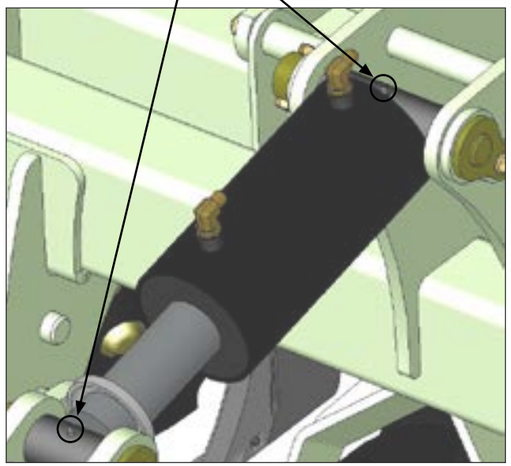
[c] "Dry" means plain or zinc plated without any lubrication, or 1/4 to 3/4 in. fasteners with JDM F13B zinc flake coating.

DHSZ

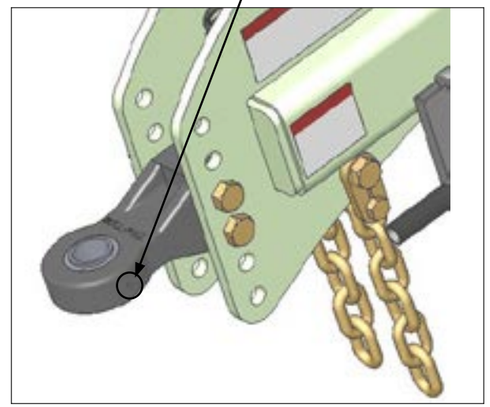
LUBRICATION

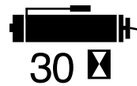
- Grease - use high quality multi-purpose grease.
- Follow recommended hourly service intervals illustrated below.

Tongue Lift Cylinder pins

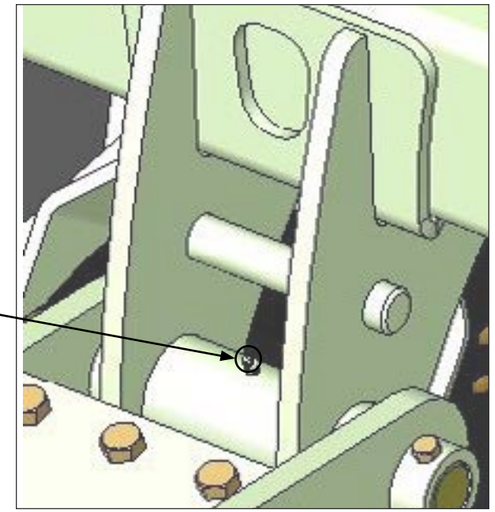


Tongue Hitch Tab





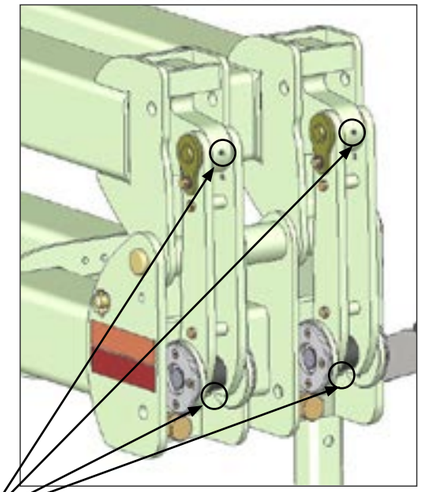
XD Combo Tongue to 1tRIPr Toolbar bushings



LUBRICATION

- Grease - use high quality multi-purpose grease.
- Follow recommended hourly service interval illustrated below.

DUAL CYLINDER TOOLBAR



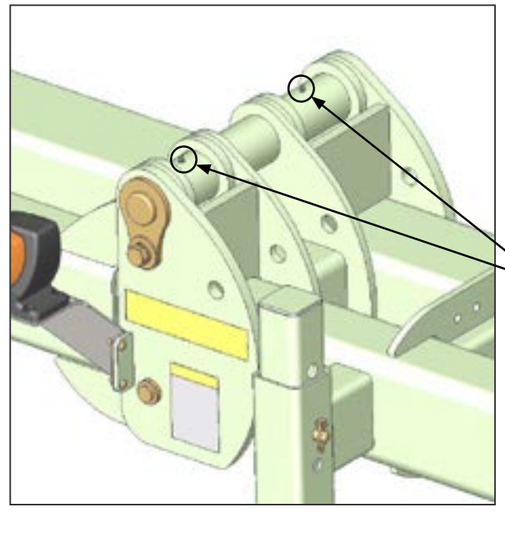
50
Internal fold

30
Lifting Wheel Cylinder pins

50

LUBRICATION

- Grease - use high quality multi-purpose grease.
- Follow recommended 50 hour service interval illustrated below.



50
Wing Hinge bushings
2 zerks on each wing

IMPLEMENT INSPECTION

- When replacement parts are necessary for periodic maintenance and servicing, genuine factory replacement parts must be used to restore implement to original specifications. Replace broken or worn parts immediately. Contact your Orthman dealer for replacement parts.

- During break-in (40 hours), check hardware for proper torque every 10 to 20 hours. (pg. 8 - 2)

- Before each use, check hardware for wear and proper torque. (pg. 8 - 2) Replace damaged or missing hardware with hardware of an identical grade to restore implement to original specifications.

- Do not allow debris to buildup on any surface of the implement.

- Replace all shields and guards. Be sure all tools, parts, and service equipment are removed prior to transporting equipment.

⚠ IMPLEMENT STORAGE

- Clean and touch up paint seasonally to avoid corrosion and rust. Contact your Orthman dealer for touch up paint.
- Inspect all safety and Orthman decals and replace if missing or damaged. Contact your Orthman dealer for replacement decals.
- Grease all zerks regardless of hourly interval prior to storage.
- Check all hardware according to torque specifications prior to storage.
- Replace all worn or damaged parts prior to storage.
- Store inside if possible. Storing implement inside will prolong the life of the components.

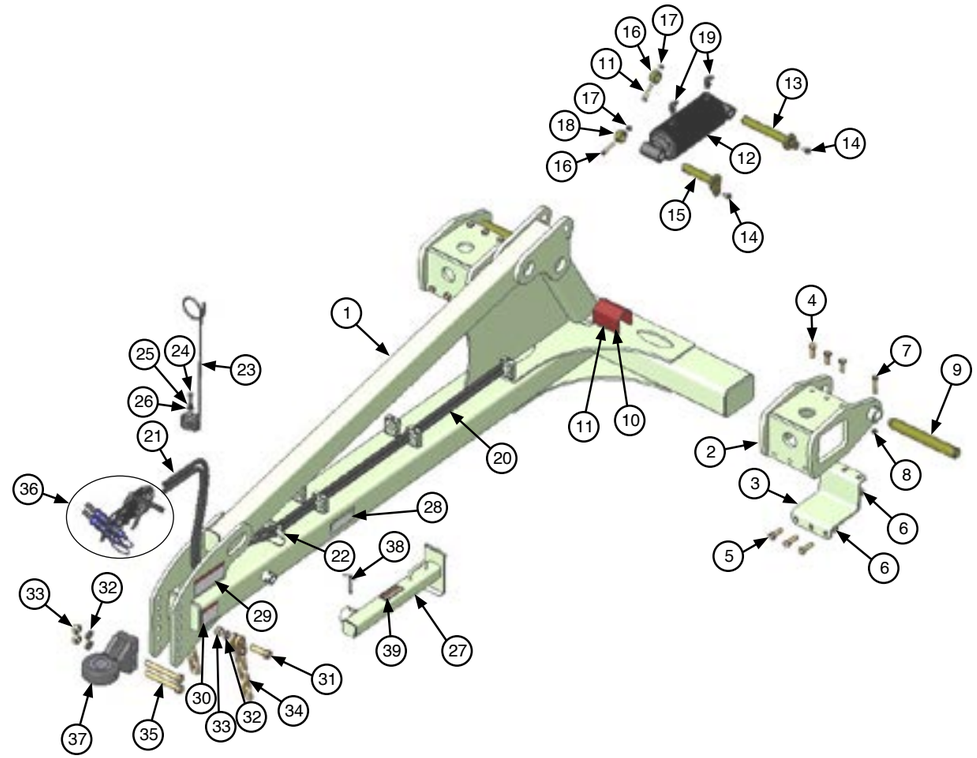
⚠ **AVOID CRUSHING.** Make sure all personnel are clear of the implement. Lower implement to the ground, place tractor in park, turn off engine, and remove key.

