AVR SERIES

OWNERS MANUAL

AVR 8
AVR 10
AVR 12

AgLINE

Data shown on the identification plate of the machine

Model:
Serial number
Dealer:
Year of fabrication:
Date of delivery:

Technical assistance center authorized by
AgLine Distributing & Equipment LLC.
to be contacted for all technical assistance needs.

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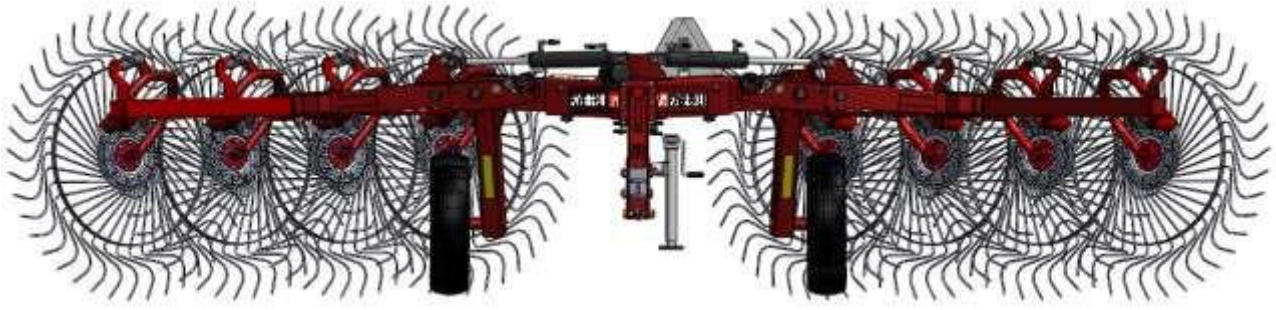
1 - INTRODUCTION

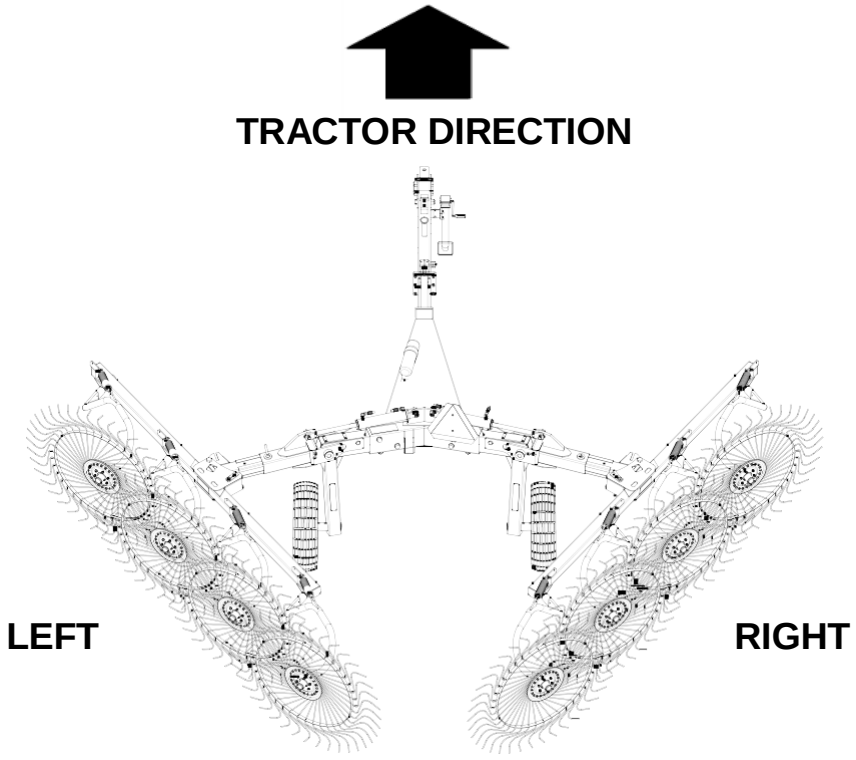
This manual contains the instructions on how to use and maintain the High Capacity Carted Rake “V RAKE” by **AgLine Distributing & Equipment**
The material in this manual is not intended to be a complete description of the parts nor a detailed explanation of their operation.
The user, however, will find the kind of information normally required to operate the machine correctly and safely and also to keep it in good working condition.
Compliance with and observance of what is described in the manual is an essential condition for the trouble-free operation, long life and cost effective performance of the machine.
Failure to observe the prescriptions given in this manual, negligence, incorrect or improper use of the machine can be cause of machine warranty coverage cancellation by manufacturer.
Service work or overhauls involving complex operations must be entrusted to authorized Technical Assistance Centers which have the necessary specialized personnel or directly to Manufacturer who is at your complete Disposal to ensure fast and complete technical assistance and anything else that can promote improved operation and optimum performance by the machine.

ATTENTION

This Manual must be kept in a safe place at operator and service engineer disposal for consultation at any time during the machine’s entire working life. It should be delivered with the machine if this latter is sold.



The manufacturer will not be liable in any way for incidental or consequential damages (including, but not limited to, loss of profits) that occur for any reason and at any time. This limited warranty does not obligate the manufacturer to be responsible for transportation costs deriving from the repair or replacement of defective products.
The manufacturer will not be responsible for labor or other costs deriving from the removal or installation of component parts that have been repaired or replaced under this limited warranty.
This warranty will not apply to any machine which has been repaired or modified without the manufacturer's advance written approval; or which has been subjected to improper use, negligence or accident; or which has not been operated in accordance with the manufacturer's printed instructions; or which has been operated beyond the recommended capacity specified by the manufacturer.
This warranty will not apply to items defined as being subject to normal wear. Such items include, but are not limited to: belts, discs, stone guards, clutches, drive shafts and universal joints, blades, and tine holders.
The decision of AgLine Distributing & Equipment as to warranty claims will be final, and the original purchaser agrees to accept the company's decision regarding defects and replacement of parts.
No agent, employee or representative of AgLine has the authority to commit the company to any additional warranty terms that differ from what is specifically expressed in this warranty.
AgLine reserves the right to modify or improve any of its products without incurring any obligation to replace previously sold products which do not have said modifications or improvements.



IMPORTANT! - Determine the right or left side of the machine by viewing it from the rear.

2 - SAFETY

This safety alert symbol indicates important safety messages in this manual and on safety signs on the machine.

This symbol means:

ATTENTION!
BECOME ALERT!
YOUR SAFETY IS INVOLVED!

Carefully read and follow the safety message accompanying this symbol.

Why is SAFETY important to you?

ACCIDENTS DISABLE AND KILL 3 BIG REASONS
ACCIDENTS COST ACCIDENTS CAN BE AVOIDED

2.1 - SIGNAL WORDS

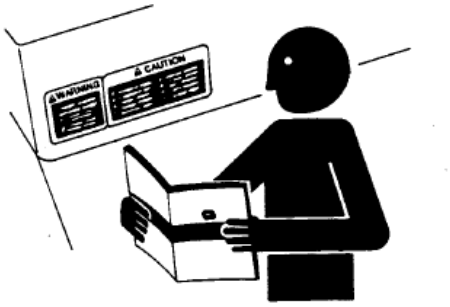
Note the use of the signal words DANGER, WARNING, and CAUTION with safety messages. The appropriate signal word for each message has been selected using the following guidelines:

DANGER – Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.

WARNING – Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury. It is also used to alert against unsafe practices.

CAUTION – Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It is also used as a reminder of good safety practices.

2.2 - FOLLOW SAFETY INSTRUCTIONS



Carefully read all safety messages in this manual and on your machine safety signs. Keep safety signs in good condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety signs. Replacement safety signs are available from your Tufline dealer.

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

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

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

2.3 - OPERATE RAKE SAFELY

All machinery should be operated by responsible persons who have been properly instructed and delegated to do so.

Before each use, inspect entire machine. Check tightness of all hardware.

Stop the tractor engine and engage parking brake before leaving tractor operator's station to adjust, lubricate, clean or unclog the machine.

Never hand feed material into the machine.

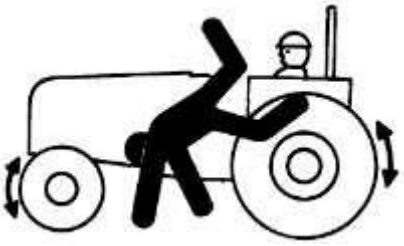
Do not lean against, sit, or stand on rake.

Make sure bystanders are clear of machine before lowering rake wheels.

2.4 - KEEP RIDERS OFF MACHINE

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

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

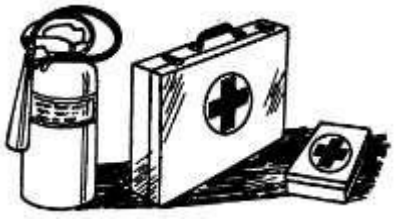


2.5 - PREPARE FOR EMERGENCIES

Be prepared if a fire starts.

Keep a first aid kit and fire extinguisher handy.

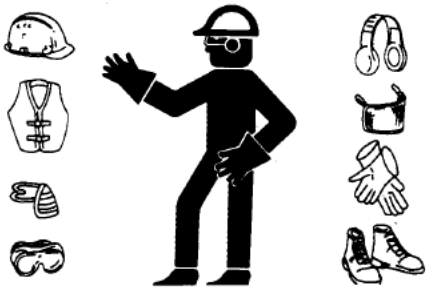
Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.



2.6 - WEAR PROTECTIVE CLOTHING

Wear close fitting clothing and safety equipment appropriate to the job.

Operating equipment safely requires the full attention of the operator. Do not wear radio or music headphones while operating machine.



2.7 - HANDLE CHEMICAL PRODUCTS SAFELY

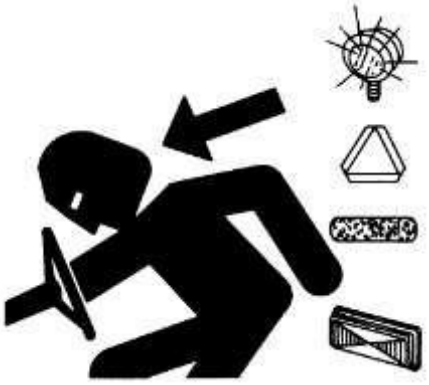
Direct exposure to hazardous chemicals can cause serious injury. Potentially hazardous chemicals used with Tufline equipment include such items as lubricants, coolants, paints, and adhesives.

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

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

(See your Tufline dealer for MSDS's on chemical products used with Tufline equipment.)

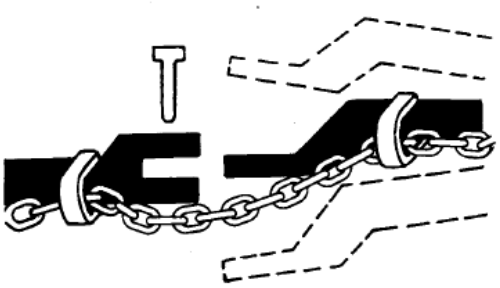
2.8 - USE SAFETY LIGHTS AND DEVICES



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

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

2.9 - USE A SAFETY CHAIN

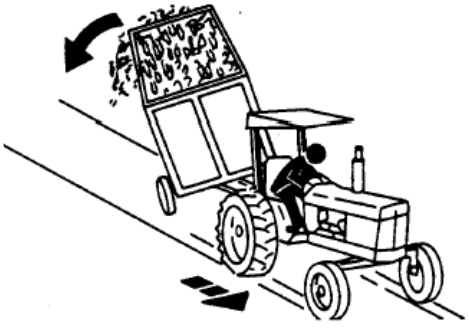


A safety chain will help control drawn equipment should it accidentally separate from the drawbar.

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

See your Tufline dealer for a chain with a strength rating equal to or greater than the gross weight of the towed machine. Do not use safety chain for towing.

2.10 - TOW LOADS SAFELY



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

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

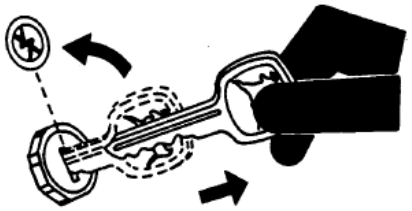
- **If towed equipment does not have brakes, do not travel more than 32 km/h (20 mph) and do not tow loads more than 1.5 times the tractor weight.**

- **If towed equipment has brakes, do not travel more than 40 km/h (25 mph) and do not tow loads more than 4.5 times the tractor weight.**

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

2.11 - SERVICE RAKE SAFELY

To help prevent injury caused by unexpected movement, be sure to service machine on level surface.



Lower rake wheels before servicing or adjusting rake.

If machine is connected to a tractor:

- Engage tractor parking brake and/or place transmission in “Park.”

- Shut off engine and remove key.

If machine is detached from tractor, block wheels and use safety stands to prevent movement.

To avoid eye injuries, cuts and bruises, take care when working around raised wheels. Do not service or adjust machine with rake wheels raised.

2.12 - PRACTICE SAFE MAINTENANCE

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

Never lubricate, service, or adjust machine while it is moving. Keep hands, feet, and clothing from power-driven parts. Disengage all power and operate controls to relieve pressure. Lower equipment to the ground. Stop the engine. Remove the key. Allow machine to cool.

Securely support any machine elements that must be raised for service work.

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

Disconnect battery ground cable (-) before making adjustments on electrical systems or welding on machine.

2.13 - REMOVE PAINT BEFORE WELDING OR HEATING

Avoid potentially toxic fumes and dust.

Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch.

Do all work outside or in a well ventilated area. Dispose of paint and solvent properly.

Remove paint before welding or heating:

- If you sand or grind paint, avoid breathing the dust. Wear an approved respirator.

- If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.

2.14 - AVOID HEATING NEAR PRESSURIZED FLUID LINES

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

2.15 - AVOID HIGH-PRESSURE FLUIDS

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

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

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

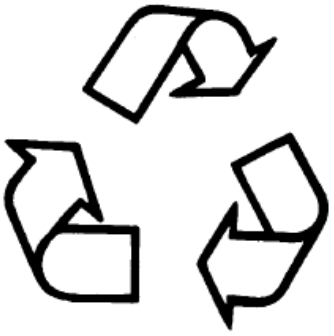
If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source.

2.16 - STORE ATTACHMENTS SAFELY

Stored attachments such as dual wheels, cage wheels, and loaders can fall and cause serious injury or death.

Securely store attachments and implements to prevent falling. Keep playing children and bystanders away from storage area.

2.17 - DISPOSE OF WASTE PROPERLY



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

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

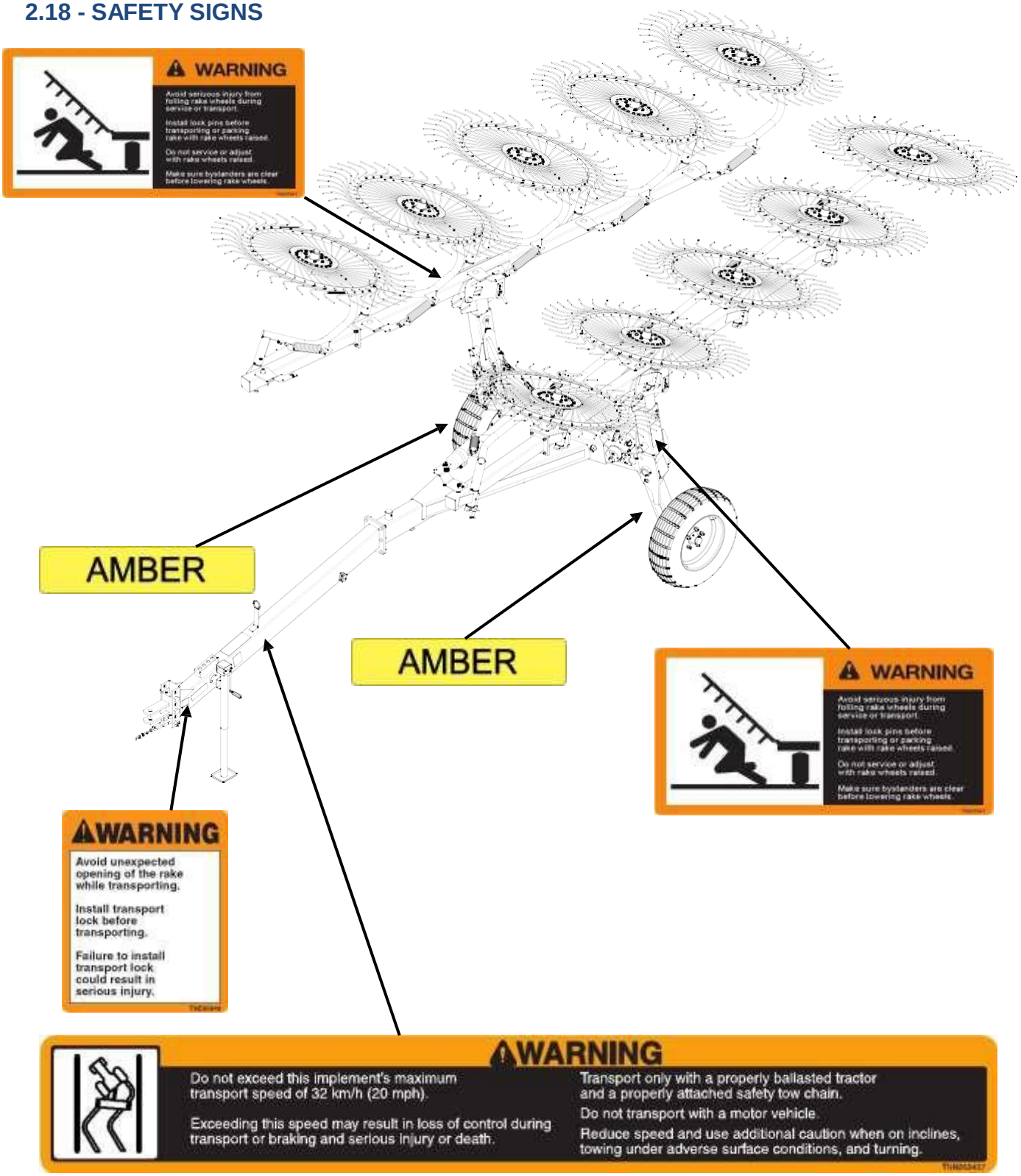
Do not pour waste onto the ground, down a drain, or into any water source.

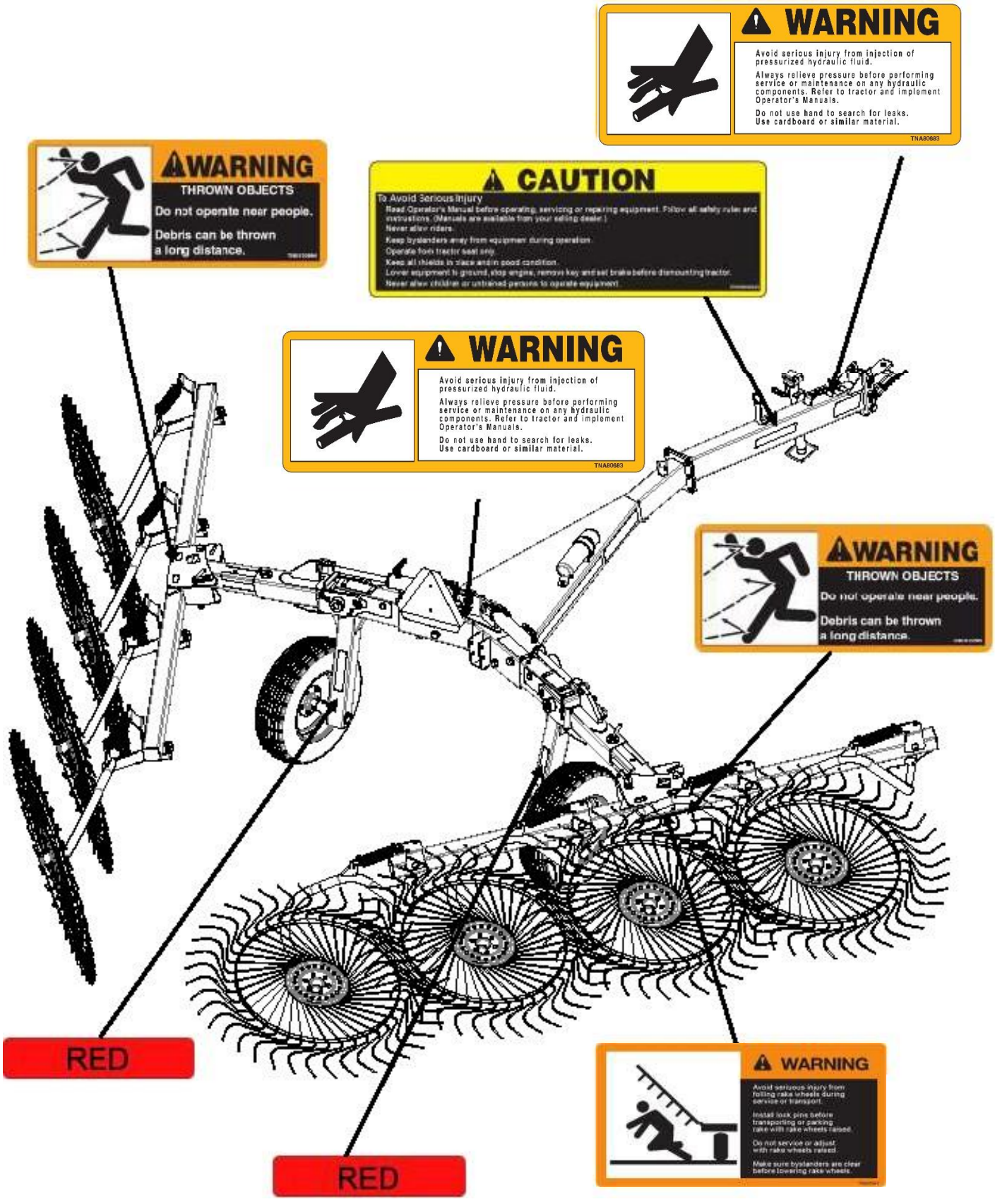
Air conditioning refrigerant escaping into the air can damage the Earth's atmosphere. Government regulations may require a certified air conditioning service center to recover and recycle used air conditioning refrigerants.