Storing implement on the ground will relieve the tractor three point hitch of hydraulic pressure.
Hydraulic systems tend to settle, endangering anything underneath the implement.

USE BAR STANDS TO SUPPORT THE IMPLEMENT. Store implement on a clean, dry, and level surface. An uneven surface could cause implement to shift or fall, resulting in injury or death, as well as implement damage. Securely support all implement components that must be raised. Store implement away from human activity.

⚠ **AVOID CRUSHING.** Never use the tongue bar stand to support the weight of the machine. Tongue bar stand may fail if machine weight rests on the tongue bar stand. Only use the tongue bar stand to keep the tongue from resting on the ground.

TONGUE ASSEMBLY



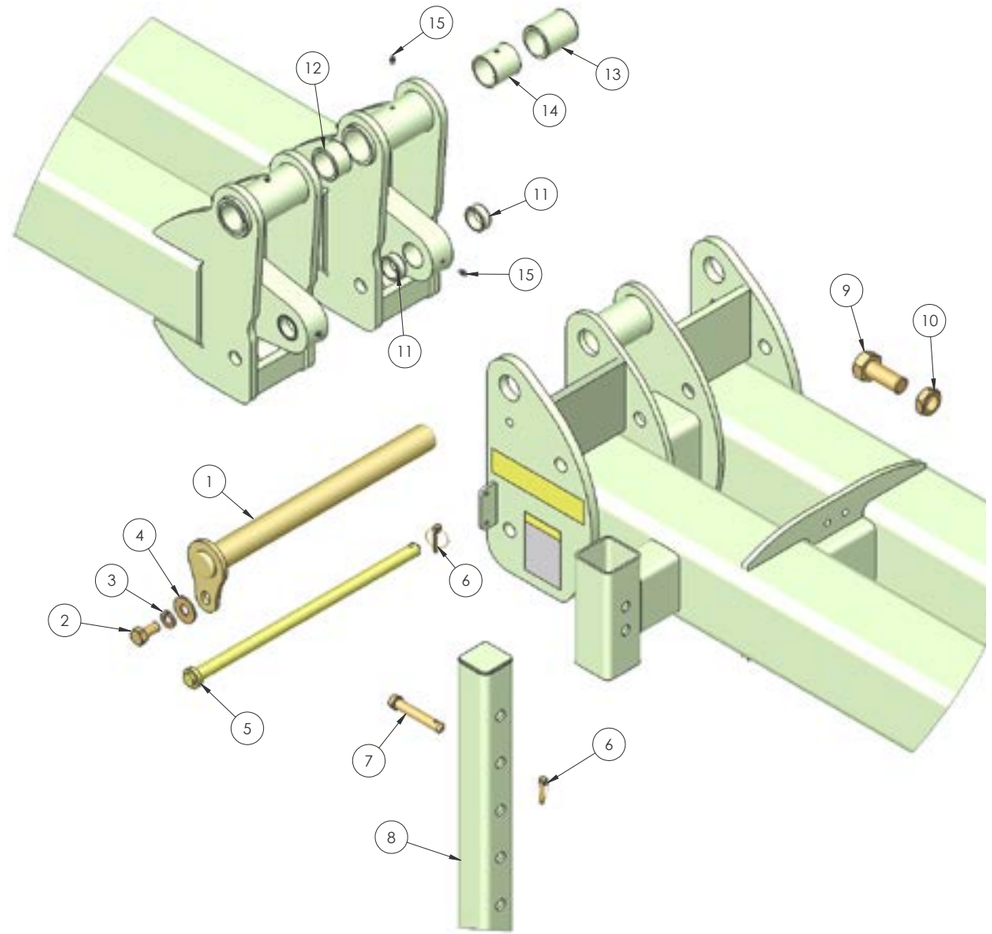
Parts list located on the following page.

TONGUE ASSEMBLY

Key	Part #	Description	Qty	Notes
1	348-196	Tongue Frame	1	---
2	348-184	Tongue Module	2	---
3	348-183	Module Clamp	2	---
4	100-156	Bolt	6	3/4" x 2", Grade 5
5	100-158	Bolt	6	3/4" x 2 1/2", Grade 5
6	102-105	Flange nut	12	3/4", serrated
7	100-124	Bolt	2	1/2" x 3 1/4", Grade 5
8	102-028	Lock nut	2	1/2"
9	348-205	Pin	2	---
10	348-198	Safety Stop	1	---
11	104-251	Safety snap pin	1	3/8" x 4" x 4 3/4"
12	194-464	Cylinder	1	6" x 6" welded
13	348-179	Pin	1	---
14	100-305	Flange bolt	2	1/2" x 1", Grade 8
15	348-197	Pin	1	---
16	100-306	Bolt	2	1/2" x 2 3/4", Grade 8
17	102-224	Lock nut	2	1/2"
18	505-379	Collar	2	---
19	198-246	Elbow	2	7/8MB x 3/4MJ 90 degrees
20	196-352	Hydraulic Hose	4	1/2" x 132" - bulkhead to mani.

Key	Part #	Description	Qty	Notes
21	196-373	Hydraulic Hose	4	1/2" - tractor to mani.
22	198-326	Union	4	3/4MJ x 3/4MJ
23	152-299	Hose Holder	1	
24	100-115	Bolt	1	1/2" x 1 1/4", Grade 5
25	108-020	Lock washer	1	1/2"
26	108-001	Flat washer	1	1/2" SAE
27	352-067	Tongue Stand	1	
28	153-044	Decal	1	Important
29	153-528	Decal	1	Warning - Hyd. pressure
30	153-167	Decal	1	Danger - Pinch
31	100-569	Bolt	2	1" x 3 1/2", Grade 5
32	108-025	Lock washer	4	1"
33	102-214	Lock nut	4	1" Nylock
34	130-037	Safety Chain	2	CAT4
35	100-405	Bolt	2	1" x 7 1/2", Grade 8
36	348-811	Hydraulic storage	1	package (see pg. x-x)
37	152-806	Hitch Tab	1	CAT4 (2" tractor pin)
	152-805			CAT5 (2 3/4" tractor pin)
38	505-854	Pin and cotter key	1	
39	153-627	Decal	1	Danger

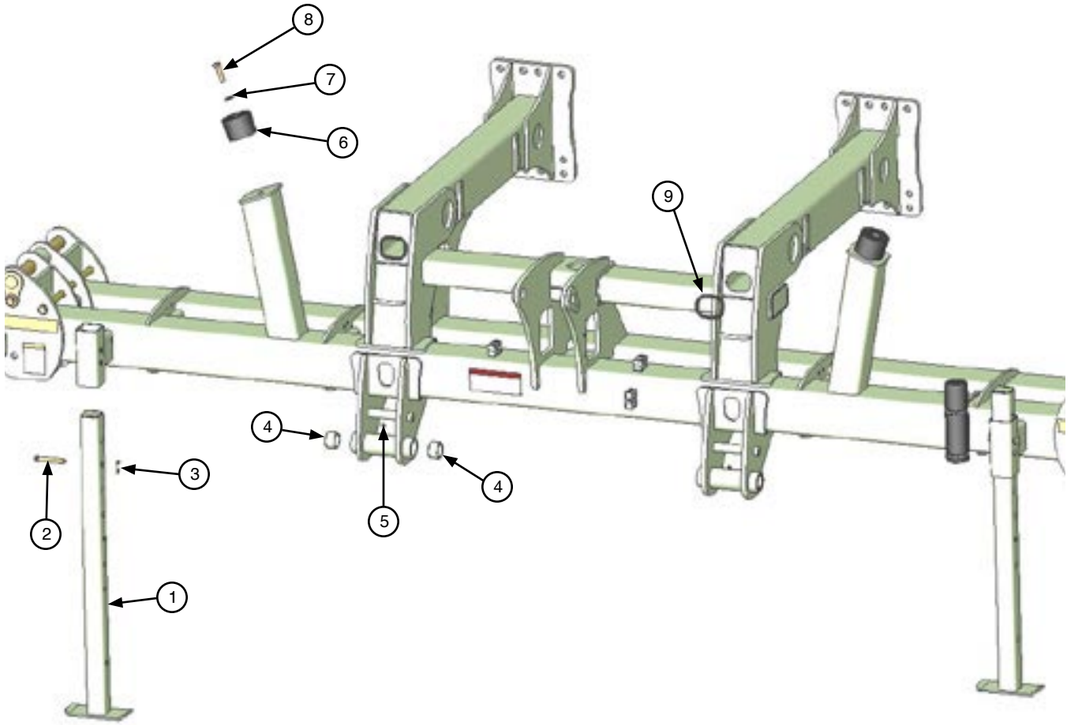
ORTHMAN
PARTS IDENTIFICATION



TOOLBAR HINGE ASSEMBLY 7X7 FRONT BAR

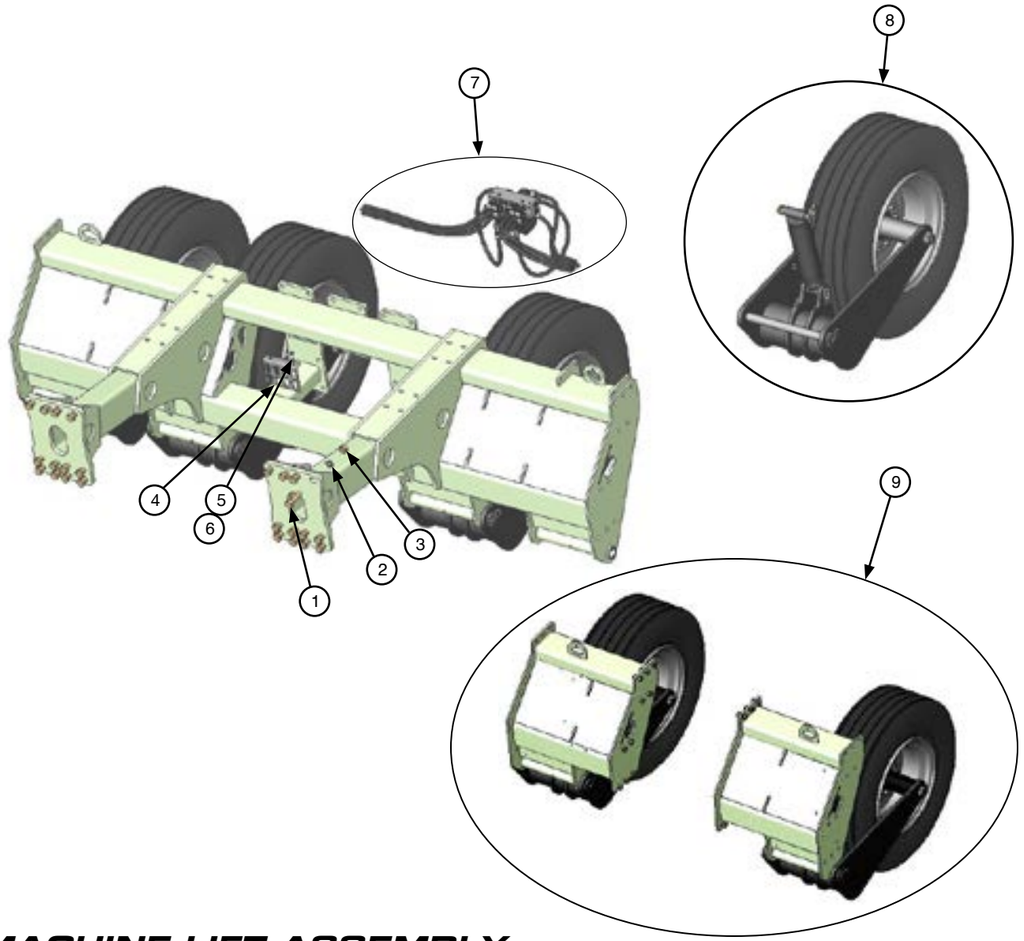
Key	Part #	Description	Qty	Notes
1	342-810	Hinge pin	2	2" x 22" long
2	100-206	Bolt	2	3/4" x 1 1/2", Grade 5
3	108-022	Lock washer	2	3/4"
4	108-011	Flat washer	2	3/4"
5	342-809	Lock pin	2	1" x 22 7/16" long
6	104-065	Linch pin	4	5/16" x 1 11/16"
7	303-846	Barstand pin	2	3/4" x 5" long
8	303-744	Bar stand	2	48"

Key	Part #	Description	Qty	Notes
9	100-471	Bolt	4	1 1/4" x 3", Grade 8
10	102-077	Jam nut	4	1 1/4"
11	134-040	Bushing, split	8	1 7/8" x 1 1/2" x 3/4" long
12	134-097	Bushing, split	4	2 1/2" x 2" x 1 1/2" long
13	134-094	Bushing, split	4	2 1/2" x 2" x 3" long
14	341-651	Spacer	4	2 3/8" long
15	110-001	Grease fitting	8	1/4" straight



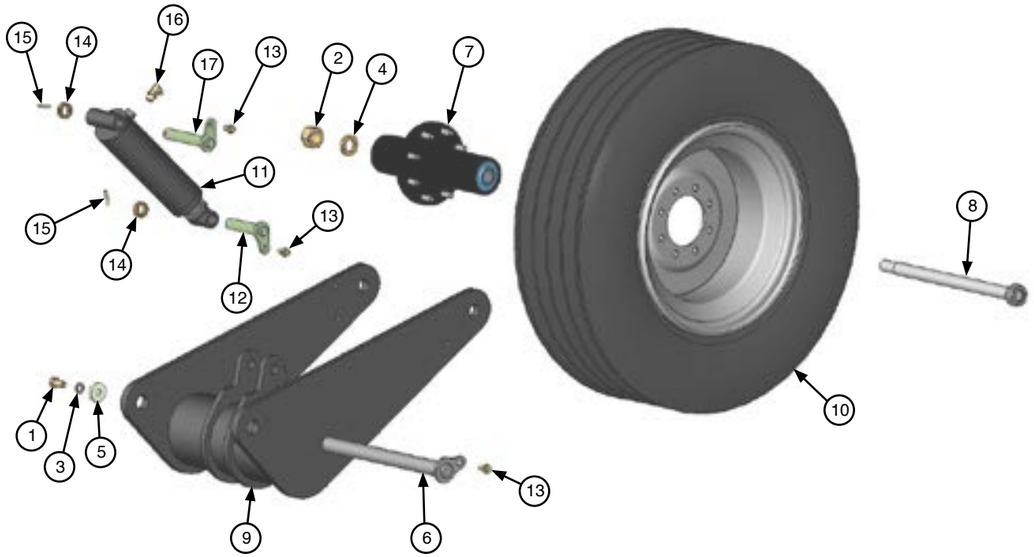
TOOLBAR CENTER SECTION ASSEMBLY

Key	Part #	Description	Qty	Notes
1	303-744	Bar stand	2	----
2	303-846	Pin	2	----
3	104-065	Lynch pin	2	----
4	134-097	Bushing	4	----
5	110-002	Grease fitting	2	----
6	152-588	Wing rest bumper	2	----
7	108-003	Flat washer	2	3/4"
8	100-075	Bolt	2	3/4" x 2 1/2"
9	352-075	Edge guard	2	Cut to length



MACHINE LIFT ASSEMBLY

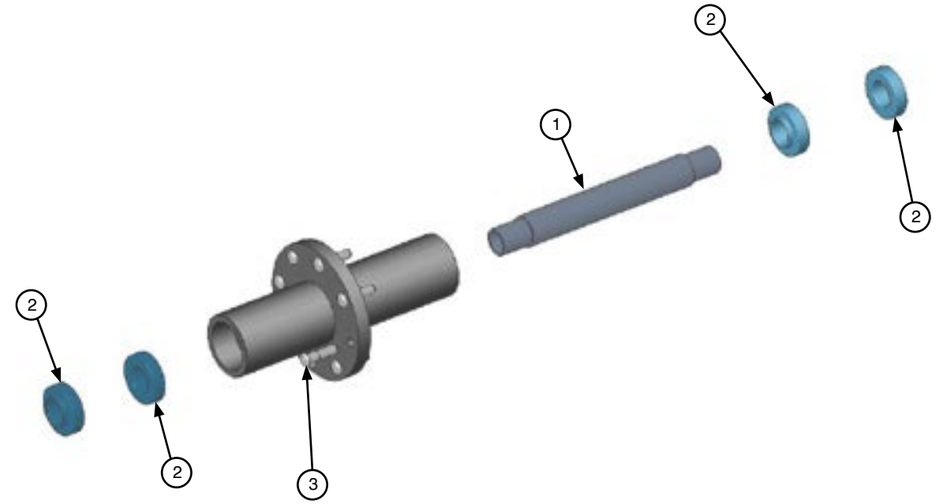
Key	Part #	Description	Qty	Notes
1	100-195	Bolt	24	1" x 3 1/4"
2	108-025	Lock washer	24	1"
3	102-111	Hex nut	24	1"
4	344-203	Hose caddy	1	Used for holding quick connect hoses for the secondary implement
5	100-105	Bolt	2	3/8" x 3/4"
6	108-018	Lock washer	2	3/8"
7	344-014	Hydraulic manifold kit	1	For individual parts breakdown, see pg. (XX)
8	344-610	Machine lift wheel assembly	4	For individual parts breakdown, see pg. (XX)
9	344-625	Extra lift wheel package	1	6 wheel lift machines only; For individual parts breakdown, see pg. (xx)