Inquire on the proper way to recycle or dispose of waste from your local environmental or recycling center, or from your Tufline dealer.

WARNING: No bystanders riding on frame.

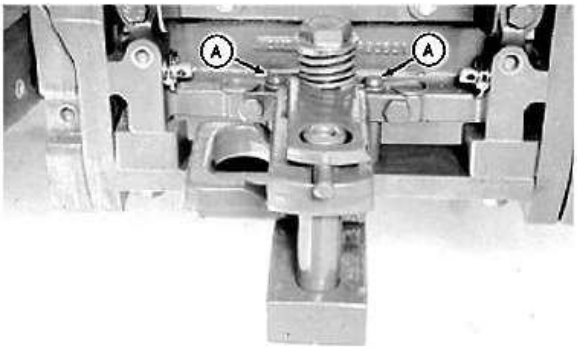
2.18 - SAFETY SIGNS




WARNING
Avoid serious injury from injection of pressurized hydraulic fluid.
Always relieve pressure before performing service or maintenance on any hydraulic components. Refer to tractor and implement Operator's Manuals.
Do not use hand to search for leaks. Use cardboard or similar material.
TNA80683
WARNING
THROWN OBJECTS
Do not operate near people.
Debris can be thrown a long distance.
CAUTION
To Avoid Serious Injury
Read Operator's Manual before operating, servicing or repairing equipment. Follow all safety rules and instructions. (Manuals are available from your selling dealer.)
Never allow riders.
Keep bystanders away from equipment during operation.
Operate from tractor seat only.
Keep all shields in place and in good condition.
Lower equipment to ground, stop engine, remove key and set brake before dismounting tractor.
Never allow children or untrained persons to operate equipment.
WARNING
Avoid serious injury from injection of pressurized hydraulic fluid.
Always relieve pressure before performing service or maintenance on any hydraulic components. Refer to tractor and implement Operator's Manuals.
Do not use hand to search for leaks. Use cardboard or similar material.
TNA80683
WARNING
THROWN OBJECTS
Do not operate near people.
Debris can be thrown a long distance.
RED
RED
WARNING
Avoid serious injury from falling rake wheels during service or transport.
Install lock pins before transporting or parking rake with rake wheels raised.
Do not service or adjust with rake wheels raised.
Make sure bystanders are clear before lowering rake wheels.

3 - PREPARING THE TRACTOR

3.1 - POSITIONING TRACTOR DRAWBAR



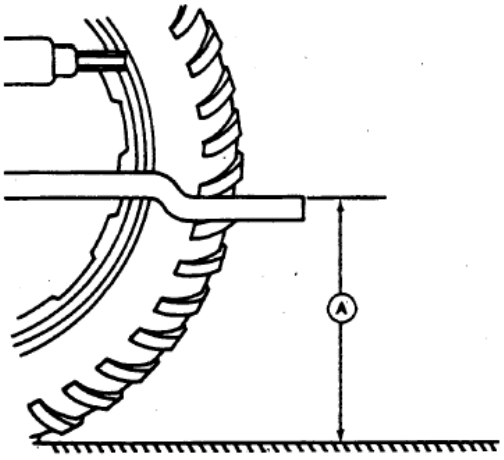
1. Remove locking pins (A) and move drawbar to center position.

2. Install locking pins (A).

3. Extend drawbar away from tractor as far as possible for better maneuverability when attaching, detaching, and operating in the field.

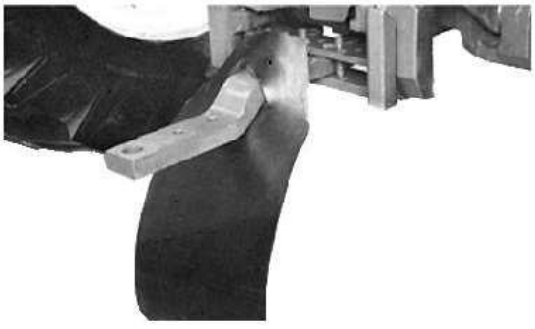
4. Remove clevis assembly, if equipped.

5. If drawbar is offset, turn drawbar so offset is down, as illustrated.



The rake can be attached to any tractor having a drawbar that conforms to ASAE-SAE standards of 330 to 559 mm (13 to 22 in.) (A) from the ground.

3.2 - USING DRAWBAR SHIELD

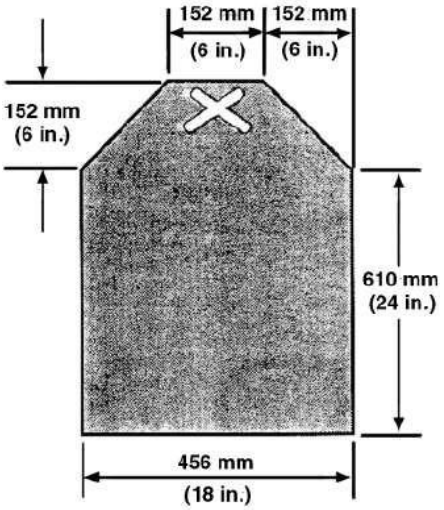


If a tractor drawbar catches and disturbs the windrow under the tractor, a drawbar shield can be used.

See Making Drawbar Shield in this section.

3.3 - MAKING DRAWBAR SHIELD

Use 2 or 4 ply belting.



3.4 - THREE-POINT HITCH POSITION

IMPORTANT: To prevent damage to rake hitch when making turns, make sure draft links clear rake tongue.

Position tractor draft links to avoid interference with rake tongue when making turns.

3.5 - CHECKING BALLAST, WHEEL SPACING, AND TIRE INFLATION

Provide sufficient weight to stabilize tractor when operating on hilly land or other adverse conditions. (See your tractor operator's manual.)

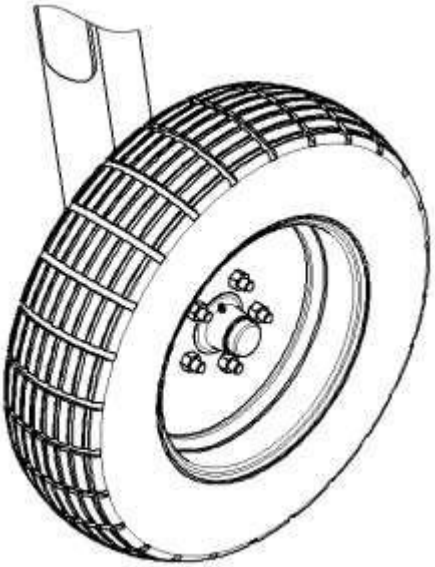
To insure proper stability, adjust ballast, wheel spacing and tire inflation according to tractor operator's manual.

4 - PREPARING THE RAKE

4.1 - CHECKING TIRE INFLATION PRESSURE

To maintain machine efficiency, use only the tires specified.

TIRE SIZE	TIRE PRESSURE
205/75-15	350 kPa (50 psi) (3.5 Bar)



4.2 - CHECKING WHEEL NUT TORQUE

Whenever a wheel has been removed and installed, check torque after one hour of operation and at 50 hour intervals. Wheel nut should be tightened to 115 N•m (85 lb-ft).

5 - ATTACHING AND DETACHING

5.1 - ATTACHING RAKE TO TRACTOR DRAWBAR

1. Position tractor drawbar. (See Positioning Tractor Drawbar in Preparing the Tractor section.)

2. Remove hitch pin.

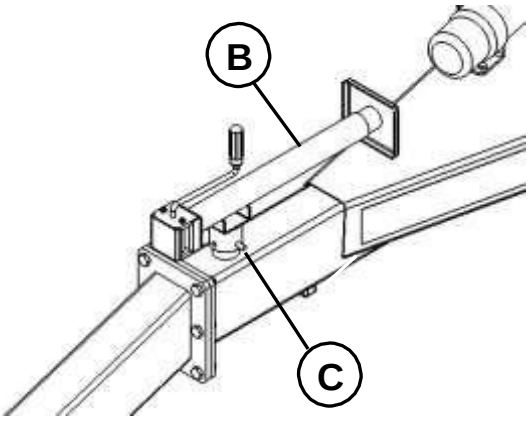
3. Back up tractor to rake. Align hitch pin holes in tractor drawbar and rake tongue.

4. Engage tractor parking brake and/or place transmission in “Park.”

5. Shut off tractor engine and remove key.

6.Install hitch pin (A). Fasten with quick-lock pin.

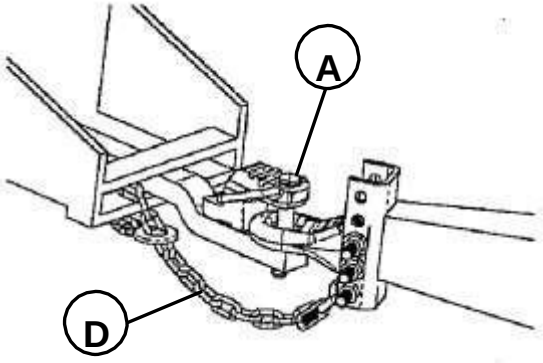
7. Raise jack stand (B) and fasten with pin (C).



A—Hitch Pin
B—Jackstand
C—Pin D—
Chain

CAUTION: A safety chain will help control drawn equipment should it accidentally separate from the drawbar. A runaway machine could cause severe injury or death to someone.
Provide only enough slack in chain to permit turning. Do not use safety chain for towing.

8. Connect chain (D) to rake tongue. Route chain through loop on drawbar and connect to tractor drawbar support. Do not fasten to drawbar. Remove all slack except what is needed for turns.

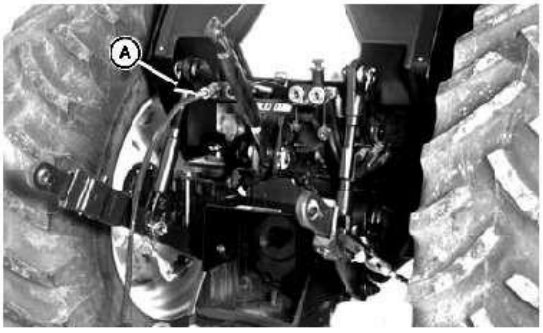


5.2 - ATTACHING TO TRACTOR HYDRAULIC SYSTEM

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

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

1. Push tractor SCV lever to the float position.
2. Connect hydraulic hoses (A) to tractor receptacle.
3. Put tractor SCV lever in the neutral position.



A—Hydraulic Hoses

5.3 - DETACHING RAKE FROM TRACTOR

CAUTION: To prevent personal injury caused by unexpected movement:

- **Park machines on a level surface.**
- **Engage tractor parking brake and/or place transmission in "Park."**
- **Shut off tractor engine and remove key.**

1. Park rake on level surface, or block ground wheels so machine cannot roll after detaching from tractor.

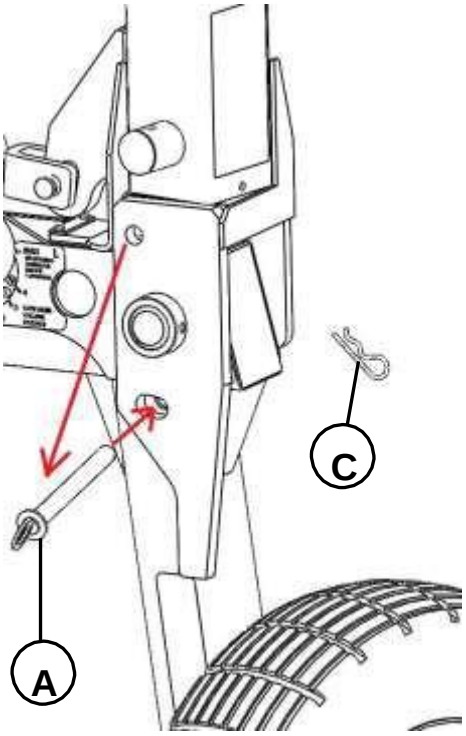
2. Lower rake wheels, or raise rake wheels .

- If rake wheels are raised, install transport pins (A) through arm support brackets and fasten with spring-locking pins.

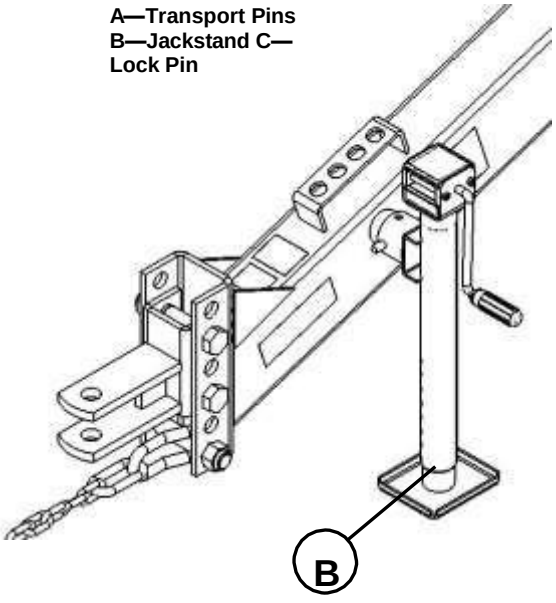
3. Engage tractor parking brake and/or place transmission in "Park."

4. Shut off tractor engine and remove key.

5. Push tractor SCV lever to the float position.



A—Transport Pins
B—Jackstand C—Lock Pin



6. Lower jackstand (B) and fasten with pin.

7. Adjust rake hitch to support weight of rake on jackstand.

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

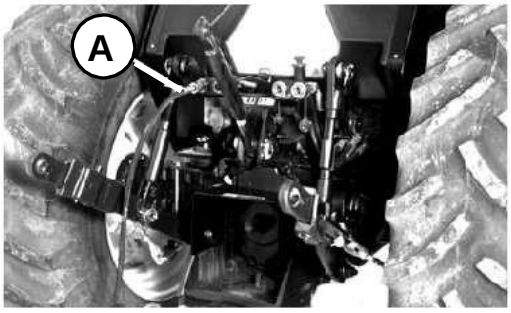
If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source.

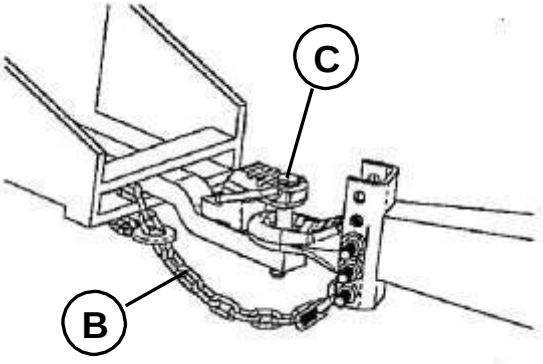
8. Disconnect hydraulic hoses (A) from tractor receptacles.

9. Unhook safety chain (B).

10. Remove hitch pin (C).

11. Put tractor SCV lever in the neutral position..





A—Hydraulic Hose
B—Safety Chain
C—Hitch Pin

6 - TRANSPORTING

6.1 - PREPARING RAKE FOR TRANSPORT

1. Park rake on level surface.

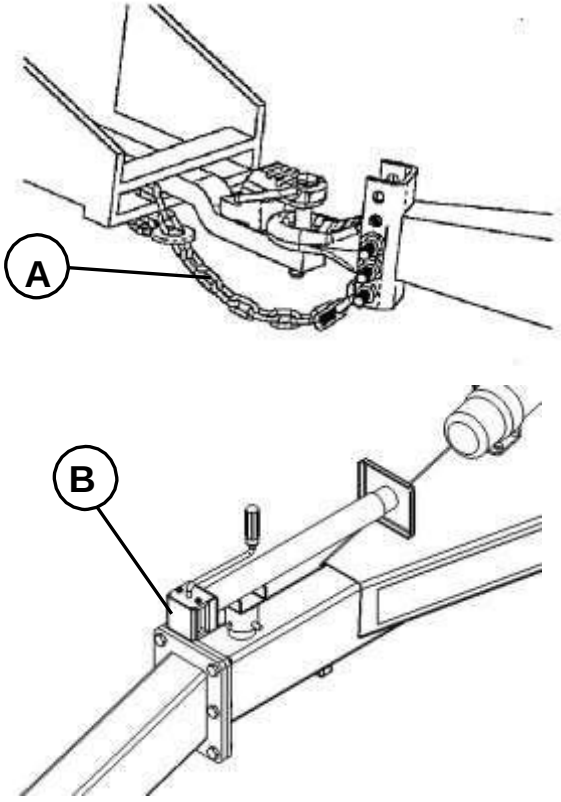
2. Engage tractor parking brake and/or place transmission in “Park.”

3. Shut off tractor engine and remove key.

CAUTION: A safety chain will help control drawn equipment should it accidentally separate from the drawbar. A runaway machine could cause severe injury or death to someone.
Provide only enough slack in chain to permit turning. Do not use safety chain for towing.

4. Make sure safety chain (A) is attached. Provide only enough slack in chain to permit turning.

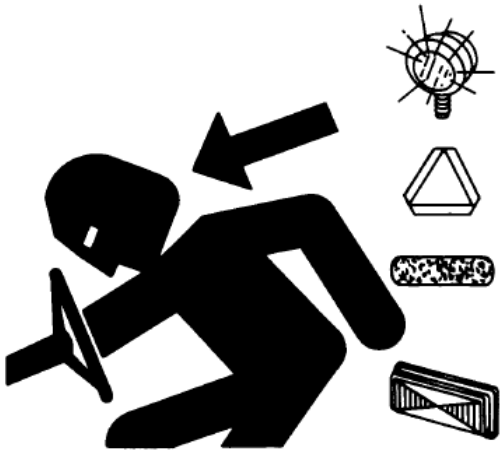
5. Put jackstand (B) in storage position.



A—Safety Chain B—Jackstand

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

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



6. Be sure SMV emblem and reflectors are clean and visible.

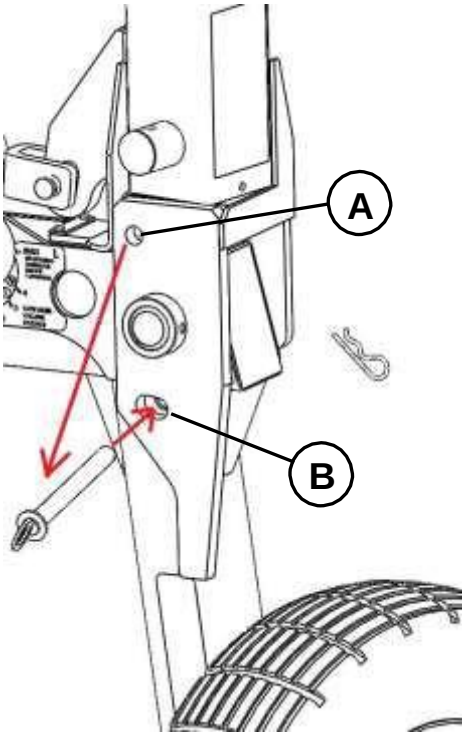
7. Clean out any crop and chaff trapped between rake tines and frame.