LIFT WHEEL ASSEMBLY

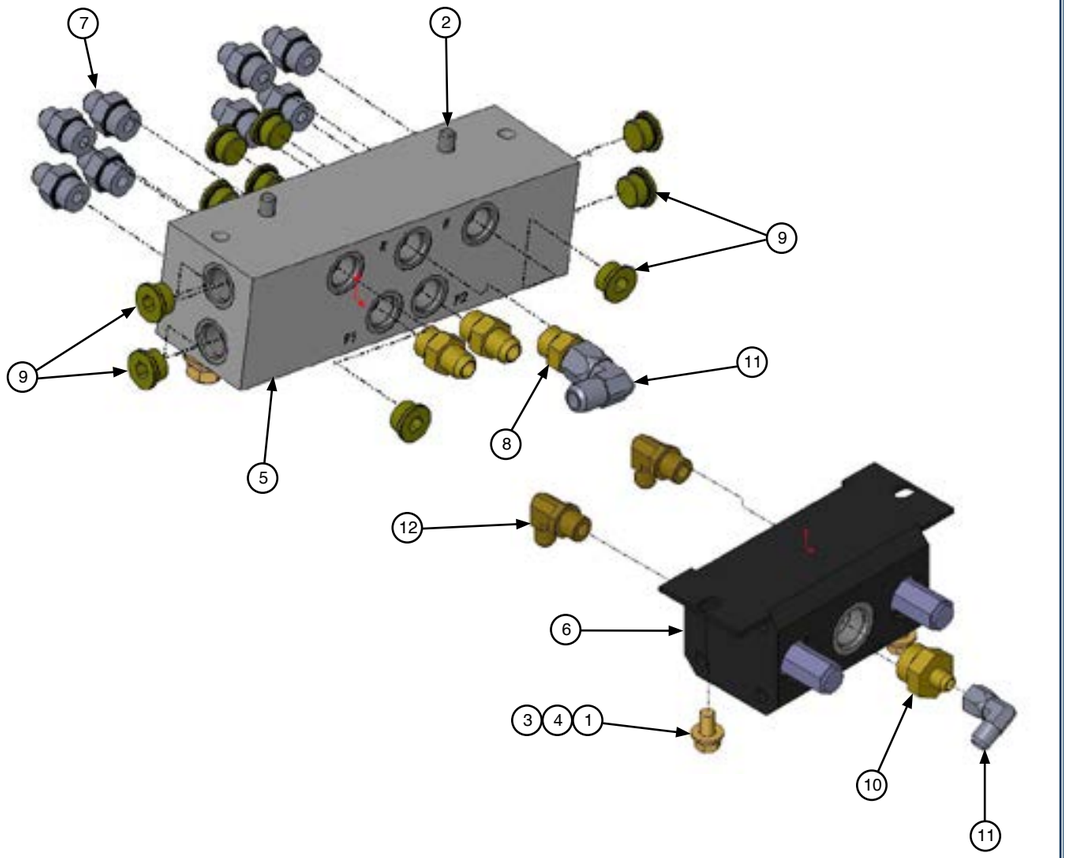
Key	Part #	Description	Qty	Notes
1	100-206	Bolt	1	3/4" x 1 1/2"
2	102-117	Nut	1	1 1/2"
3	108-022	Lock washer	1	3/4"
4	108-063	Lock washer	1	1 1/2"
5	342-214	Pin retainer	1	---
6	344-094	Pin	1	---
7	344-102	Wheel hub	1	Breakdown on pg. xx
8	344-105	Bolt	1	Wheel bolt
9	344-611	Wheel Fork	1	----

Key	Part #	Description	Qty	Notes
10	190-056	Tire and Rim	1	385/65R22.5
11	194-428	Hydraulic Cylinder	1	----
12	366-114	Pin	1	----
13	100-305	Bolt	3	1/2" x 1"
14	301-793	Pin collar	2	----
15	104-008	Roll pin	2	----
16	198-080	Elbow fitting	2	7/8"-14MB - 9/16"-18MJ
17	344-623	Pin	1	----



WHEEL HUB ASSEMBLY

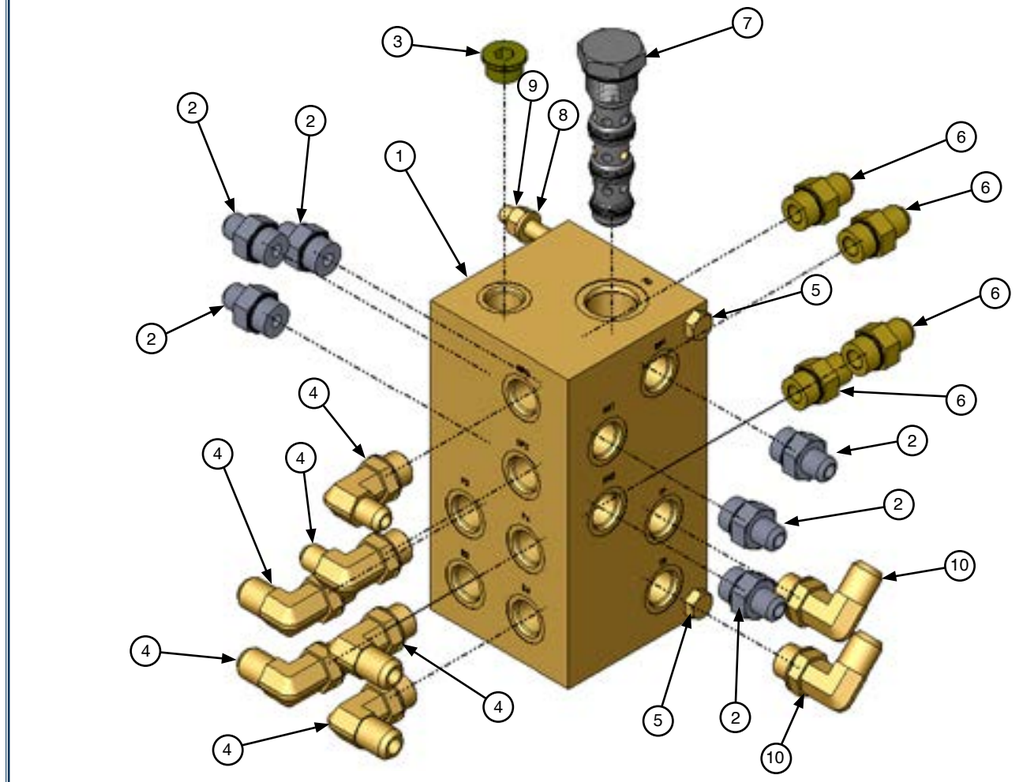
Key	Part #	Description	Qty	Notes
1	344-104	Spacer	1	----
2	120-058	Bearing	4	----
3	100-555	Wheel stud	8	5/8" x 2.5



MACHINE LIFT HYDRAULIC MANIFOLD/GEAR FLOW DIVIDER ASSEMBLY

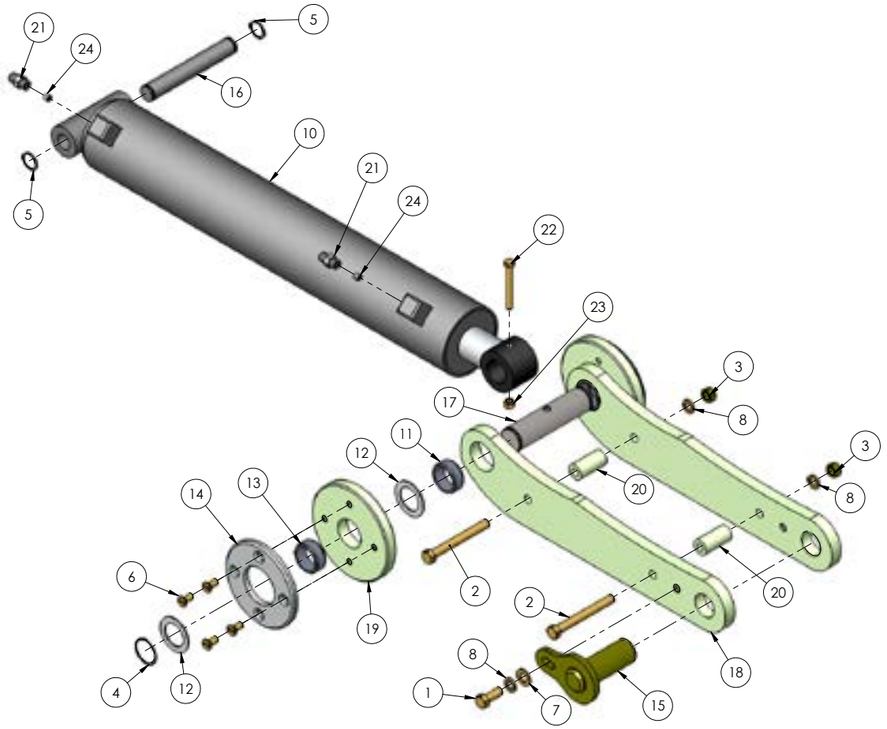
Key	Part #	Description	Qty	Notes
1	100-114	Bolt	2	1/2" x 1"
2	106-148	Screw	2	3/8" x 3"
3	108-001	Flat washer	2	1/2"
4	108-020	Lock washer	2	1/2"
5	180-288	Manifold	1	no fittings
6	180-289	Gear flow divider	1	no fittings

Key	Part #	Description	Qty	Notes
7	198-078	Adaptor fitting	8	3/4"-16MB - 9/16"-18MJ
8	198-128	Adaptor fitting	1	3/4"-16MB - 3/4"MJ
9	198-210	Plug	10	3/4"-16MB
10	198-289	Adaptor fitting	1	1 5/16"-12MB x 3/4"-16MJ
11	198-301	Elbow fitting	2	3/4"-16MJ - 3/4"FJX
12	198-246	Elbow fitting	2	7/8"-14MB - 3/4"-16MJ



HYDRAULIC MANIFOLD ASSEMBLY

Key	Part #	Description	Qty	Notes
1	180-332	Manifold block	1	no fittings, used on all machines except for 12R30, 8R30, and narrow transport configurations
2	198-078	Adaptor	6	3/4 - 16MB - 9/16-18MJ
3	198-210	Plug	1	3/4 - 16MB
4	198-089	Elbow	6	3/4 - 16MB - 3/4 - 16MJ
5	100-215	Bolt	2	3/8 - 16 x 5 1/2 GR. 5
6	198-128	Adaptor	4	3/4-16MB - 3/4MJ
7	180-279	Flow Divider	1	-----
8	108-018	Lock Washer	2	3/8
9	102-005	Nut	2	3/8-16 GR. 2
10	198-064	Elbow	2	3/4-16MB - 9/16-18MJ
	381-332	Manifold pkg.		Includes items 1-10
	381-334	Manifold pkg.		12R30 configuration only; Includes items 1-10, but with 2 less elbows and 2 more adaptors,

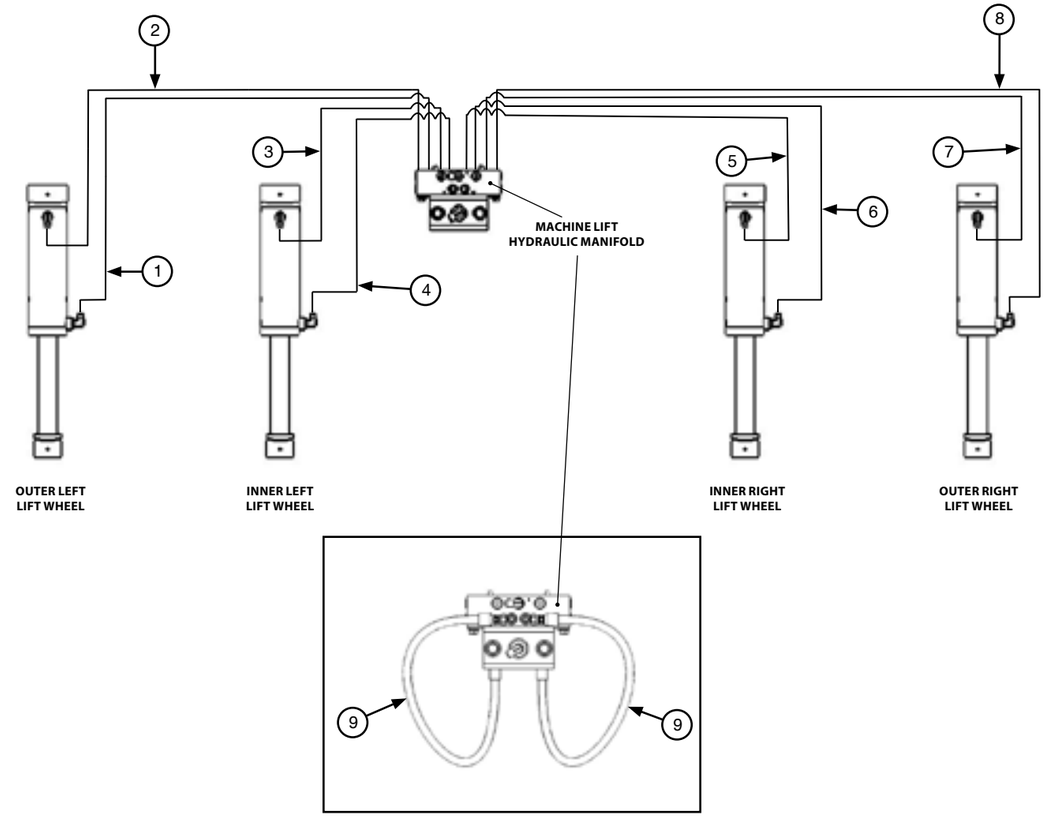


INTERNAL FOLD ASSEMBLY

Key	Part #	Description	Qty	Notes
1	100-115	Bolt	1	1/2″ x 1 1/4″, Grade 5
2	100-125	Bolt	2	1/2″ x 4 1/4″, Grade 5
3	102-007	Nut	2	1/2″
4	104-052	Snap ring	2	1 1/2″ external
5	104-053	Snap ring	2	1″ external
6	106-107	Screw	4	3/8″ x 3/4″
7	108-001	Flat washer	1	1/2″
8	108-020	Lock washer	3	1/2″
9				
10	194-499	Cylinder	1	4″ x 24″
11	134-040	Bushing, split	2	1 7/8″ x 1 1/2″ x 3/4″
12	134-041	Machined washer	4	2 1/4″ x 1 1/2″ x 14 ga.
13	134-040	Bushing, split	2	1 7/8″ x 1 1/2″ x 3/4″
	134-047	Bushing, split	2	1 3/4″ x 1 1/2″ x 5/8″