8. Remove right-hand and left-hand transport lock pins from (A) position.

9. Raise rake wheels to their maximum height.

CAUTION: To avoid bodily injury or death, install transport lock pins to prevent rake arms from dropping during transport and colliding with vehicles or other fixed objects.

10. Install transport lock pins to (B) position through arm support brackets. Fasten with spring-locking pins.



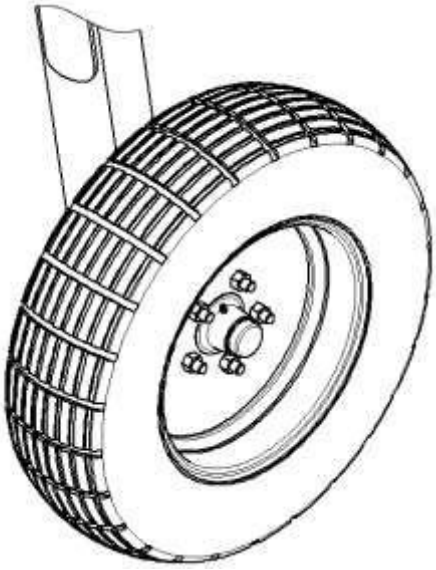
A—Work Lock Pin position B—Transport Lock Pin position

7 - OPERATING THE RAKE

7.1 - PRESTARTING CHECKS

CAUTION: To prevent personal injury caused by unexpected movement or falling rake wheels:

- **Park machine on a level surface.**
- **Lower rake wheels.**
- **Engage tractor parking brake and/or place transmission in "Park."**
- **Shut off tractor engine and remove key.**



Inspect and service machine before starting work each day.

- Check for any loose tines, bolts or missing hardware.
- Check tire inflation pressure. Correct tire pressure is 350 kPa (50 psi) (3.5 Bar).
- Check wheel nut torque. Wheel nuts should be tightened to 115 N•m (85 lb-ft).

7.2 - PREPARING RAKE FOR FIELD OPERATION

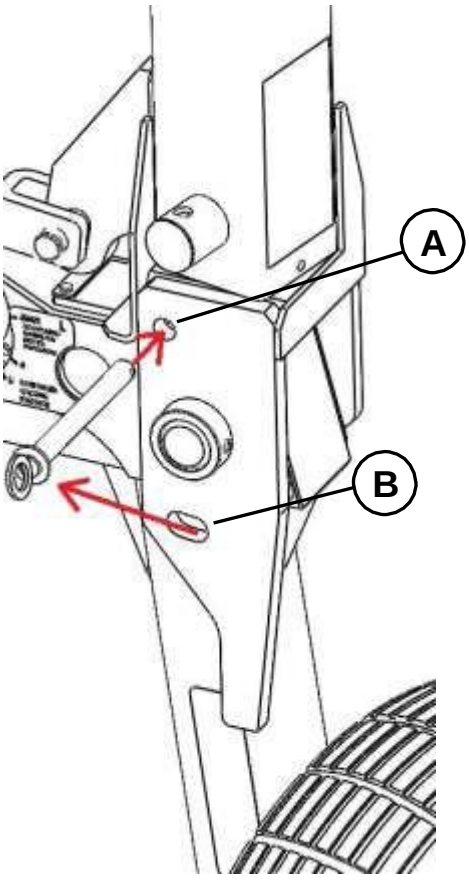
CAUTION: To prevent personal injury caused by unexpected movement:

- **Park machine on a level surface.**
- **Engage tractor parking brake and/or place transmission in "Park."**
- **Shut off tractor engine and remove key.**

1. Park machine on level surface.

2. Remove spring-locking pins and transport lock pins from (B) position.

3. Put transport lock pin to (A) work position and fasten with spring-locking pin. Repeat on opposite side.



A—Work Lock Pin position B—Transport Lock Pin position

7.3 - CAUTIONS

CAUTION: To avoid bodily injury, make sure bystanders are clear of machine before lowering rake wheels.

IMPORTANT: To avoid machine damage, make sure area is free from obstructions when opening rake.

4. Put tractor SCV lever in the neutral position..

5. Lower rake wheels.

CAUTION: To avoid bodily injury:

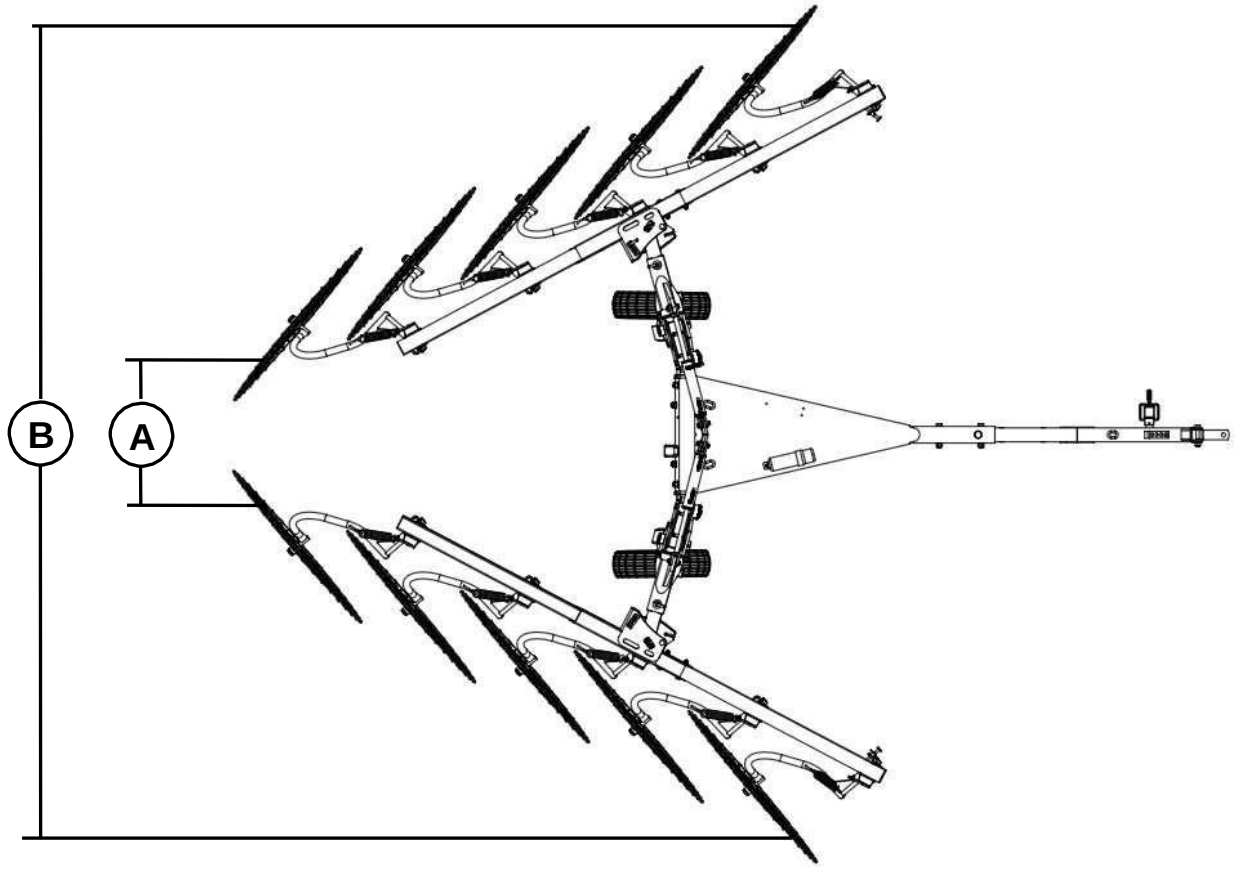
- **Keep bystanders away from machine while it is operating as foreign objects may be thrown by machine.**
- **Allow only the operator on tractor platform when operating the tractor and rake.**
- **Slow down when turning or traveling over rough terrain.**
- **Engage tractor parking brake and/or place transmission in "Park," shut off tractor engine and remove key before servicing or making adjustments to rake.**

Regulate ground speed according to crop condition, terrain, and tractor horsepower. In general, raking speeds at 8—11 km/h (5—7 mph) will produce good results. A slower ground speed may be necessary for hills or rough terrain.

For sickle mowed crop, rake in the same direction as mower travel.

For rotary mowed crop, rake in opposite direction as mower travel.

7.4 - SETTING WORKING WIDTH



NOTE: Windrow widths (A) and (B) are approximate.

The working width and windrow width will vary due to the type and quantity of crop being raked.

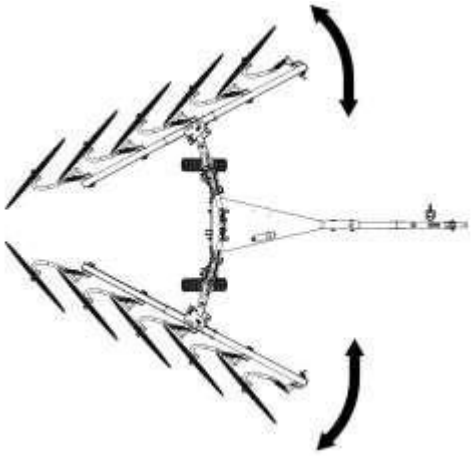
The distance between rings on rear raking wheels can be used to determine basic windrow width. Actual width will depend on crop type, volume, and raking speed. When adjusting with turnbuckle, working width will change.

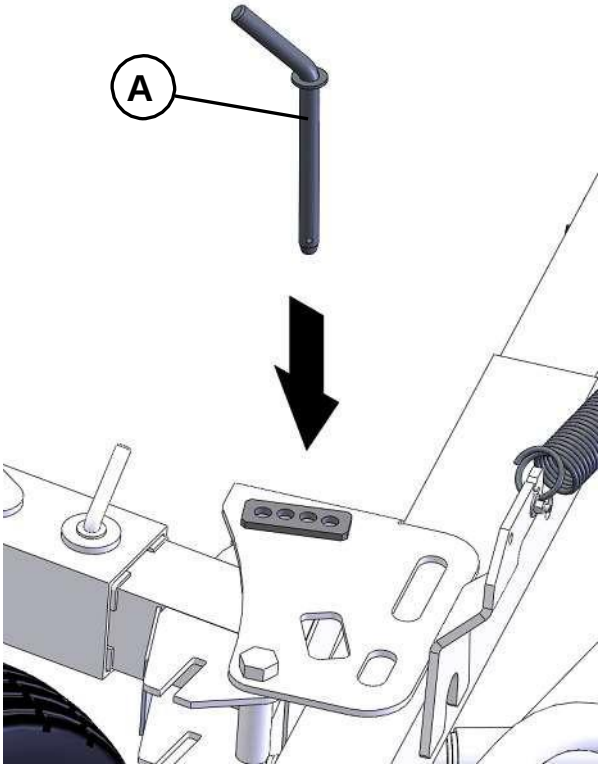
Windrow Width 8-10 12 Wheel Rake (A)	Working Width 8 Wheel Rake (B)	Working Width 10 Wheel Rake (B)	Working Width 12 Wheel Rake (B)
0,8 to 2,1 m (2 ft 7 in. to 6 ft 11 in.)	5,1 to 5,8m (16 ft 9 in. to 19 ft 0 in.)	5.4 to 6,3 m (17 ft 9 in. to 20 ft 8 in.)	6,0 to 7,4 m (19 ft 8 in. to 24 ft 3 in.)

7.5 - ADJUSTING RAKING AND WINDROW WIDTH

The raking width is determined by the windrow width setting and the angle of raking wheels.

To change rake wheel angle, remove spring-locking pin and lock pin (A) .There are four positions to increase or decrease angle.





Changing raking width will also change the windrow width. Adjust windrow width as desired.

The rake can be set for windrow widths of 0.40 to 2.53 m (1 ft 4 in. to 8 ft 4 in.).

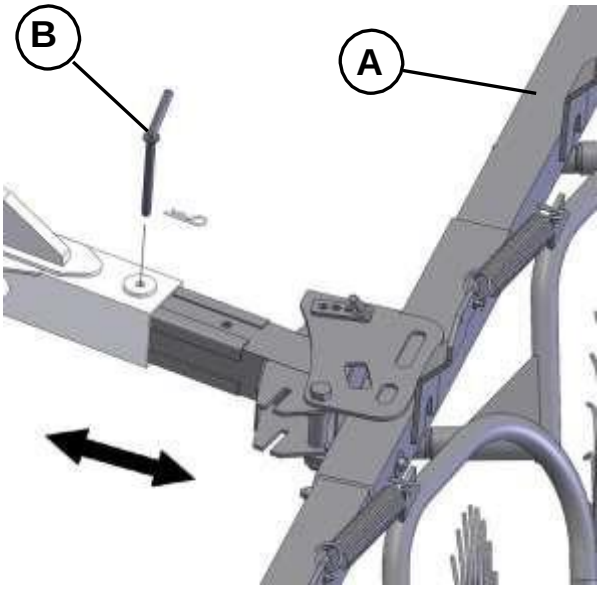
A windrow of proper width will result in more uniform bales. The overall windrow width should be the same size or slightly wider than the baler bale chamber.

To adjust windrow width:

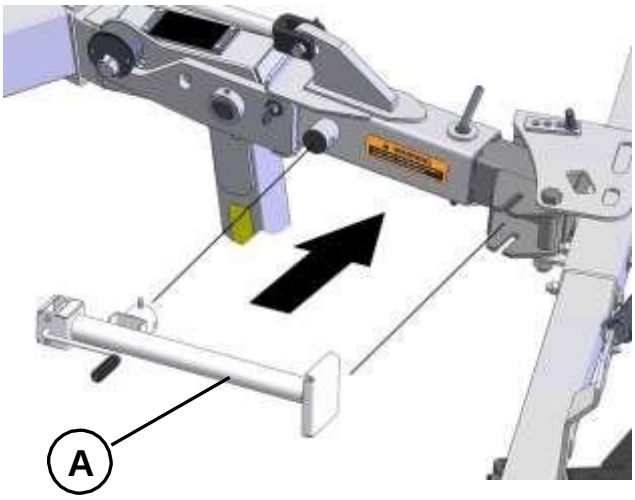
1. Take off lock-pin (B)

2. Slide pivot frame (A) to desired width. There are two positions on the arm.

3. Insert the lock-pin (B). Repeat on opposite side.



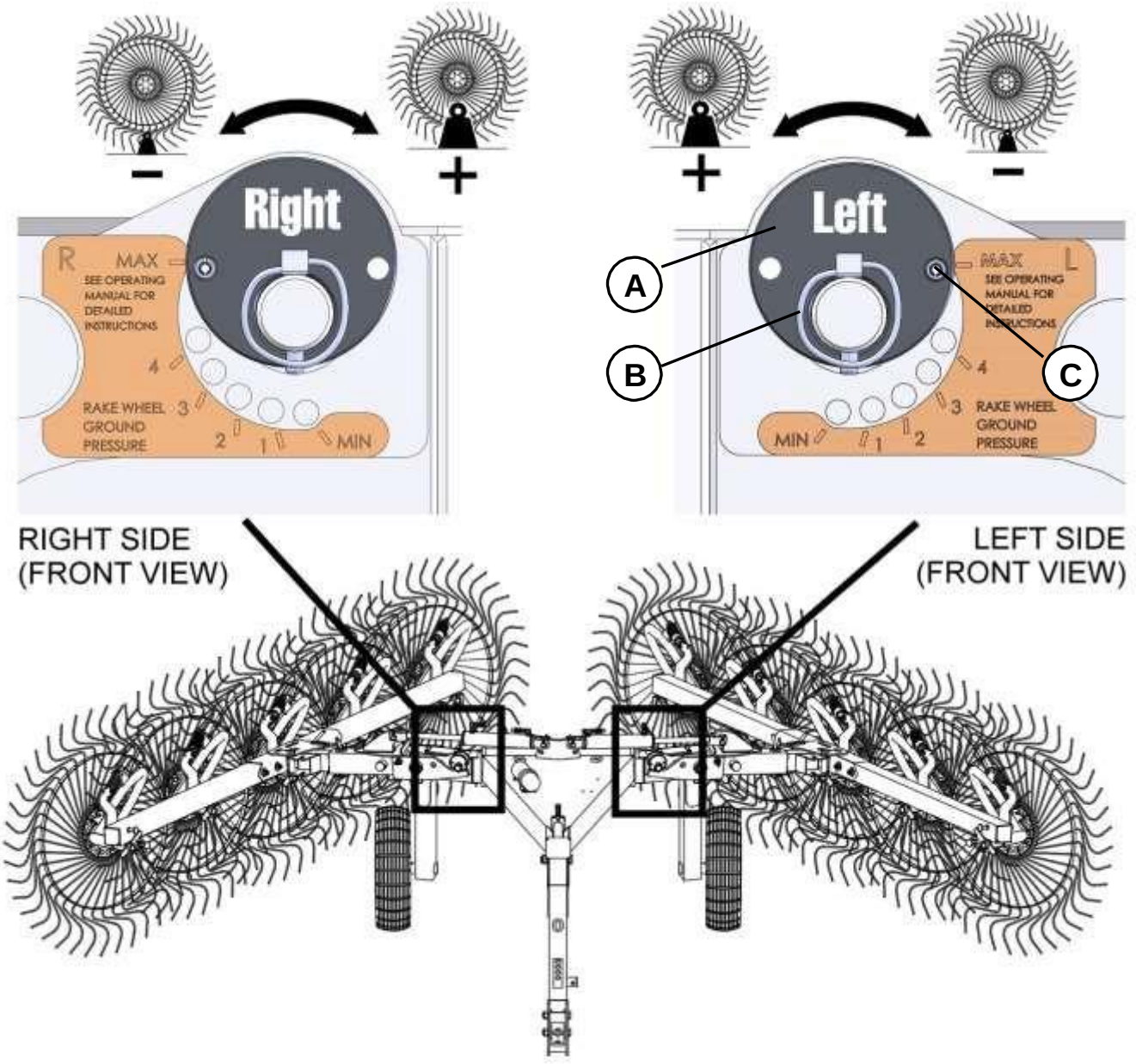
To easily operate the adjustment, you can use the jack stand that comes standard with the machine.
Position the jack stand (A) as shown in the picture.



Move the handle (B) of the jack stand to slide the frame inside or outside to desired position.

7.6 - ADJUSTING RAKING WHEEL GROUND PRESSURE

The correct ground pressure on raking wheels may vary depending on field conditions and the type and quantity of crop being raised.
Ground pressure is controlled by the position of each cam on each rake wheel support assembly. The cam can be adjusted at six positions from minimum ground pressure to maximum ground pressure.



A—Cam B—
Locking ring pin
C—Roll pins
(picture shown the maximum pressure adjustment position)

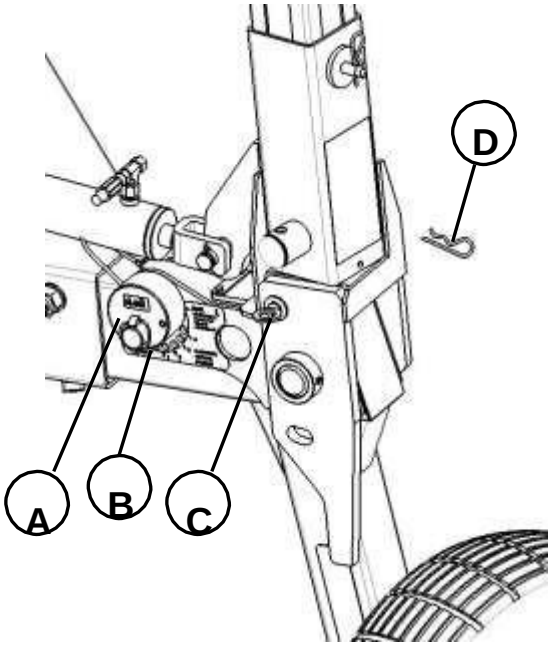
To adjust ground wheel pressure:

1. Park rake on level surface.

2. Engage tractor parking brake and/or place transmission in “Park.”

3. Close the machine to transport position and install transport lock pins (C) through arm support brackets. Fasten with spring-locking pins (D).