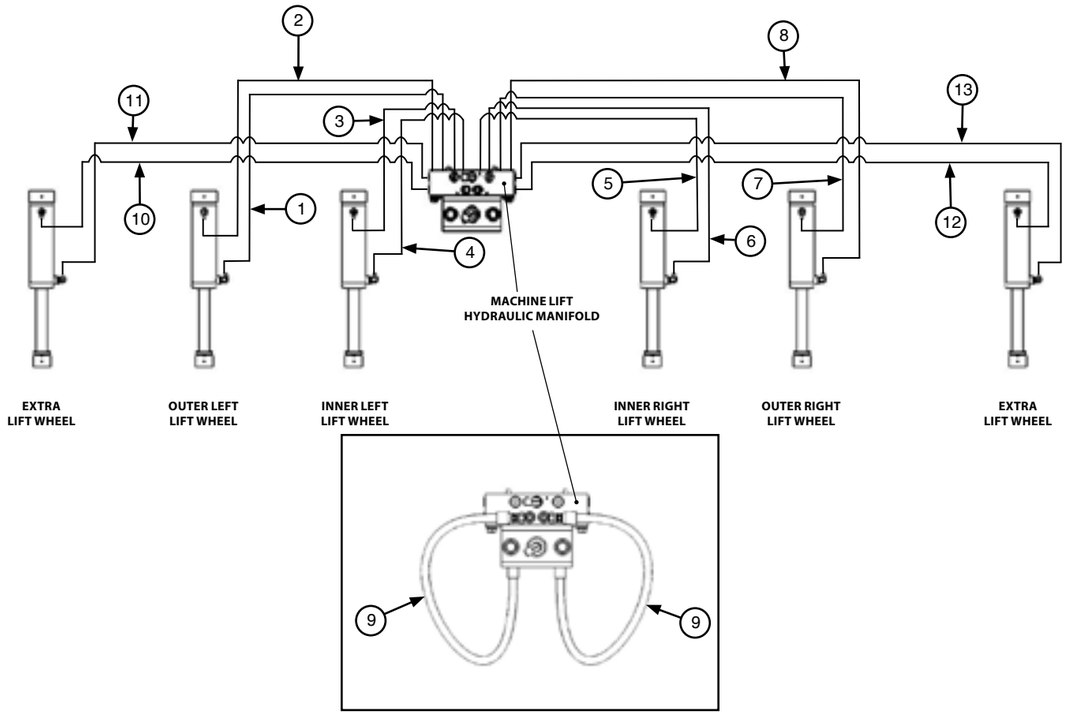
Key	Part #	Description	Qty	Notes
14	301-512	Friction plate	2	---
15	301-548	Linkage pin	1	---
16	301-500	Pin	1	6 7/8″ long (for 3/8″ wall bars)
	301-800	Pin	1	6 9/16″ long (for 1/2″ wall bars)
17	301-948	Pin	1	5 7/8″ long (for 3/8″ wall bars)
	301-945	Pin	1	5 5/8″ long (for 1/2″ wall bars)
18	341-823	Connecting strap	2	---
19	301-511	Guide wheel	2	3/4″ thick (for 3/8″ wall bars)
	301-802	Guide wheel	2	5/8″ thick (for 1/2″ wall bars)
20	317-714	Spacer	2	---
21	340-078	Adaptor	2	9/16″ MB x 9/16 MJ
22	100-098	Bolt	1	3/8″ x 3″, Grade 5
23	102-027	Lock nut	1	3/8″
24	340-057	Restrictor	2	3/8″ x 3/8″ with .055 hole

HYDRAULIC HOSE IDENTIFICATION
(4 WHEEL MACHINE LIFT)



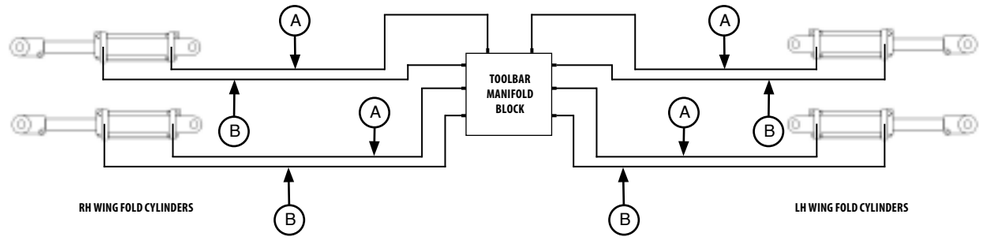
Key	Part #	Description	Qty	Notes
1	196-232	Hydraulic hose	1	3/8″ x 72″ ; End fittings - 9/16FJX x 9/16FJX
2	196-233	Hydraulic hose	1	3/8″ x 66″ ; End fittings - 9/16FJX x 9/16FJX
3	196-235	Hydraulic hose	1	3/8″ x 34″ ; End fittings - 9/16FJX x 9/16FJX
4	196-234	Hydraulic hose	1	3/8″ x 42″ ; End fittings - 9/16FJX x 9/16FJX
5	196-231	Hydraulic hose	1	3/8″ x 52″ ; End fittings - 9/16FJX x 9/16FJX
6	302-851	Hydraulic hose	1	3/8″ x 44″ ; End fittings - 9/16FJX x 9/16FJX
7	196-054	Hydraulic hose	1	3/8″ x 76″ ; End fittings - 9/16FJX x 9/16FJX
8	196-230	Hydraulic hose	1	3/8″ x 82″ ; End fittings - 9/16FJX x 9/16FJX
9	196-179	Hydraulic hose	2	1/2″ x 30″ ; End fittings - 3/4FJX x 3/4MB

HYDRAULIC HOSE IDENTIFICATION
(6 WHEEL MACHINE LIFT)



Key	Part #	Description	Qty	Notes
1	196-232	Hydraulic hose	1	3/8" x 72" ; End fittings - 9/16FJX x 9/16FJX
2	196-233	Hydraulic hose	1	3/8" x 66" ; End fittings - 9/16FJX x 9/16FJX
3	196-235	Hydraulic hose	1	3/8" x 34" ; End fittings - 9/16FJX x 9/16FJX
4	196-234	Hydraulic hose	1	3/8" x 42" ; End fittings - 9/16FJX x 9/16FJX
5	196-231	Hydraulic hose	1	3/8" x 52" ; End fittings - 9/16FJX x 9/16FJX
6	302-851	Hydraulic hose	1	3/8" x 44" ; End fittings - 9/16FJX x 9/16FJX
7	196-054	Hydraulic hose	1	3/8" x 76" ; End fittings - 9/16FJX x 9/16FJX
8	196-230	Hydraulic hose	1	3/8" x 82" ; End fittings - 9/16FJX x 9/16FJX
9	196-179	Hydraulic hose	2	1/2" x 30" ; End fittings - 3/4FJX x 3/4MB
10	196-240	Hydraulic hose	1	3/8" x 100" ; End fittings - 9/16FJX x 9/16FJX
11	196-241	Hydraulic hose	1	3/8" x 106" ; End fittings - 9/16FJX x 9/16FJX
12	196-404	Hydraulic hose	1	3/8" x 110" ; End fittings - 9/16FJX x 9/16FJX
13	196-242	Hydraulic hose	1	3/8" x 116" ; End fittings - 9/16FJX x 9/16FJX

HYDRAULIC HOSE IDENTIFICATION
(WING FOLD)



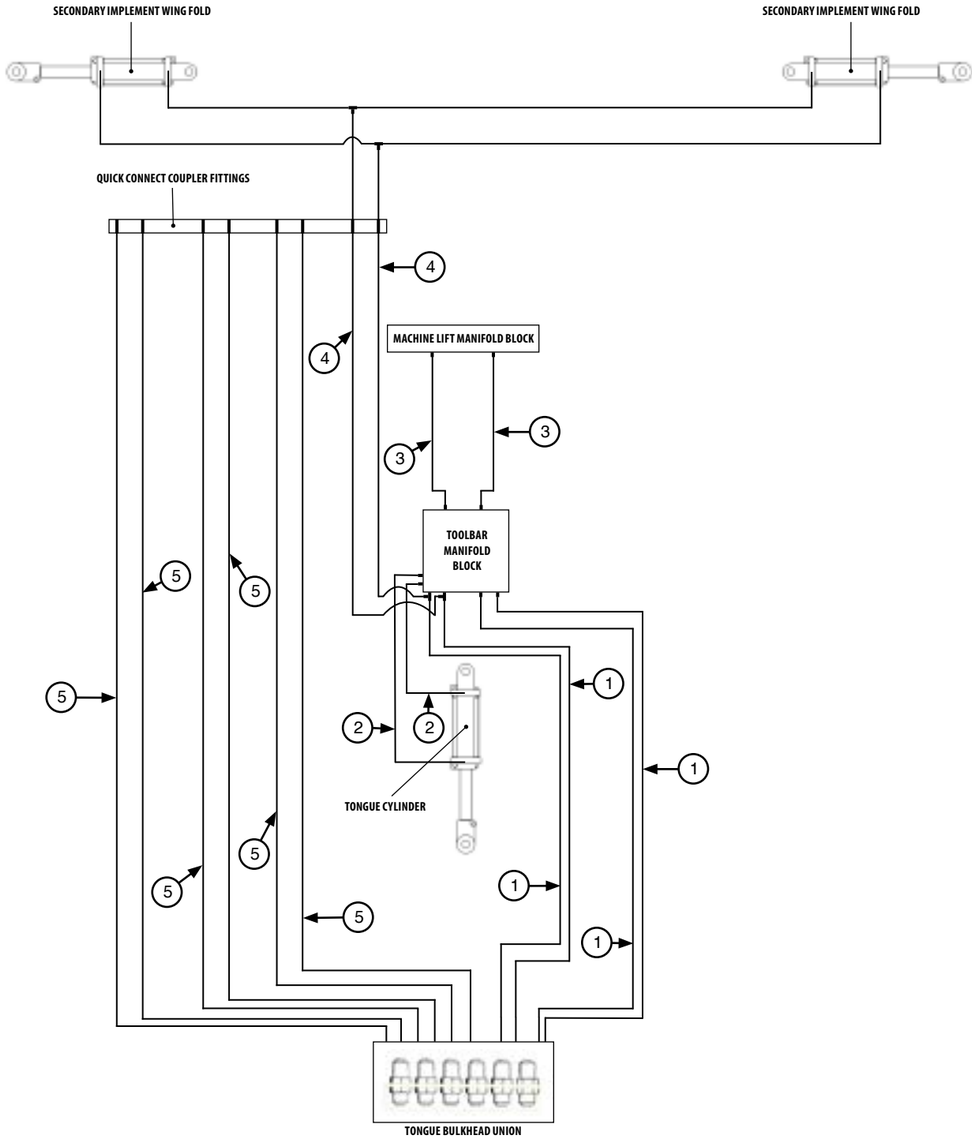
Parts list located on the following page.

WING FOLD HYDRAULIC HOSES

Key	Part #	Machine Configuration	Qty	Notes
A	301-454	**8R30**	2	1/4" x 48"; Wing Extend Hyd. Hose
		End fittings		9/16FJX x 9/16FJX
B	196-112	**8R30**	2	1/4" x 72"; Wing Retract Hyd. Hose
		End fittings		9/16FJX x 9/16FJX
A	196-112	**12R30**	2	1/4" x 72"; Wing Extend Hyd. Hose
		End fittings		9/16FJX x 9/16FJX
B	196-113	**12R30**	2	1/4" x 96"; Wing Retract Hyd. Hose
		End fittings		9/16FJX x 9/16FJX
A	196-113	**12R36**	4	1/4" x 96"; Wing Extend Hyd. Hose
		End fittings		9/16FJX x 9/16FJX
B	196-114	**12R36**	4	1/4" x 120"; Wing Retract Hyd. Hose
		End fittings		9/16FJX x 9/16FJX
A	196-141	**16R30**	4	1/4" x 108"; Wing Extend Hyd. Hose
		End fittings		9/16FJX x 9/16FJX
B	196-118	**16R30**	4	1/4" x 132"; Wing Retract Hyd. Hose
		End fittings		9/16FJX x 9/16FJX
A	196-118	**16R36**	4	1/4" x 132"; Wing Extend Hyd. Hose
		End fittings		9/16FJX x 9/16FJX
B	196-454	**16R36**	4	1/4" x 156"; Wing Retract Hyd. Hose
		End fittings		9/16FJX x 9/16FJX
A	196-118	**18R30**	4	1/4" x 132"; Wing Extend Hyd. Hose
		End fittings		9/16FJX x 9/16FJX
B	196-454	**18R30**	4	1/4" x 156"; Wing Retract Hyd. Hose
		End fittings		9/16FJX x 9/16FJX

Note: Tongue hydraulic hoses can be found on the "Tongue Assembly" parts pages.

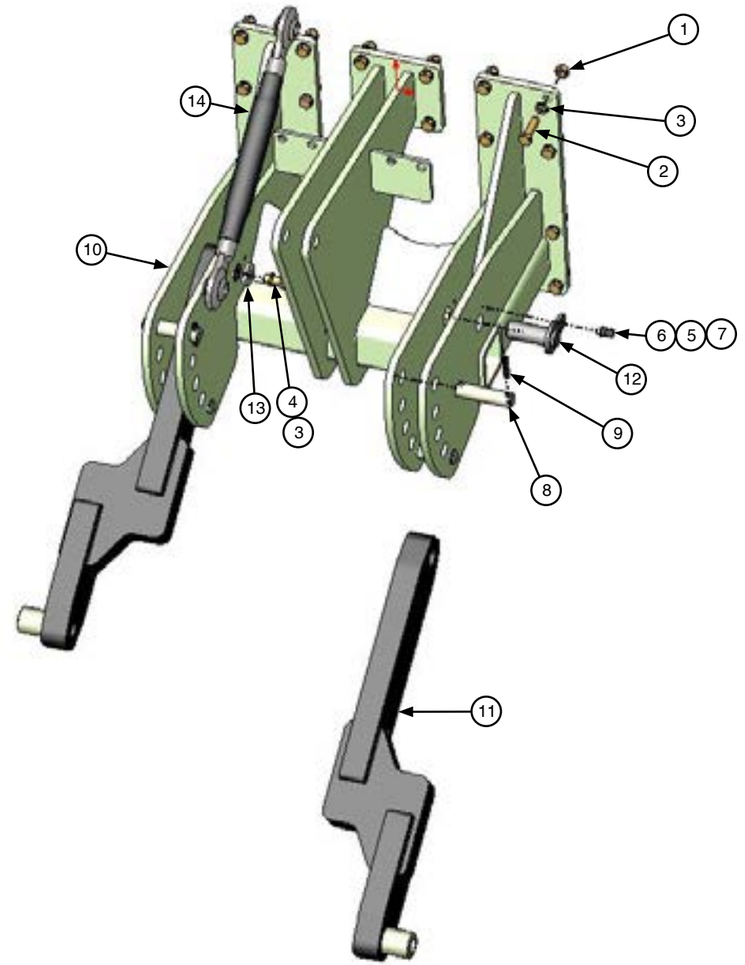
HYDRAULIC HOSE IDENTIFICATION
(TONGUE BULKHEAD TO MACHINE)



Parts list located on the following page.

TONGUE BULKHEAD TO MACHINE HOSES

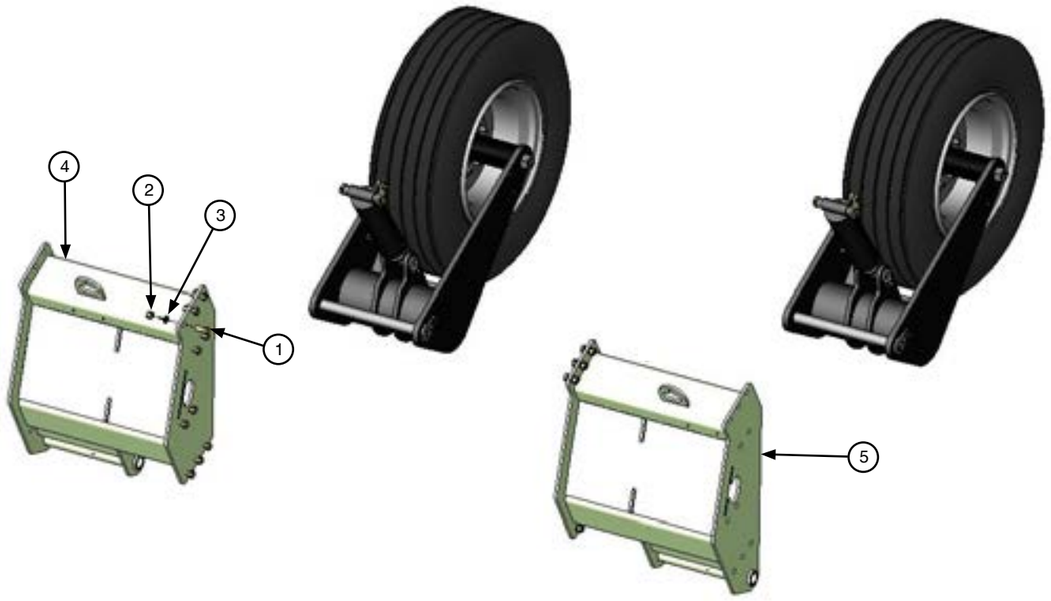
Key	Part #	Description	Qty	Notes
1	196-352	Machine lift hydraulic hoses - Bulkhead to Toolbar Manifold Block	4	1/2" x 132" ; End fittings - 3/4FJX x 3/4FJX
2	196-561	Tongue Cylinder hydraulic hose - Toolbar Manifold Block tongue cylinder	2	1/2" x 27" ; End fittings - 3/4FJX x 3/4MB
3	196-344	Machine lift hydraulic hoses - Toolbar Manifold Block to Machine Lift Manifold Block	2	1/2" x 192" ; End fittings - 3/4FJX x 3/4FJX
4	196-318	Secondary Implement wing fold hoses - Toolbar Manifold Block to Quick Connect	2	1/2" x 180" ; End fittings - 3/4FJX x 3/4MB
5	196-036	Secondary Implement auxiliary hoses	6	1/2" x 216" ; End fittings 3/4FJX x 3/4FJX