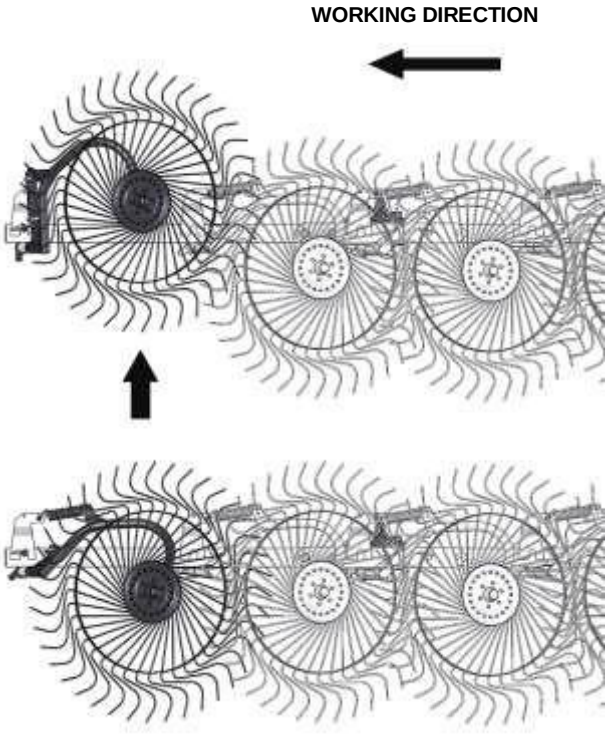
4. (**See pag. 32**) Remove Locking ring pin (B), slide out the Cam (A), rotate to desired hole position, slide in and fix with Locking ring pin (B)



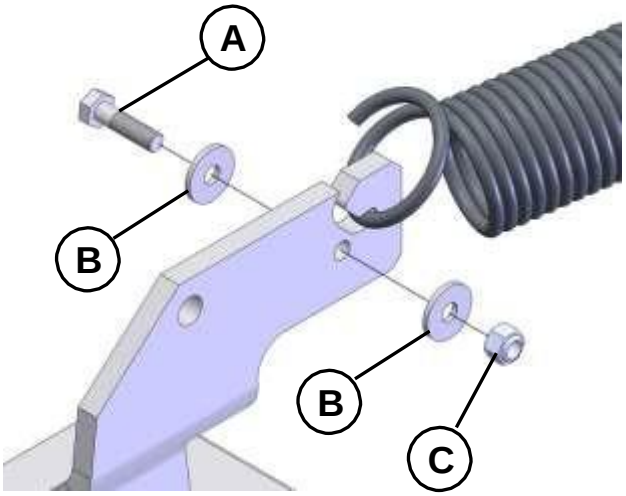
7.7 - FLIP-UP RAKING (ONLY FOR TVR 10 & TVR 12)

In the presence of large volumes of product, there is the possibility to exclude the action of the first finger wheel due to reduce the working capacity.

To determine this configuration, only for models TVR 10 and TVR 12, you can raise up the first finger wheel (FLIP-UP) and lock it in the raised position:

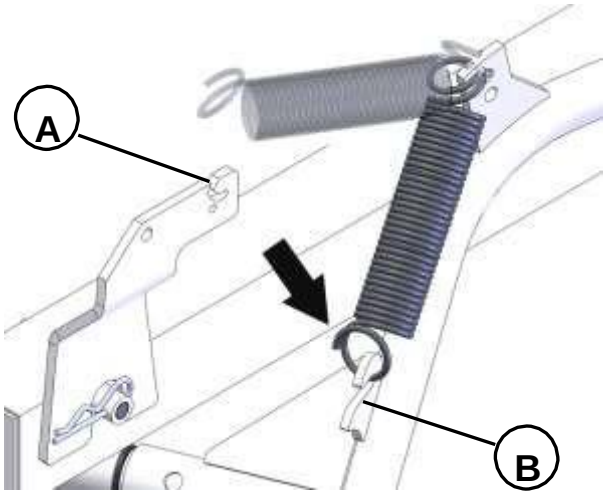


1. Remove Nut (C), Washers (B) and Screw TE (A).

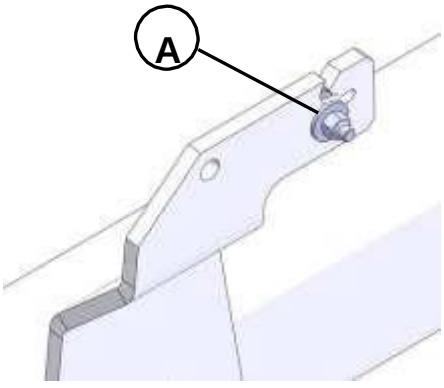


A—Screw TE M8x30
B—Washer M8 C—
Nut M8

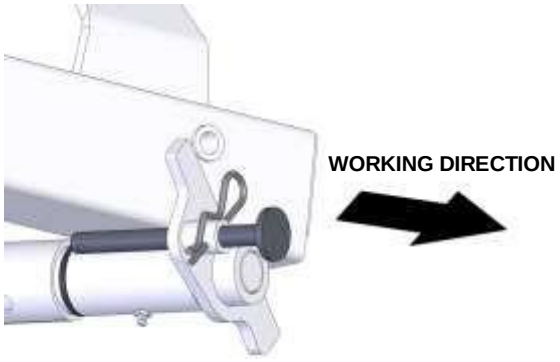
2. Move spring from position (A) into hook welded on the arm (B).

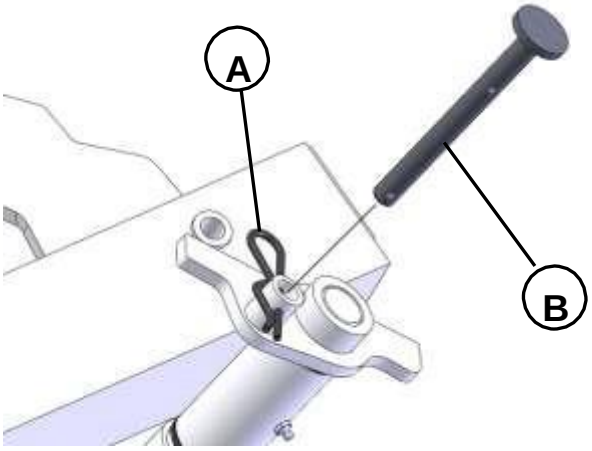


3. Remount screw, washers and nut in the same position (A).



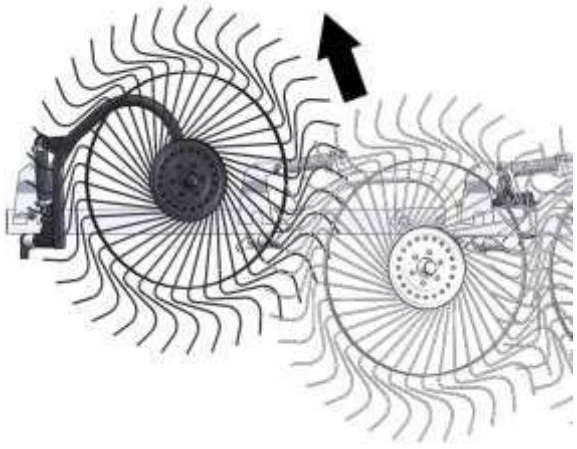
4. Remove spring lock pin (A) and lock pin (B).



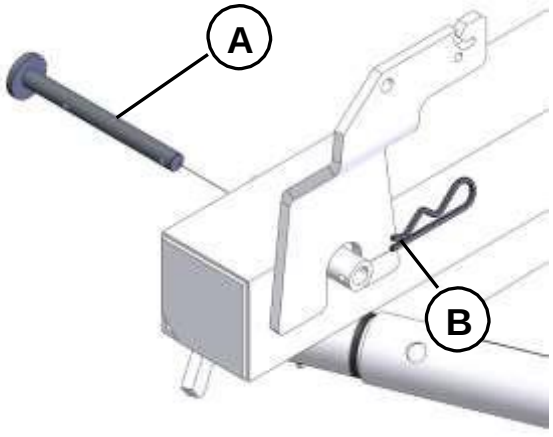


A—Spring Lock Pin B—Lock Pin

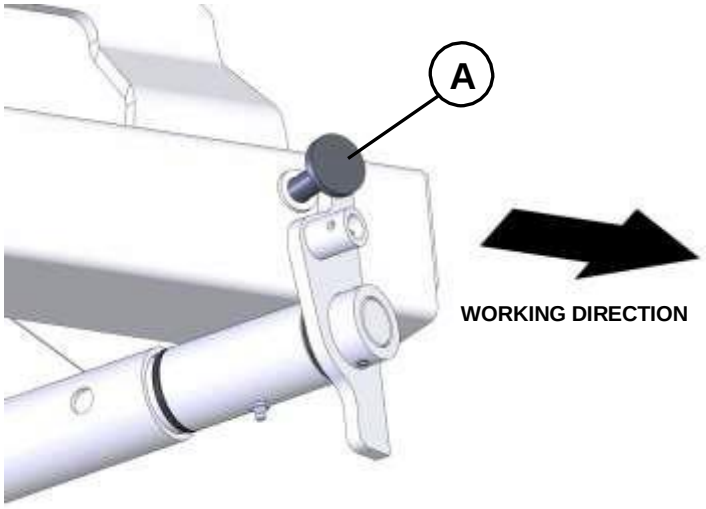
5. Lift up front rake to maximum position.



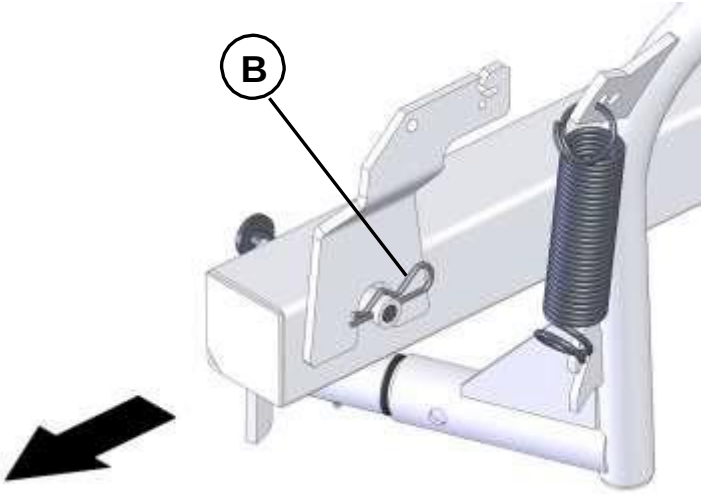
6. Insert the lock pin (A) and spring lock pin (B).



A—Lock Pin B—Spring Lock Pin



A—Lock Pin B—Spring Lock Pin



View from opposite side

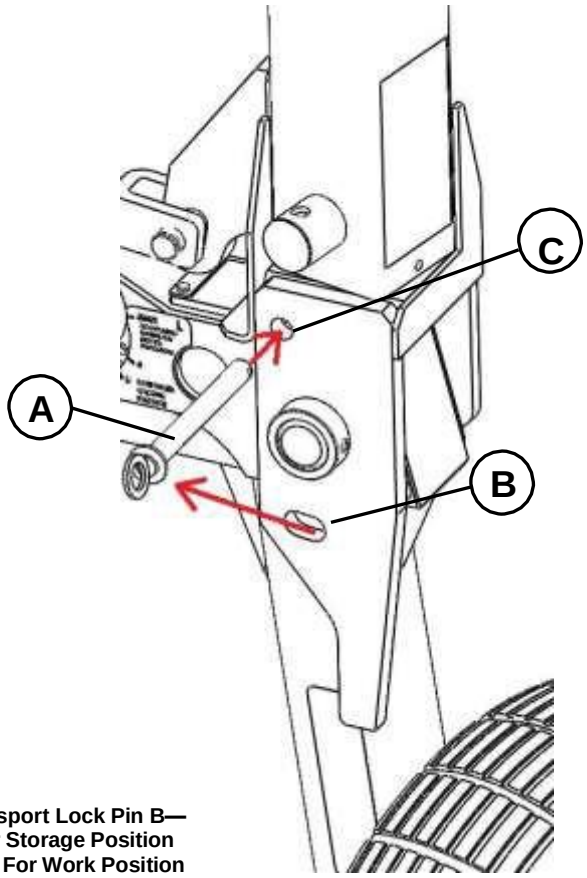
7.8 - RAKING A SINGLE WINDROW OR SWATH

1. Raise raking wheels to maximum height.

2. Install left-hand and right-hand transport lock pins (A). Fasten with spring-locking pins.

3. If left-hand raking is desired, remove transport pin (A) from left-hand support. Install pin (A) through hole (B) for storage.

If right-hand raking is desired, follow same procedure.

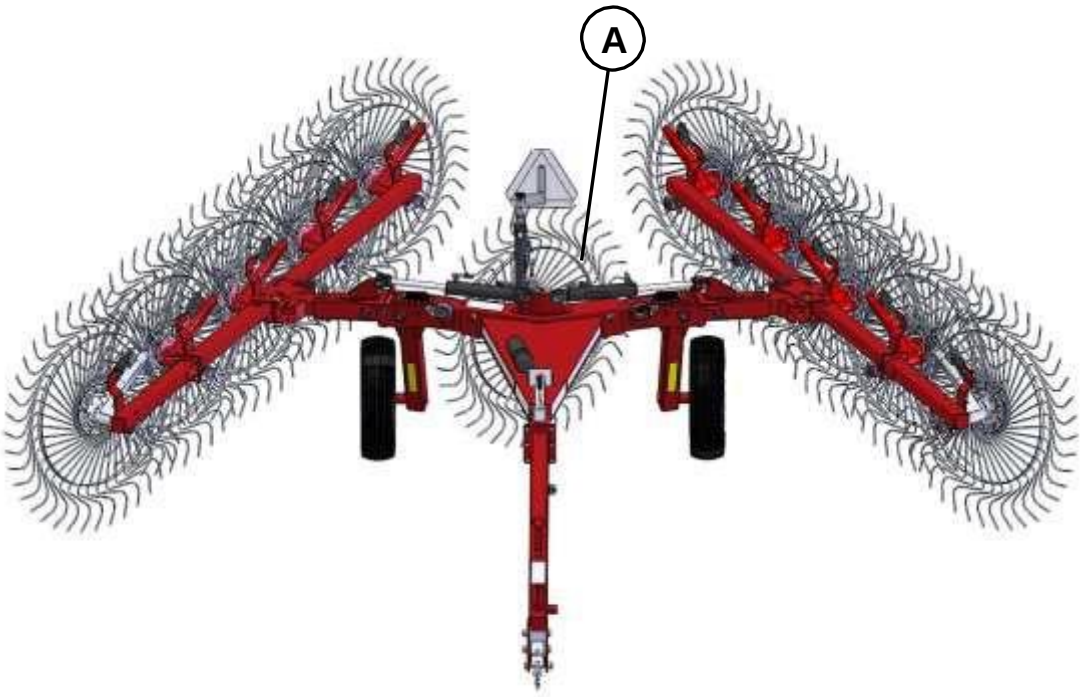


A—Transport Lock Pin B—Hole For Storage Position
C—Hole For Work Position

4. Lower raking wheel assembly.

8 - ATTACHMENTS

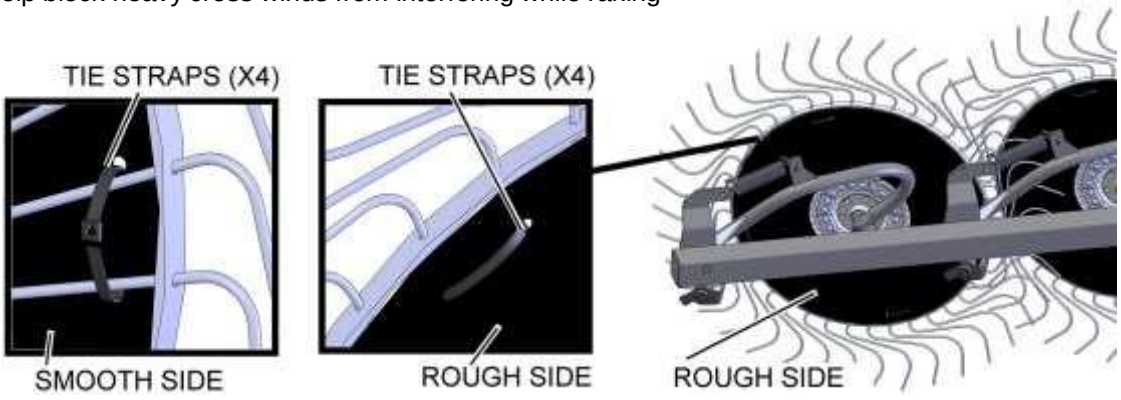
8.1 - CENTER KICKER WHEEL



Center wheel (A) is used to fluff center part of windrow. Can be used when raking three windrow together or after mower and tedder applications.

8.2 WIND SHIELD KIT

Wind shield made of ABS plastic should be used:
- to provide smoother movement of the crop
- to help keep fine or short crops in the windrow
- to help prevent crops from sticking to the wheels
- to help block heavy cross winds from interfering while raking



9 - LUBRICATION AND MAINTENANCE

9.1 - PERFORM LUBRICATION AND MAINTENANCE

CAUTION: Do not clean, lubricate or adjust machine while it is running.

- **Park machine on level surface.**
- **Engage tractor parking brake and/or place transmission in "Park."**
- **Shut off tractor engine and remove key.**

IMPORTANT: The recommended intervals are based on normal conditions. Severe or unusual conditions may require shorter intervals.

Perform each lubrication and maintenance illustrated in this section at the beginning of the season and at the end of the season.

Clean lubrication fittings before lubricating. Replace lost or broken fittings immediately. If a new fitting fails to take grease, remove and check for failure of adjoining parts.

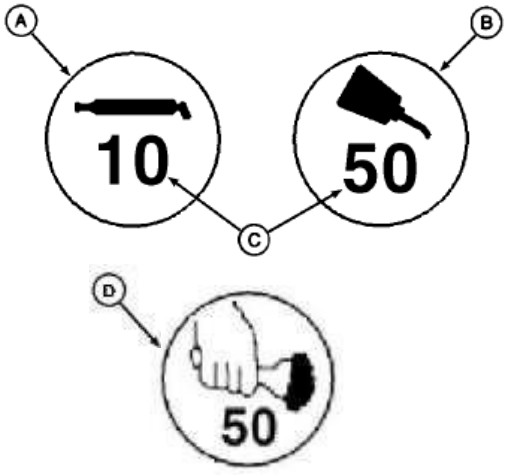
9.2 - OBSERVE LUBRICATION SYMBOLS

Follow hourly (C) intervals on grease symbols (A) and oil symbols (B).

GREASE SYMBOL (A) Lubricate with High Temp EP grease or equivalent SAE multipurpose grease (unless otherwise specified) at hourly intervals indicated on the symbols.

OIL SYMBOL (B) Lubricate with SAE 30 or heavier oil at hourly intervals indicated on the symbols.

GREASE SYMBOL (D) Grease Lubricate with brush



Lubrication Symbols

A—Grease Symbols
B—Oil Symbols C—Hourly Intervals

9.3 - ALTERNATIVE AND SYNTHETIC LUBRICANTS

Conditions in certain geographical areas may require lubricant recommendations different from those printed in this manual.

Some coolants and lubricants may not be available in your location.

Consult your Tufline dealer to obtain information and recommendations.

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

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

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

9.4 - GREASE

Use grease based on NLGI consistency numbers and the expected air temperature range during the service interval.