SECONDARY IMPLEMENT HITCH ASSEMBLY

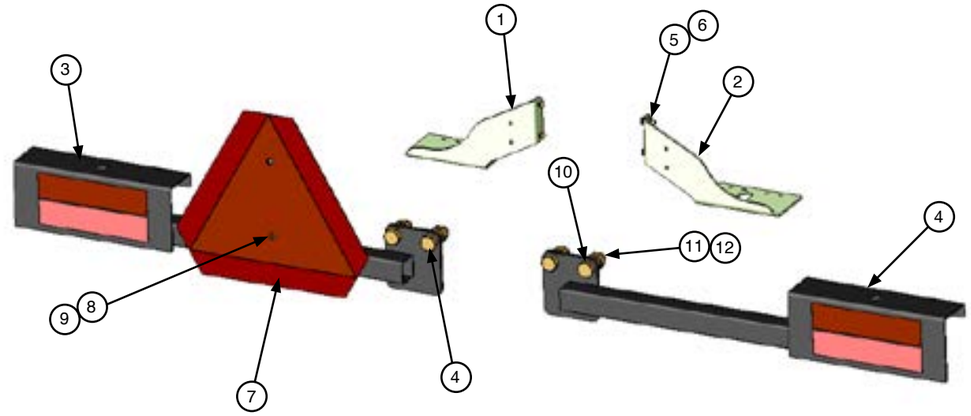
Key	Part #	Description	Qty	Notes
1	102-009	Hex nut	20	3/4"
2	100-159	Bolt	20	3/4" x 2 3/4"
3	108-022	Lock washer	22	3/4"
4	100-155	Bolt	2	3/4" x 1 3/4"
5	108-001	Flat washer	2	1/2"
6	100-115	Bolt	2	1/2" x 1 1/4"
7	108-020	Lock washer	2	1/2"

Key	Part #	Description	Qty	Notes
8	344-028	Pin	2	----
9	104-102	Roll pin	4	----
10	348-085	LIft frame tail	1	----
11	348-080	Tug arm	2	----
12	344-038	Pin	2	----
13	342-214	Pin retainer	2	----
14	152-683	Top link	1	----



ADDITIONAL LIFT WHEELS ASSEMBLY (6 WHEEL CONFIGURATIONS ONLY)

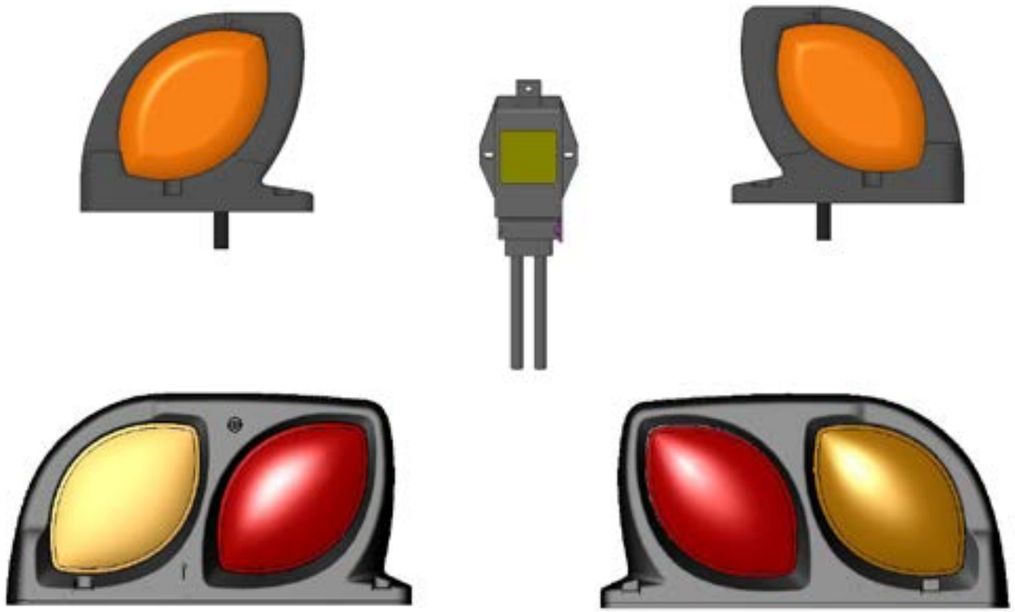
Key	Part #	Description	Qty	Notes
1	100-155	Bolt	20	3/4" x 1 3/4"
2	102-009	Hex nut	20	3/4"
3	108-022	Lock washer	20	3/4"
4	344-626	RH lift wheel frame	1	----
5	344-627	LH lift wheel frame	1	----



LIGHT BRACKET ASSEMBLY

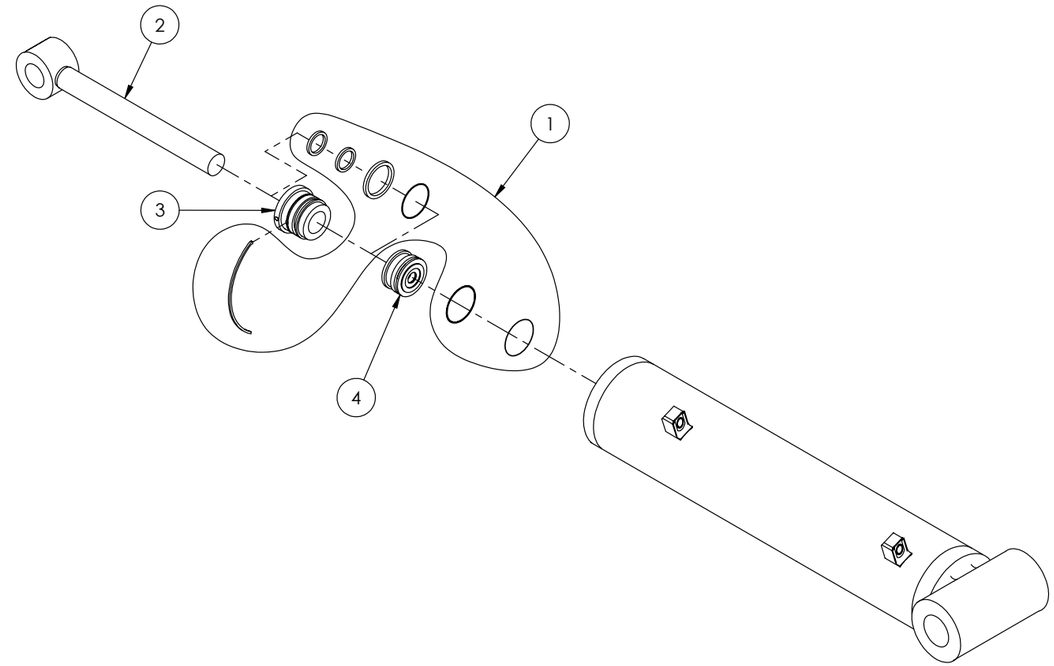
Key	Part #	Description	Qty	Notes
1	341-772	Light Bracket	1	Front LH
2	341-774	Light Bracket	1	Front RH
3	348-524	Light Bracket	1	Rear LH
4	348-528	Light Bracket	1	Rear RH
5	100-001	Bolt	4	Carriage; 1/4"-20 X 1"
6	102-227	Nut	4	1/4"-20
	303-915	Light Bracket pkg.		Includes items 1-12

Key	Part #	Description	Qty	Notes
7	153-109	SMV sign	1	----
8	102-077	Screw	2	1/4" x 3/4"
9	102-085	Nut	2	1/4
10	100-157	Bolt	4	3/4"-10 x 2 1/4" GR.5
11	108-022	Lock Washer	4	3/4"
12	102-009	Nut	4	3/4"



LIGHT KIT ASSEMBLY

Key	Part #	Description	Qty	Notes
	152-850	XD Light Kit	--	Includes all parts in above. Cobo brand
				Call the Orthman parts department for individual replacement lights.



HYDRAULIC CYLINDER INTERNAL (WING FOLD)

Key	Part #	Description	Qty	Notes
1	194-440	Seal kit	1	for 194-499 cylinder
2	194-406	Cylinder rod	1	---
3	194-288	Gland	1	---
4	194-293	Piston	1	---

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