The following greases are preferred:

- John Deere HD POLYUREA GREASE

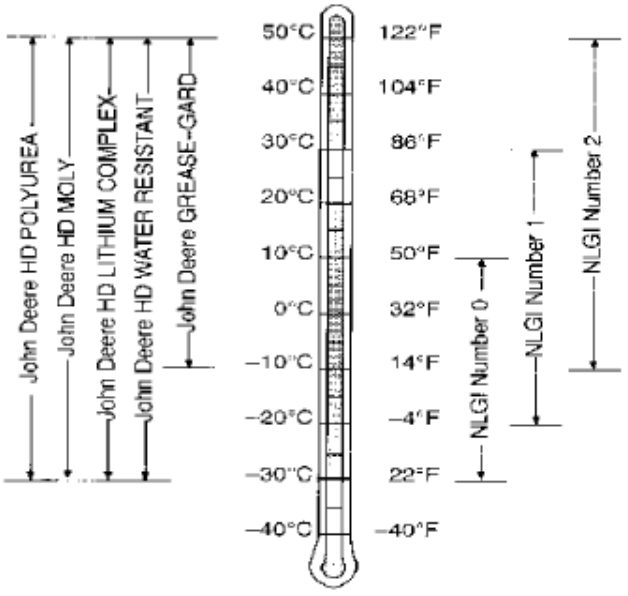
The following greases are also recommended:

- John Deere HD MOLY GREASE
- John Deere HD LITHIUM COMPLEX GREASE
- John Deere HD WATER RESISTANT GREASE
- John Deere GREASE-GARD

Other greases may be used if they meet the following:

- NLGI Performance Classification GC-LB

IMPORTANT: Some types of grease thickener are not compatible with other.



9.5 - LUBRICANT STORAGE

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

Use clean containers to handle all lubricants.

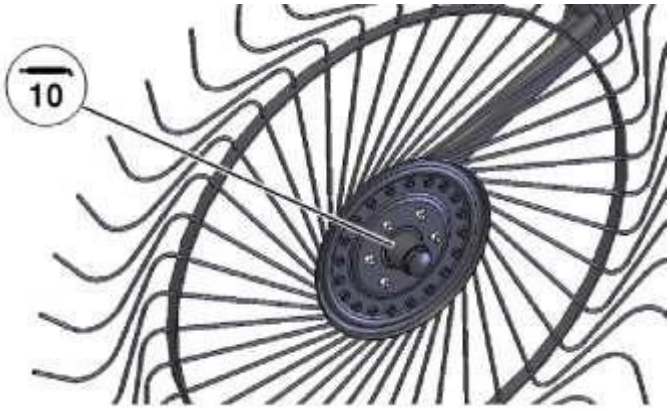
Whenever possible, store lubricants and containers in an area protected from dust, moisture, and other contamination. Store containers on their side to avoid water and dirt accumulation.

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

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

9.6 - EVERY 10 HOURS

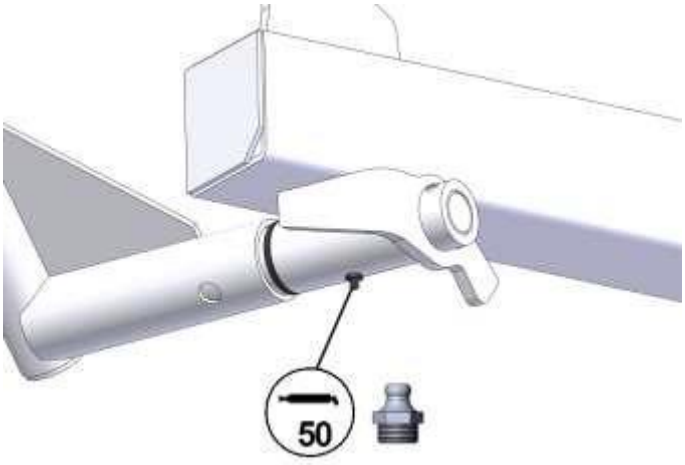
- Rake Wheels



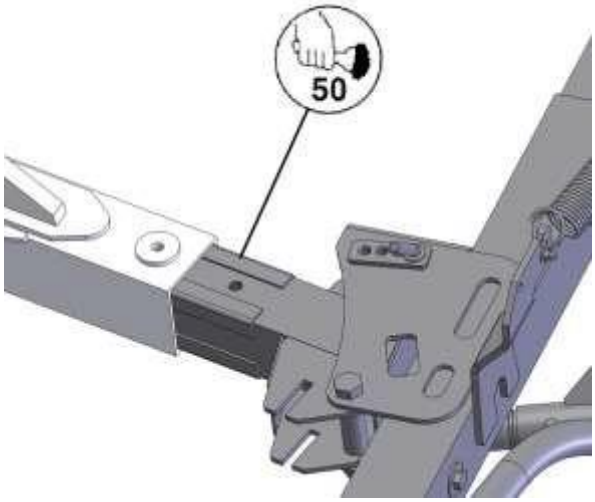
9.7 - EVERY 50 HOURS

- Left-Hand and Right-Hand Finger wheel arms

Grease lightly.

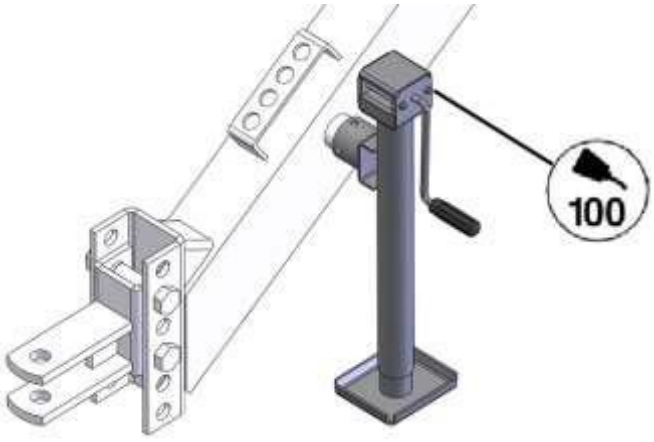


- Left-Hand and Right-Hand Pivots
  Grease lightly



9.8 - EVERY 100 HOURS

- Jackstand
Oil Threads.



9.9 - ANNUALLY

Repack Wheel Bearings:

1. Raise one side of machine and install support stands.

2. Remove wheel.

3. Remove hub cap, cotter pin, and wheel nut.

4. Remove washer, bearing, and wheel hub.

5. Remove rear seal and bearing.

6. Clean all parts in solvent and blow dry with compressed air. Replace any worn or damaged parts.

7. Pack bearings with EP Moly or an equivalent SAE multipurpose type grease, or wheel bearing grease. Coat rear seal with same grease.

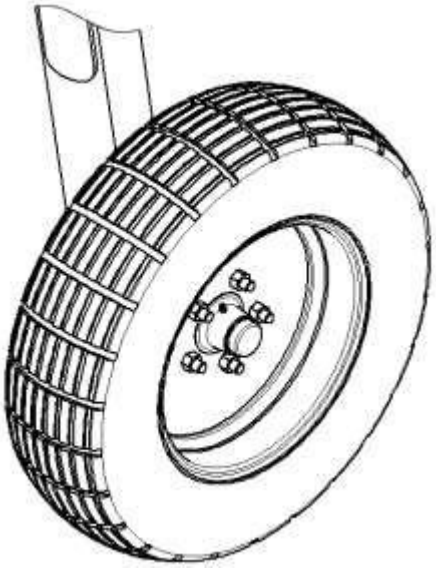
8. Install rear bearing and seal.

9. Install wheel hub, front bearing, washer and nut.
Tighten nut until a slight drag is felt when hub is turned. Back nut off just enough to install cotter pin in hole in spindle.

10. Install hub cap and wheel. Tighten wheel hardware to **115 Nm (85 lb-ft)**.

11. Repeat procedure on other wheel.

12. Check wheel hardware torque after one hour of operation and at 50 hour intervals.



9.10 - AS REQUIRED

Periodically inspect rake and make necessary repairs.

- Check frame for fatigue or cracking. Replace or repair worn or damaged parts.

- Check decals; replace if missing or damaged.

- Check bolts and fasteners; tighten or replace as necessary.

- Check tire pressure. Inflate to **350 kPa (50 psi) (3.5 bar)**.

- Check tires and rims for damage.

- Check condition of raking wheels for loose hardware, loose bearings, and broken or bent tines.

- Check hydraulic cylinders and hoses for leaks or damage.

10 - TROUBLESHOOTING

10.1 - HYDRAULIC PROBLEMS

Symptom	Problem	Solution
Hydraulic system inoperative.	Remote outlet valve not activated.	Open remote hydraulic outlet valve.
	Hose from implement not properly connected to tractor.	Connect hose.
	Hydraulic oil level too low in tractor.	Check tractor operator's manual for proper level.

10.2 - RAKING PROBLEMS

Symptom	Problem	Solution
Field not cleaned well.	Rake wheels too high.	Adjust rake wheels lower to ground.
Hay is bunching.	Tips of tines collecting dirt.	Remove paint and dirt from tips of tines.
	Incorrect ground speed.	Increase or decrease ground speed.
	Steel burrs on tines or hoops.	Remove burrs.
	Ground wheels and wheel supports obstruct flow of hay.	Adjust wheels and wheel supports toward center of rake.
Rake wheel hoops breaking.	Excessive ground speed.	Reduce ground speed.
	Excessive ground pressure.	Reduce ground pressure.
Tines breaking.	Excessive ground speed.	Reduce ground speed
	Excessive ground pressure.	Reduce ground pressure.
Rake wheel does not turn.	Inadequate lubrication.	Lubricate wheel. (See Lubrication and Maintenance section.)
	Failed bearing.	Replace bearing.
Poor windrow preparation.	Rake wheels too high.	Lower rake wheels.
	Broken or missing tines.	Replace tines.
	Excessive ground speed.	Reduce ground speed.
	Slow ground speed.	Increase ground speed.
	Excessive ground pressure.	Reduce ground pressure.
Rake wheels on one side do not turn.	Rake wheels too high.	Lower rake wheels.
	Broken or missing tines.	Replace tines. (See Replacing Wheel Tines in Service section.)

11 - SERVICE

11.1. - SERVICING TIRES SAFELY

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

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

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

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

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

11.2 - SERVICING RAKE SAFELY

CAUTION: Avoid serious injury from falling rake wheels during service. Make sure bystanders are clear before lowering rake wheels.

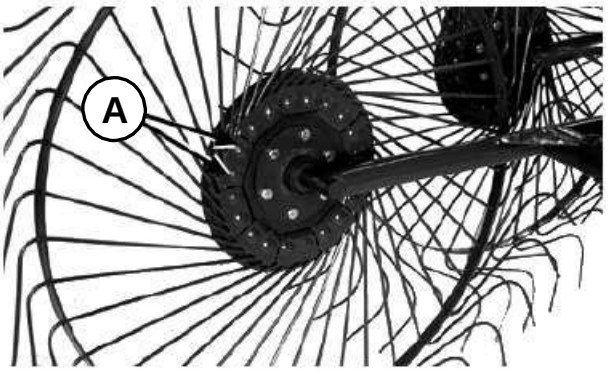
Do not service or adjust machine with rake wheels raised.

11.3 - REPLACING WHEEL TINES

To replace a tine:

1. Remove two round-head bolts (A), nuts, clip and tine.

2. Install new tine. Fasten with clip, round-head bolts (A) and nuts.



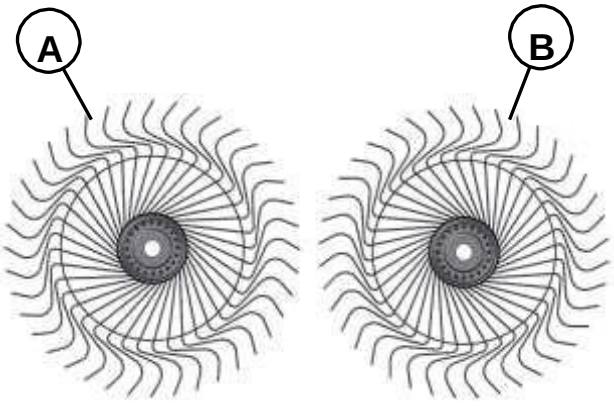
11.4 - IDENTIFYING LEFT-HAND AND RIGHT-HAND RAKE WHEELS

To identify left-hand and right-hand rake wheels:

- Put rake wheels against a wall with tine mounting clip nuts facing outward.

- If the last bend in the tines curve to a clockwise direction, it is a left-hand rake wheel (A).

- If the tines curve in a counterclockwise direction, it is a right-hand rake wheel (B).



A—Left-Hand Rake Wheel B—Right-Hand Rake Wheel

12 - STORAGE

12.1 - BEGINNING OF SEASON

1. Review operator's manual and check adjustments.

2. Lubricate complete machine. (See Lubrication and Maintenance section.)

3. Check air pressure in tires. Correct tire pressure is 350 kPa (50 psi) (3.5 Bar).

4. Check all hardware for tightness.

5. If any major moving parts have been replaced, make sure they run properly.

12.2- END OF SEASON

1. Clean rake thoroughly. Trash and dirt will draw moisture and cause rust.

2. Put rake in a dry place.

3. Thoroughly lubricate machine. (See Lubrication and Maintenance section.)

4. Apply a thin layer of grease on exposed cylinder rods to prevent rusting.

5. Check hydraulic hoses for deterioration and replace if necessary.

6. Tighten any loose bolts, nuts, and hydraulic fittings.

7. Repair or replace worn or broken parts.

8. Paint all parts where necessary.

9. Replace damaged or missing decals.

10. List replacement parts needed and order them early.

13 - V RAKE CHECKLISTS

13.1 - DEALERS RECORD

Owner's Name:	Date Sold:
Address:	Model Number:
City:	Serial Number:
State:	Zip:

13.2- PREDELIVERY

After the rake has been completely set up, make sure it is in good running condition before delivering to the customer. The following checklist is a reminder of important points to inspect. Check off each item after it is found satisfactory or after the correct adjustment is made.

- Rake has been assembled correctly.

- Check hydraulic hose and connection for oil leaks or damage.

- Check machine for loose hardware.

- Machine lubricated. (See Lubrication and Maintenance.)

- Check condition of rake wheels tines.

- Check that all rake wheels pivot freely.

- Check all phases of operation.

- Check that safety chain is installed.

- Tire pressures checked.

- Check wheel bolt torque.

- Decals intact and legible.

- Touch up paint, if necessary.

_____

(Date set up)

_____

(Signature)

13.3 - DELIVERY

The following checklist is a reminder of very important information which should be conveyed to the customer at the time the machine is delivered. Check off each item as it is fully explained to the customer.

- Warranty statement.

- Safe and correct operation and service.

- Advise customer that the life expectancy of the rake, like any other machine, is dependent upon regular lubrication and maintenance as described in the operator's manuals.

- Daily and periodic inspections.

- Servicing machine regularly and correctly.

- Advise to use safety chain.

- Make customer aware of optional equipment offered for this machine.

- Transporting machine correctly

- Storing machine correctly.

- AgLine parts and service.

- Give operator's manual to customer and explain all operating adjustments and lubrication and maintenance intervals. Encourage customer to read manual.

- Have customer record machine serial number in the Specifications section.

- Remove and file this page.

_____

(Date Delivered)

_____

(Signature)

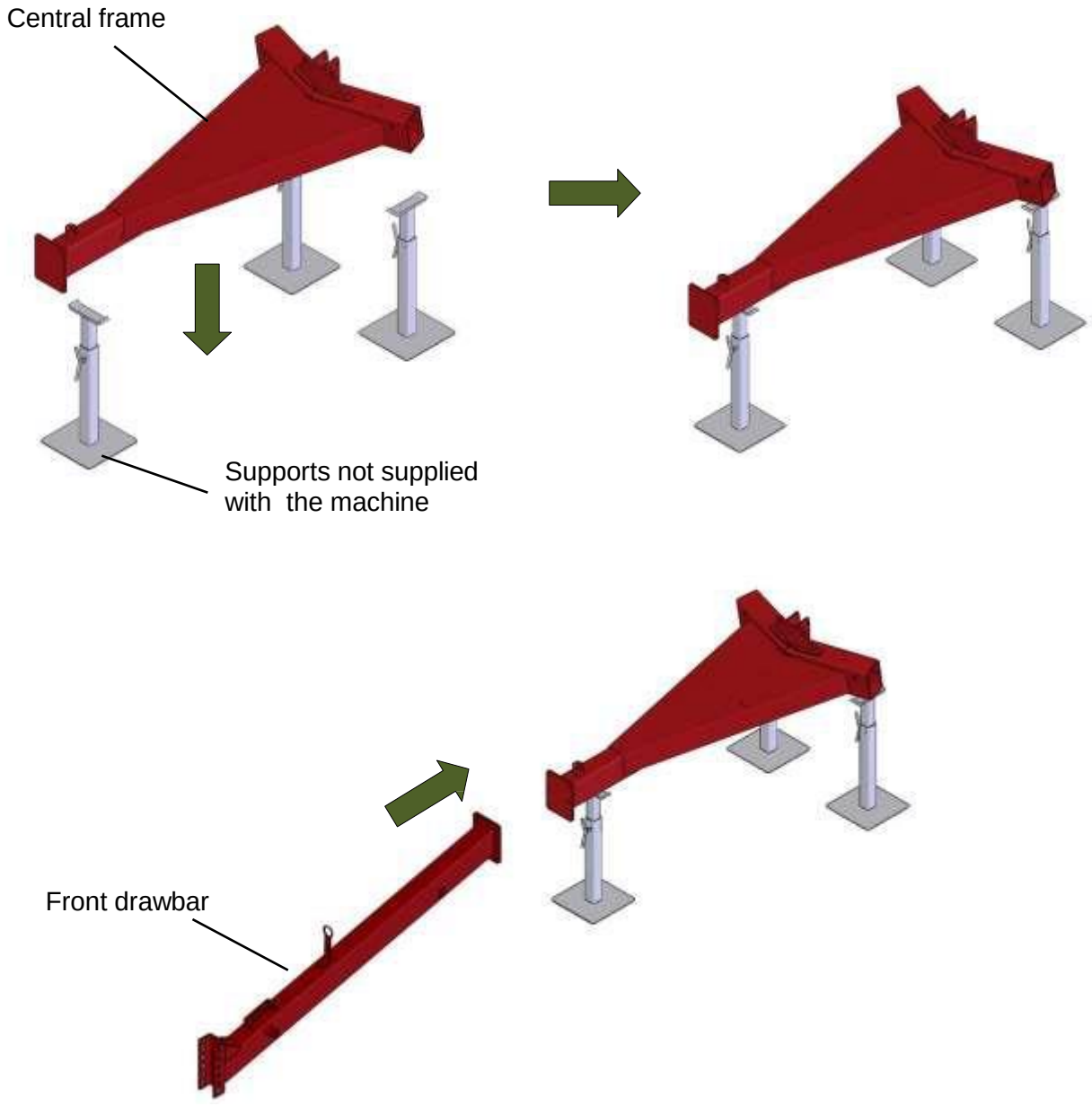
14 - ASSEMBLY

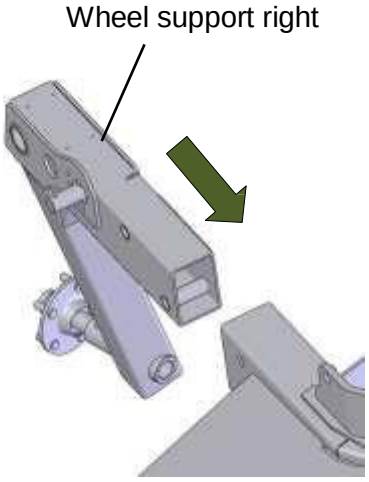
14.1. UNCRATING RAKES

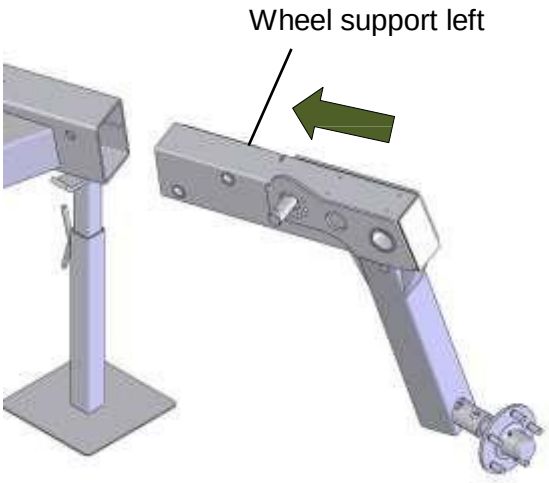
Select an area that has adequate room for parts layout and machine assembly.

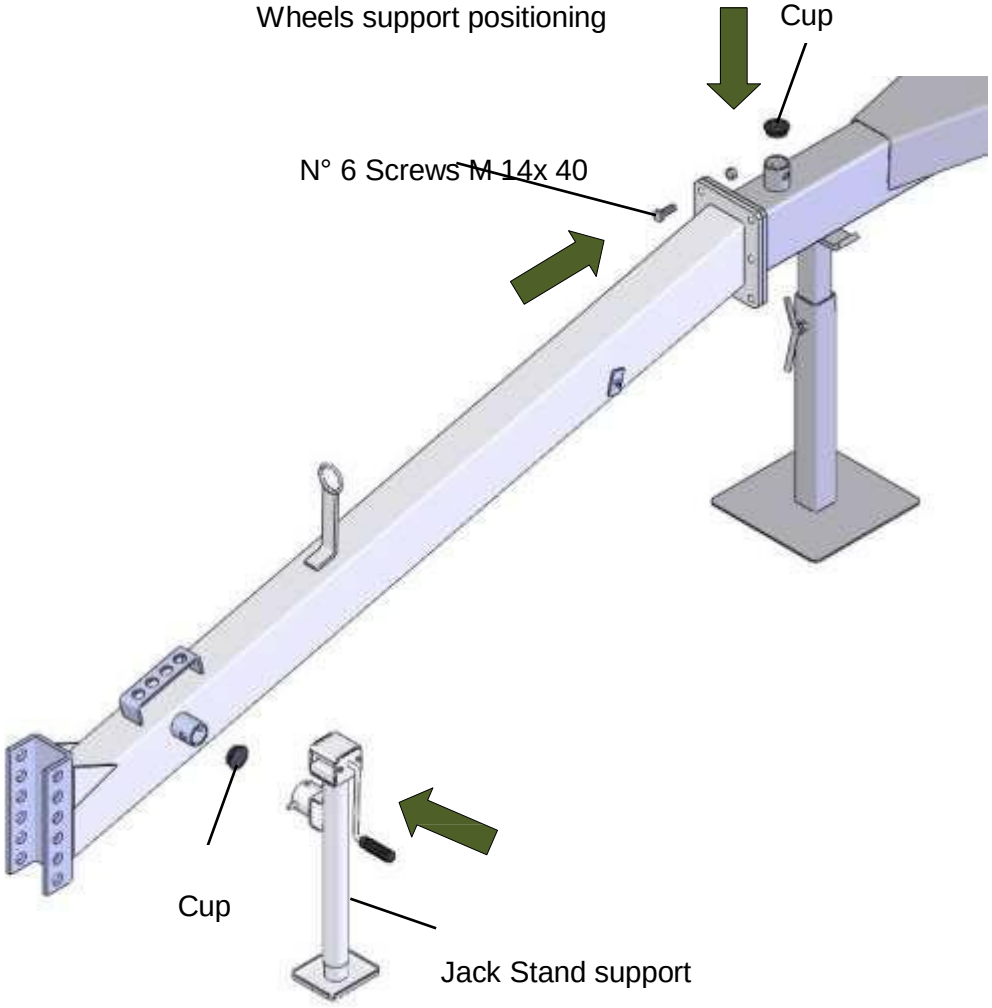
Begin assembly by removing all components from the crate. Lay components out individually for ease of locating during assembly.

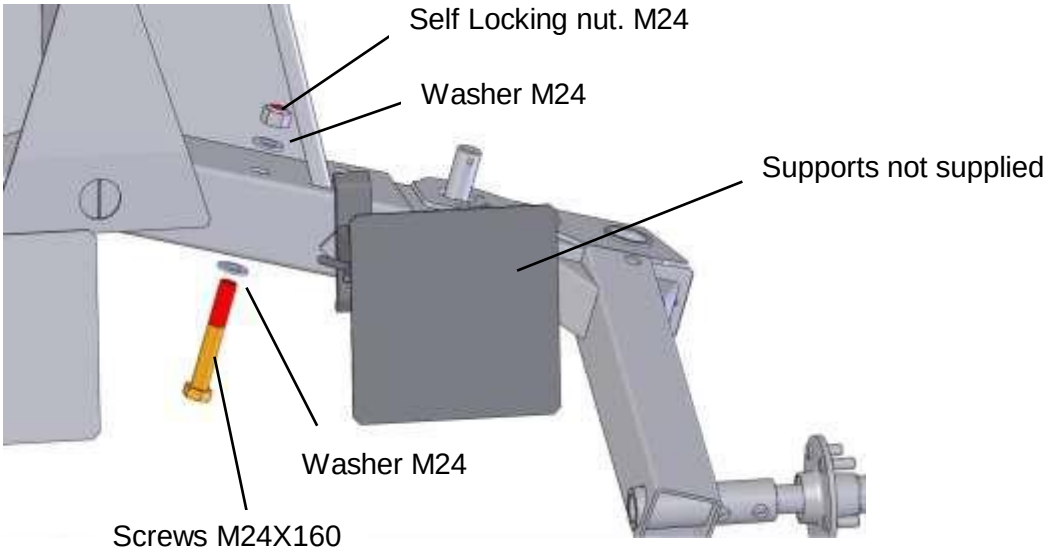
14.2. FRAME MACHINE ASSEMBLY

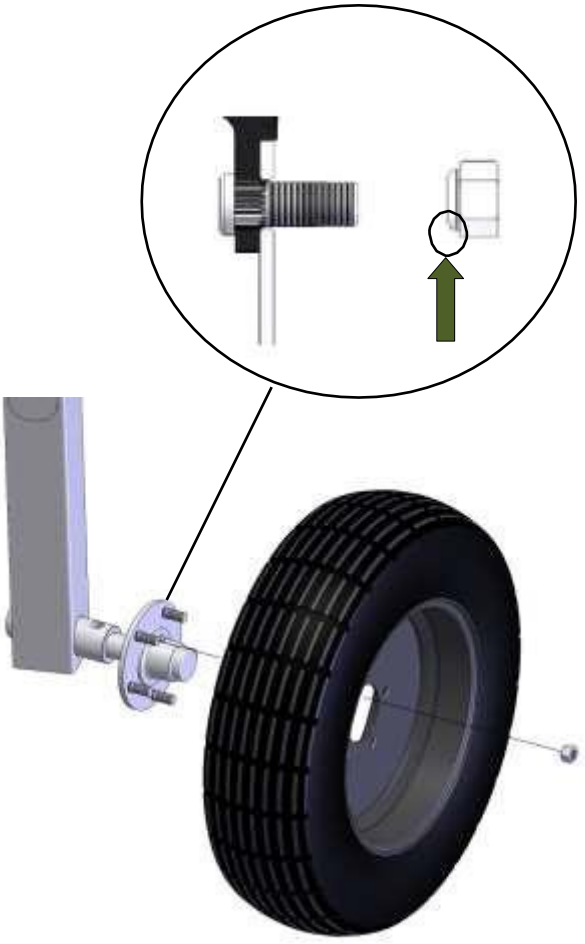


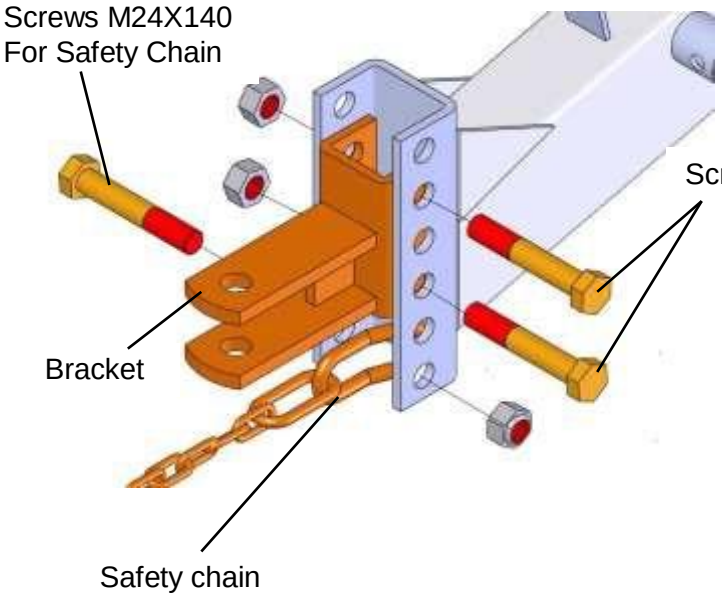

Wheel support right


Wheel support left

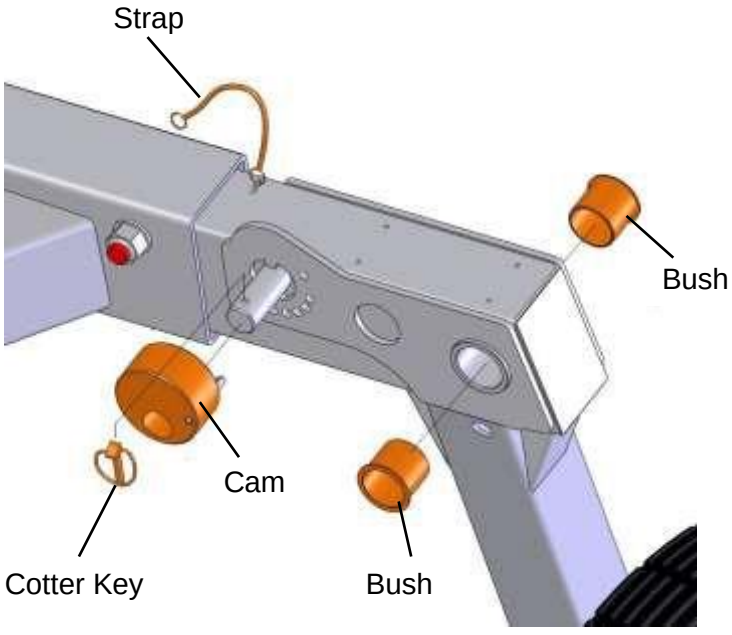

Wheels support positioning
Cup
N° 6 Screws M 14x 40
Cup
Jack Stand support


Self Locking nut. M24
Washer M24
Supports not supplied
Washer M24
Screws M24X160

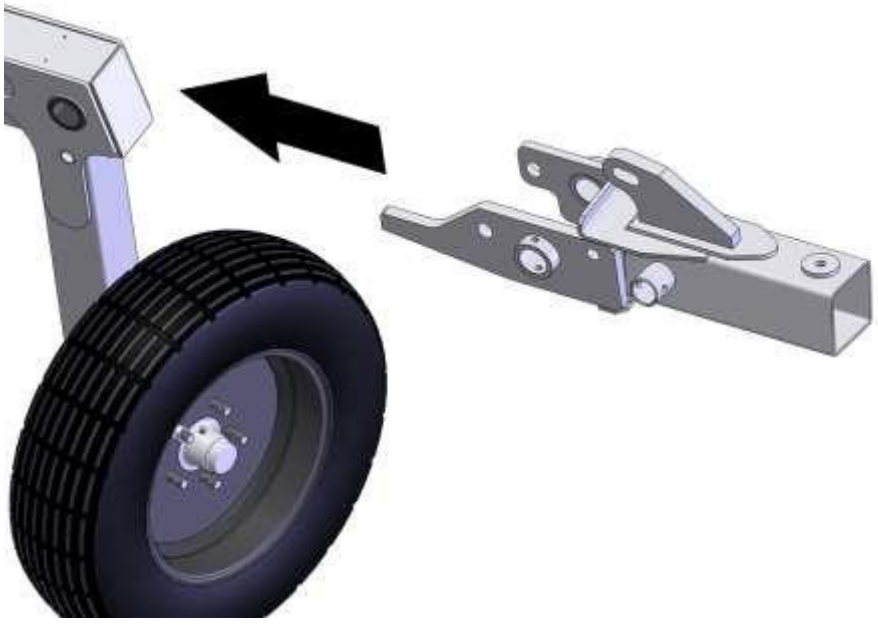


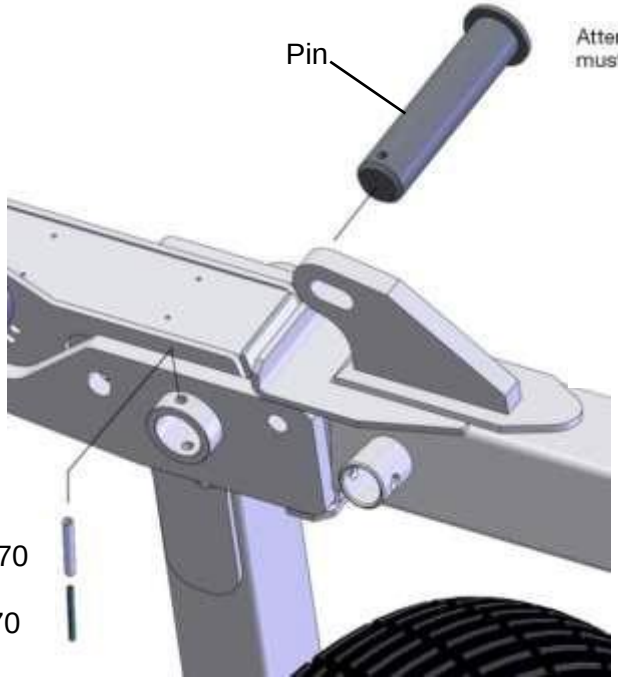


Remove supports



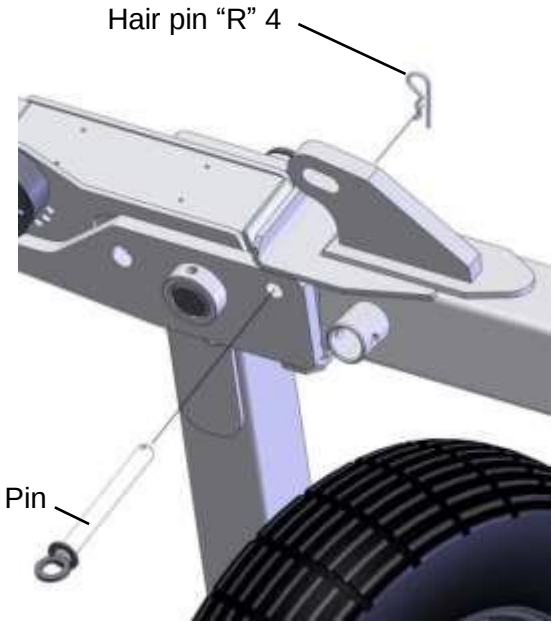
14.3.- ARMS ASSEMBLY

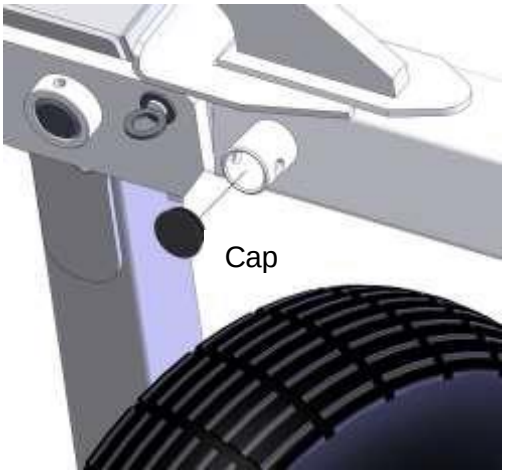


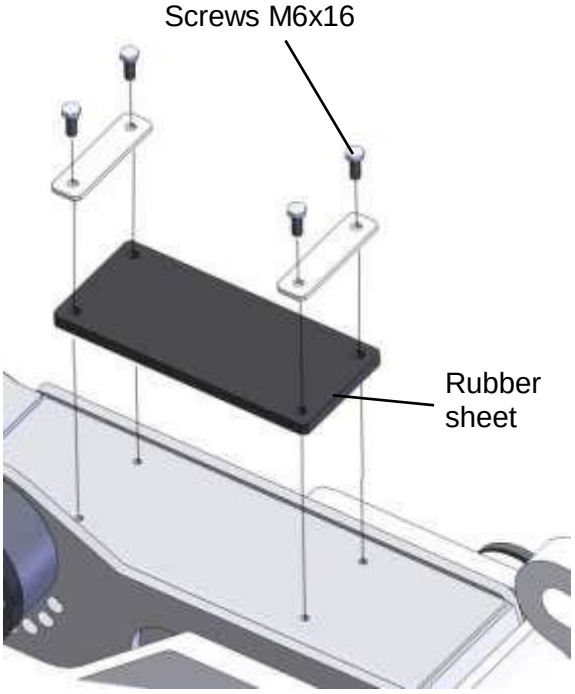


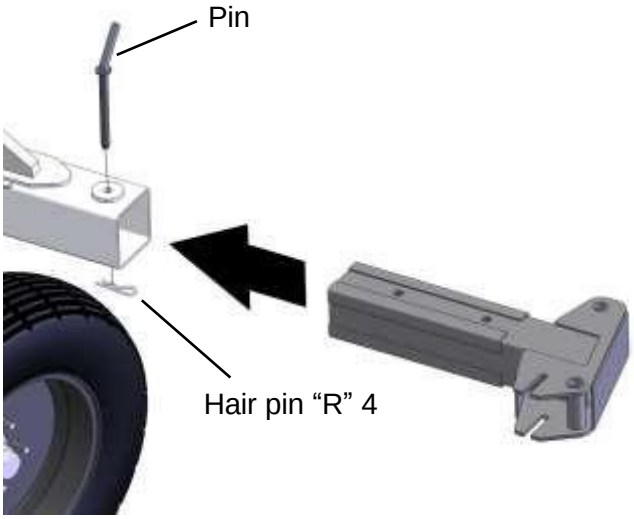
Attention: when mounting double-pin, the inner elastic pin must have the fissure at the opposite side of the external one

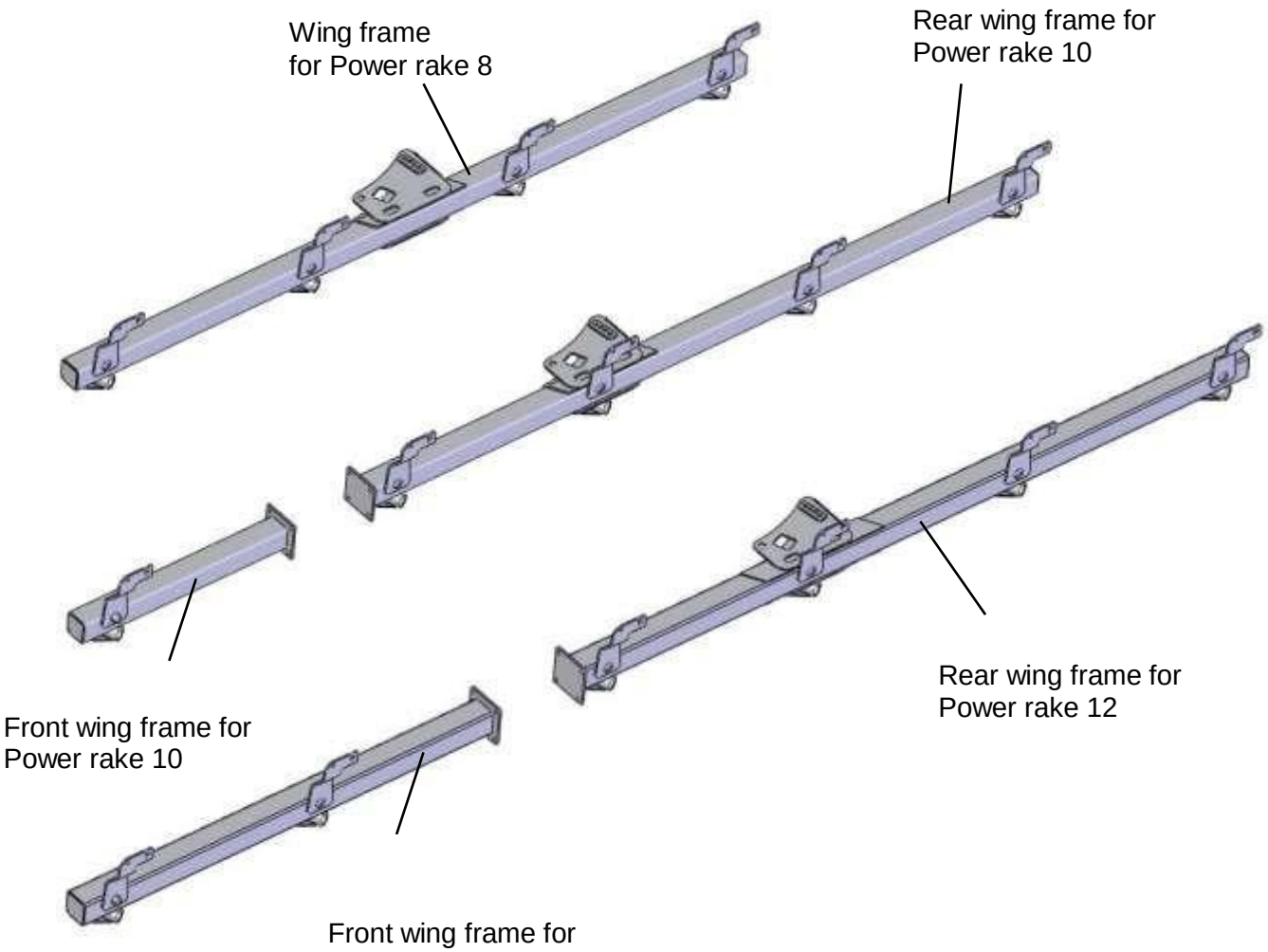
Elastic pin 10x70
+
Elastic pin 6x70

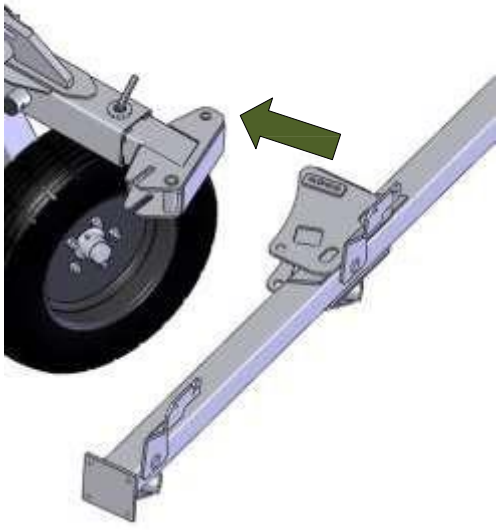

Hair pin “R” 4
Pin

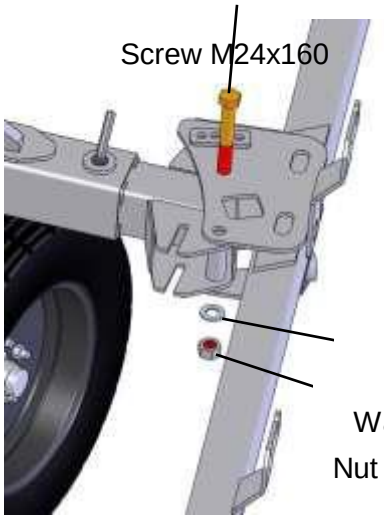

Cap

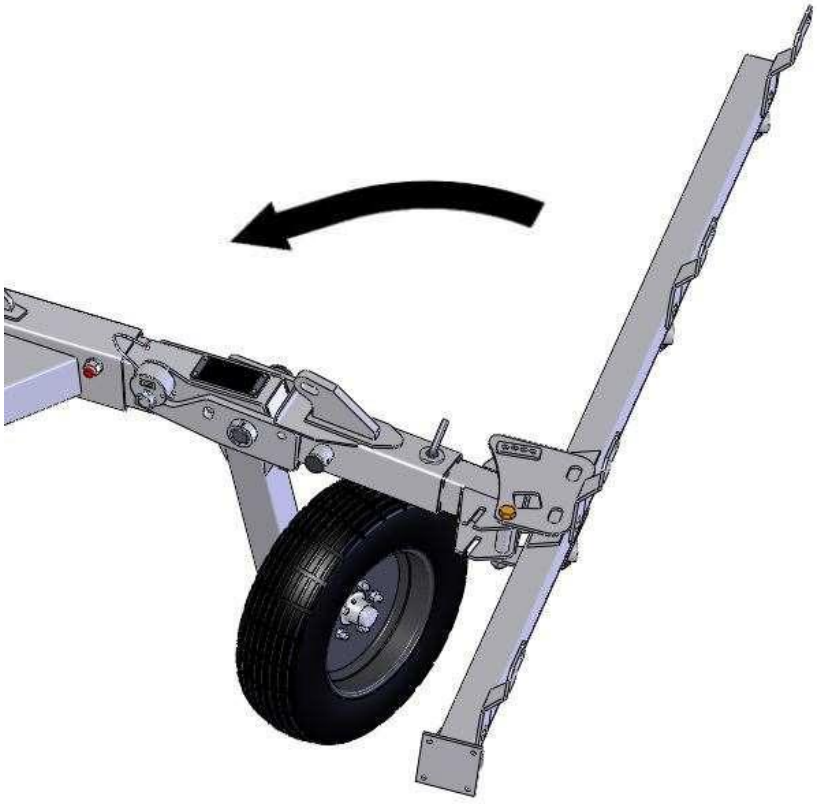

Screws M6x16
Rubber sheet

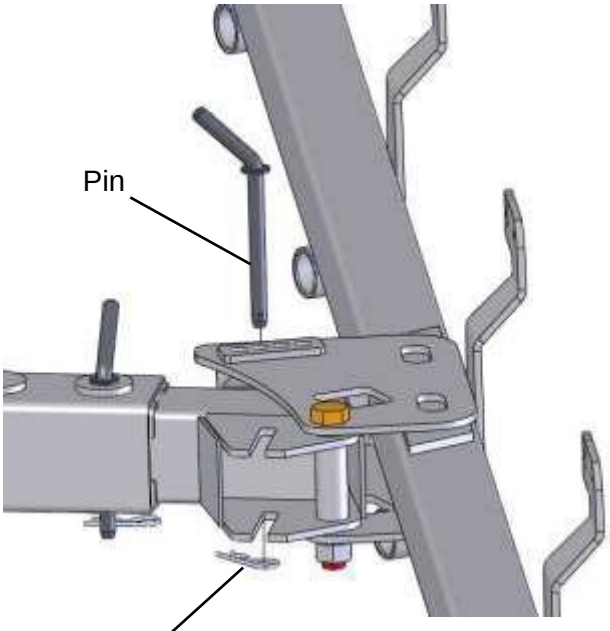

Pin
Hair pin “R” 4

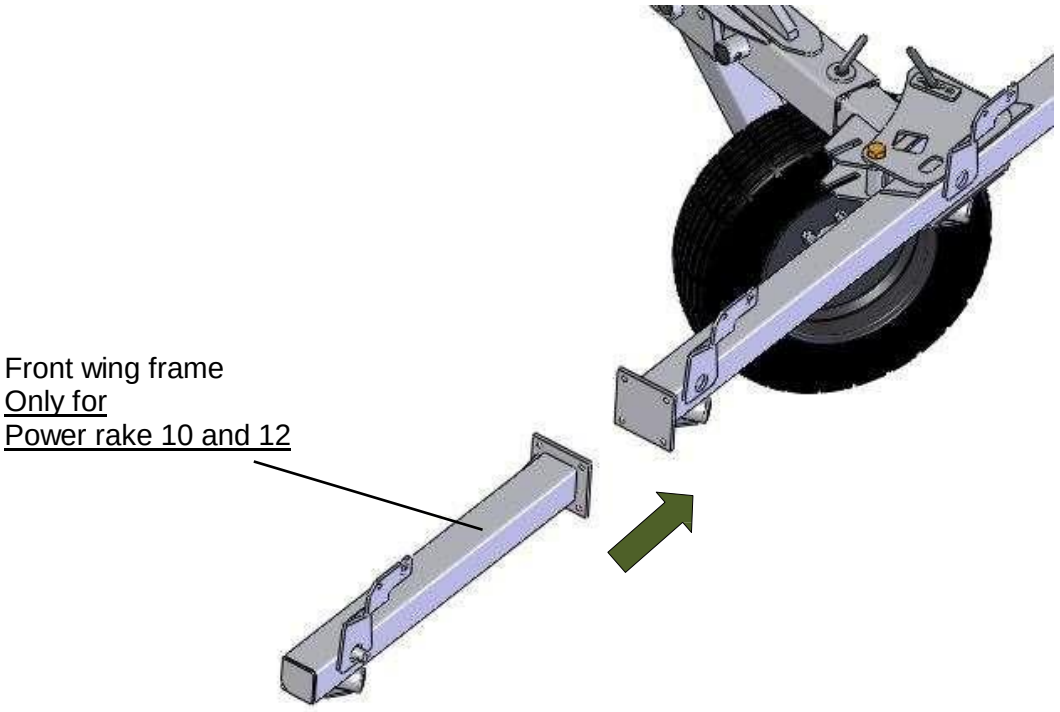

Wing frame
for Power rake 8
Rear wing frame for
Power rake 10
Front wing frame for
Power rake 10
Rear wing frame for
Power rake 12
Front wing frame for
Power rake 12

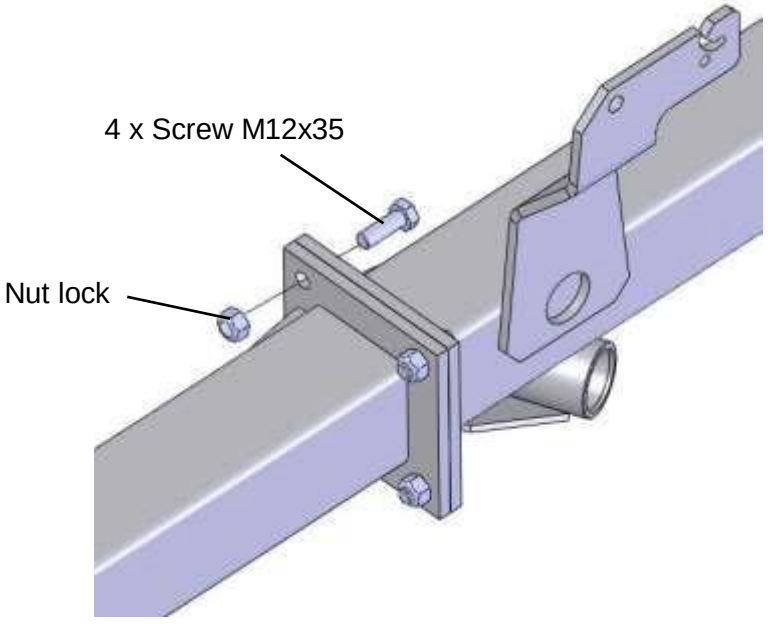


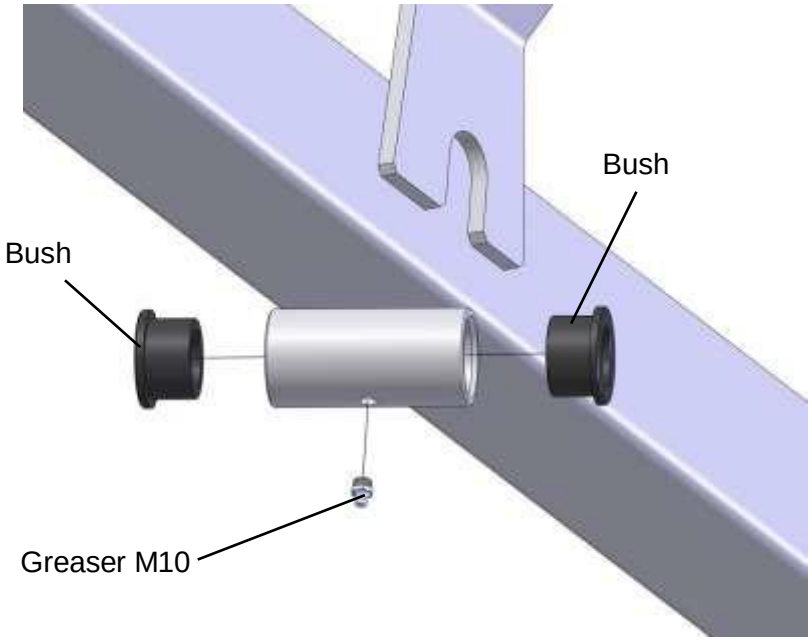

Screw M24x160
Washer
Nut

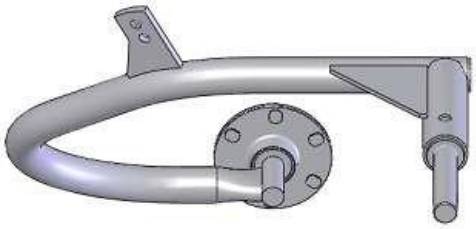



Pin
Hair pin “R” 4

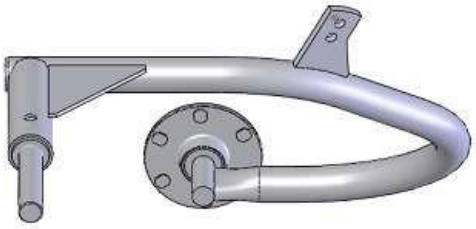

Front wing frame
Only for
Power rake 10 and 12


4 x Screw M12x35
Nut lock


Bush
Bush
Greaser M10

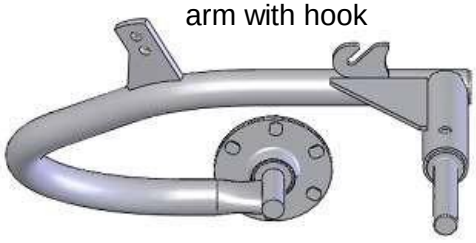


LH Rake arm

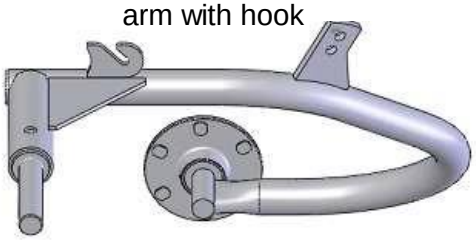


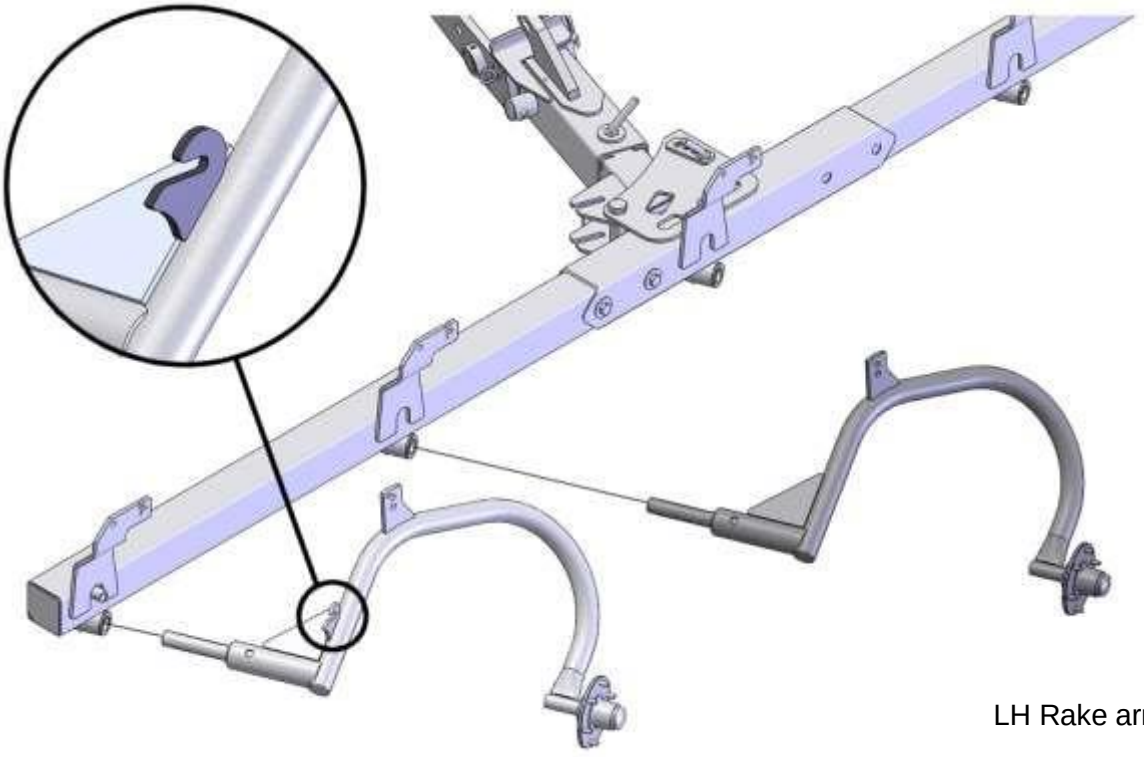
RH Rake arm

LH Front rake arm with hook



RH Front rake arm with hook

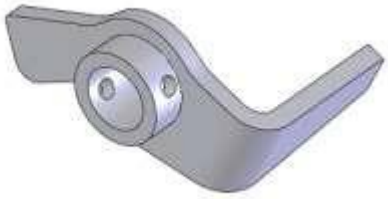




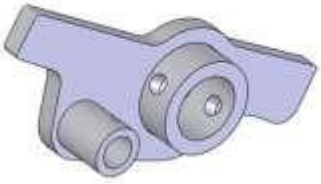
LH Rake arm

LH Front rake
arm with hook

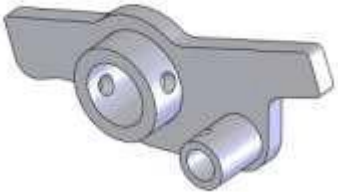
LH Stop arm bushing



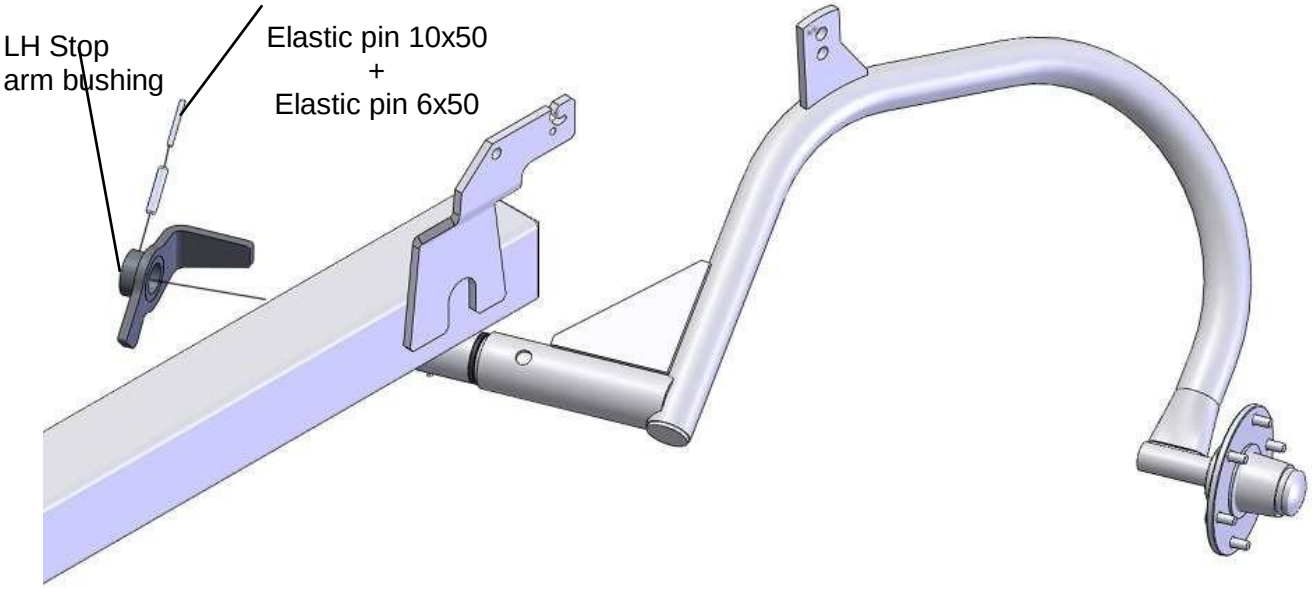
RH Stop arm bushing

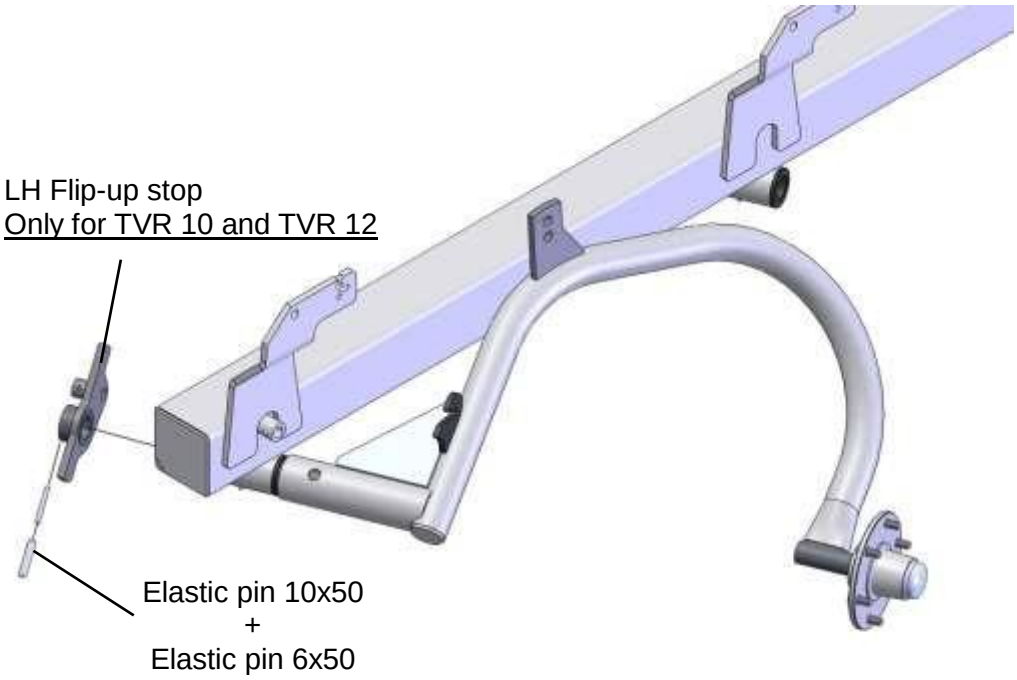


LH Flip-up stop
Only for TVR 10 and TVR 12

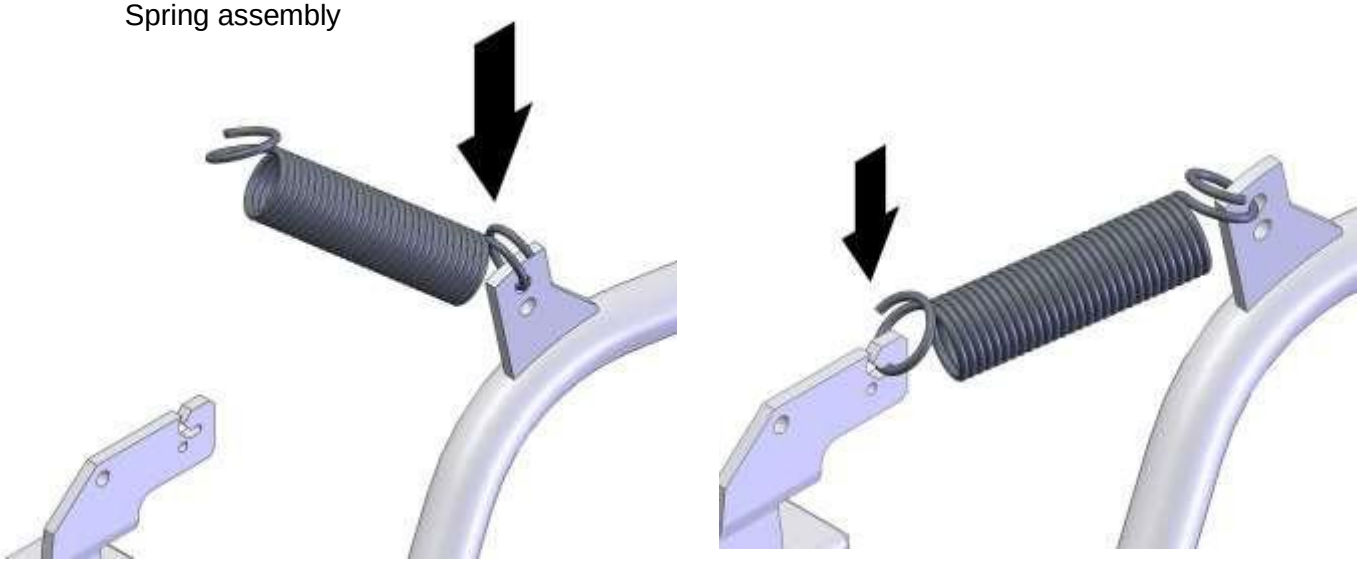


RH Flip-up stop
Only for TVR 10 and TVR 12

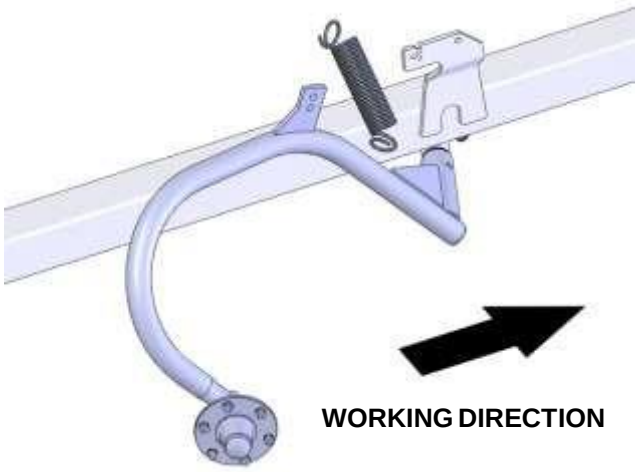


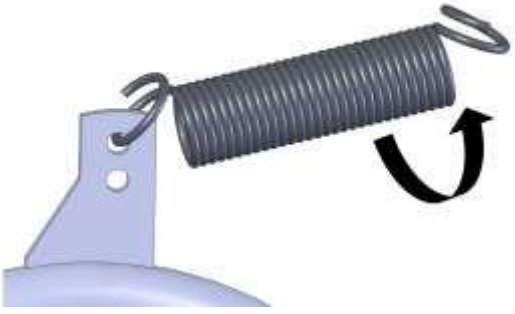


Spring assembly

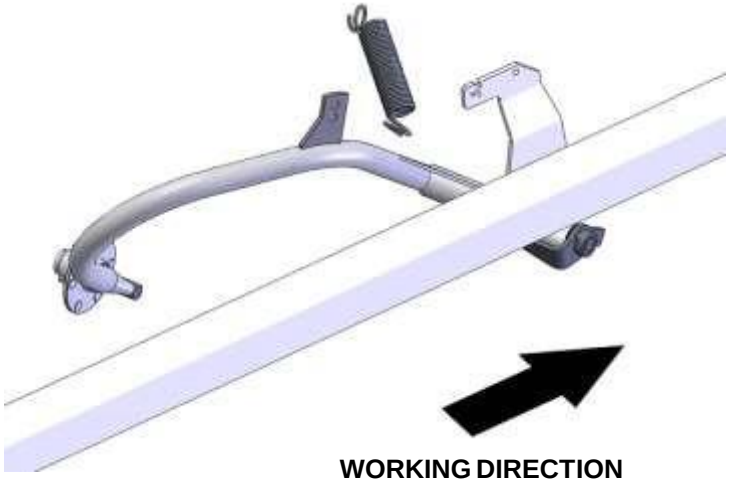


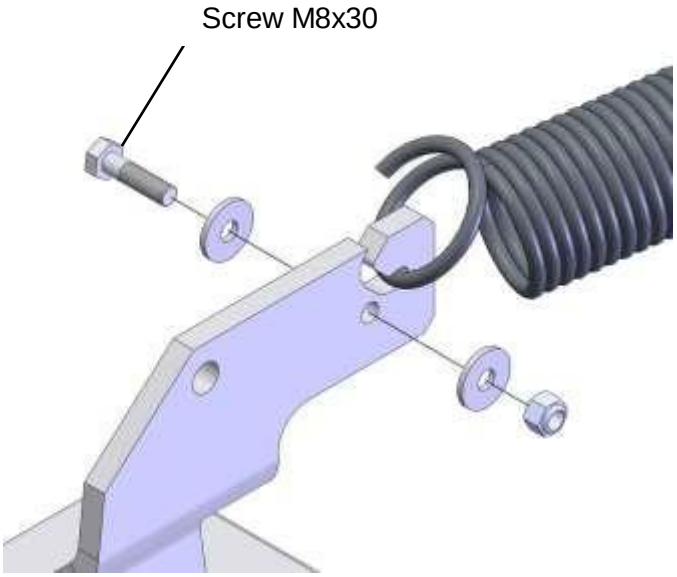
Right side spring assembly

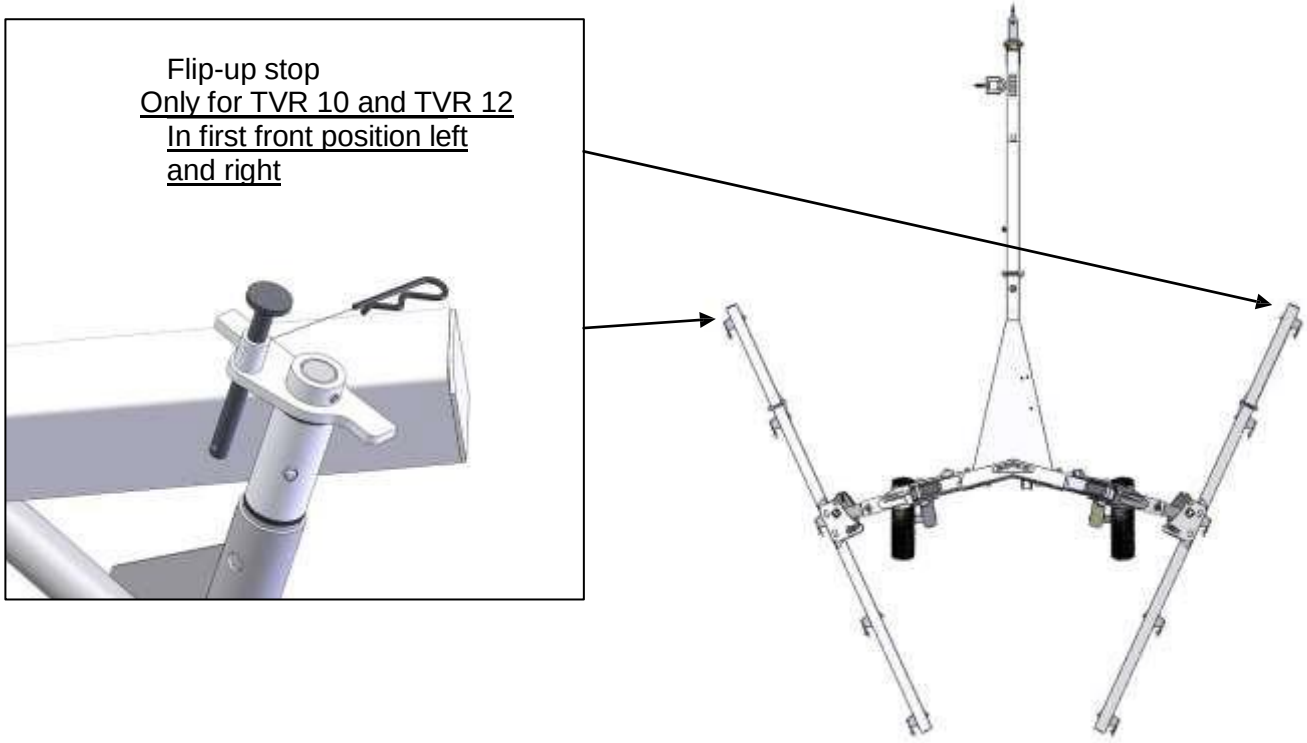




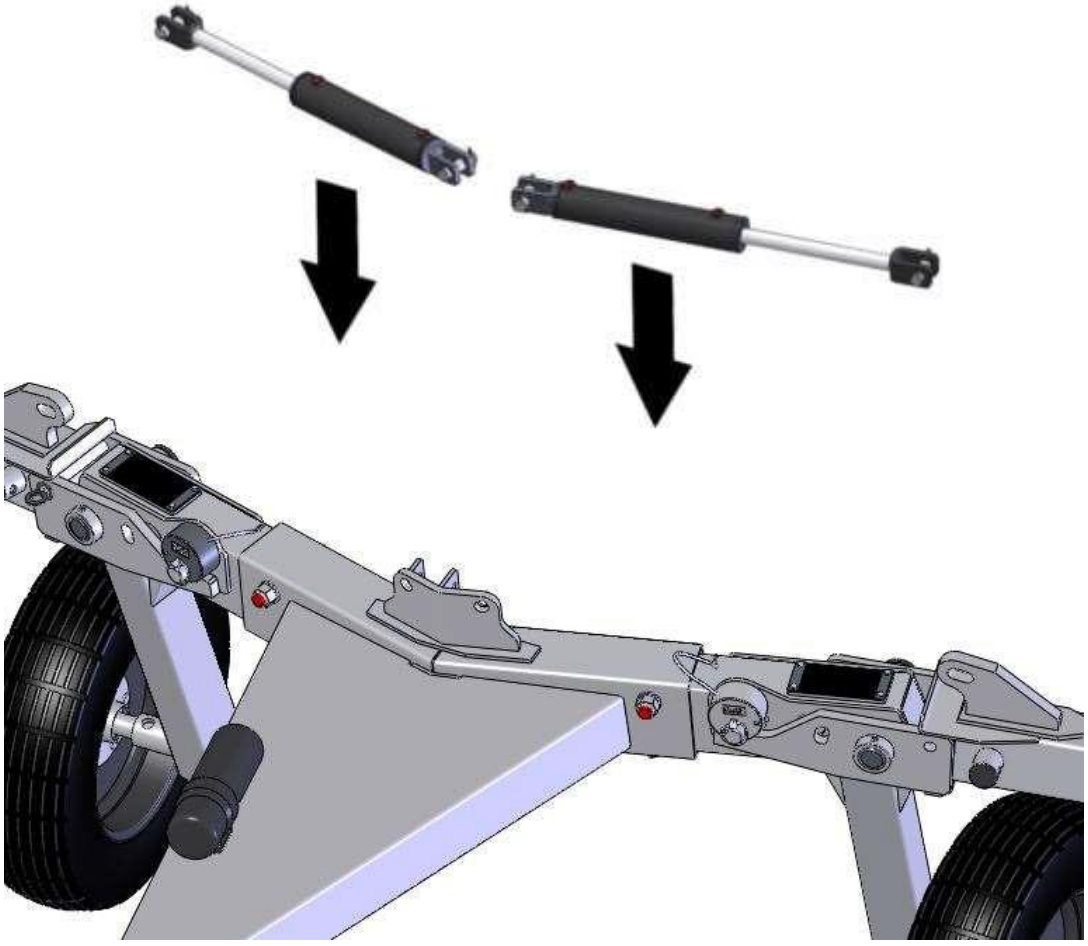
Left side spring assembly

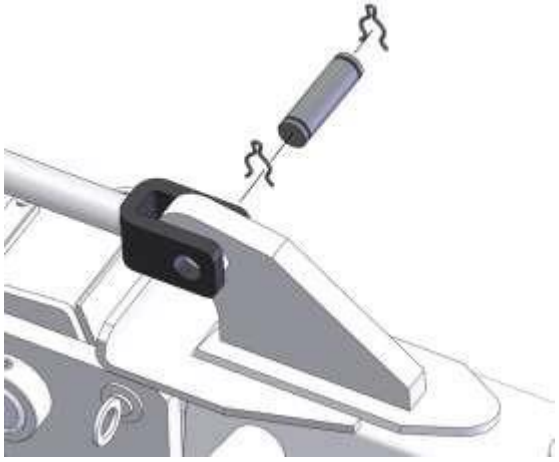


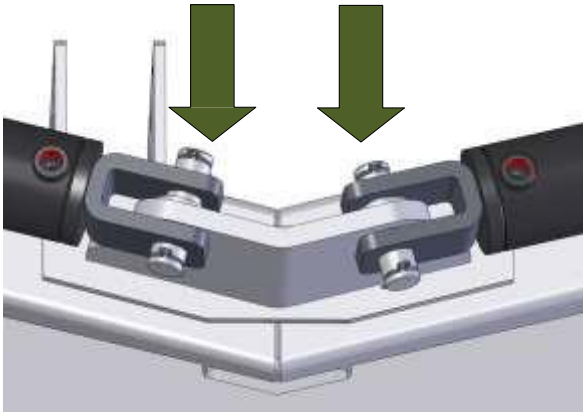

Screw M8x30

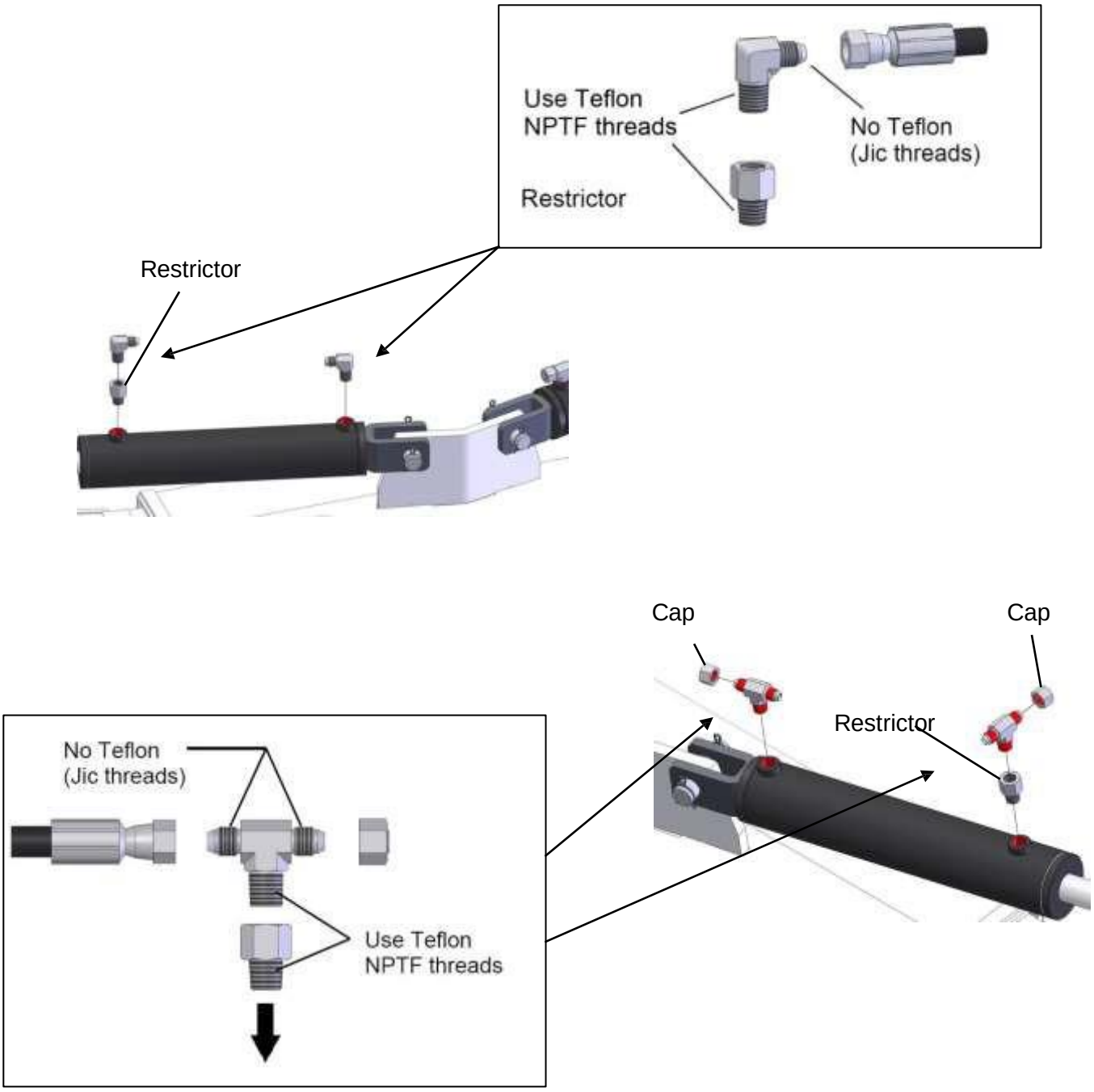

Flip-up stop
Only for TVR 10 and TVR 12
In first front position left
and right

14.4. CYLINDERS ASSEMBLY





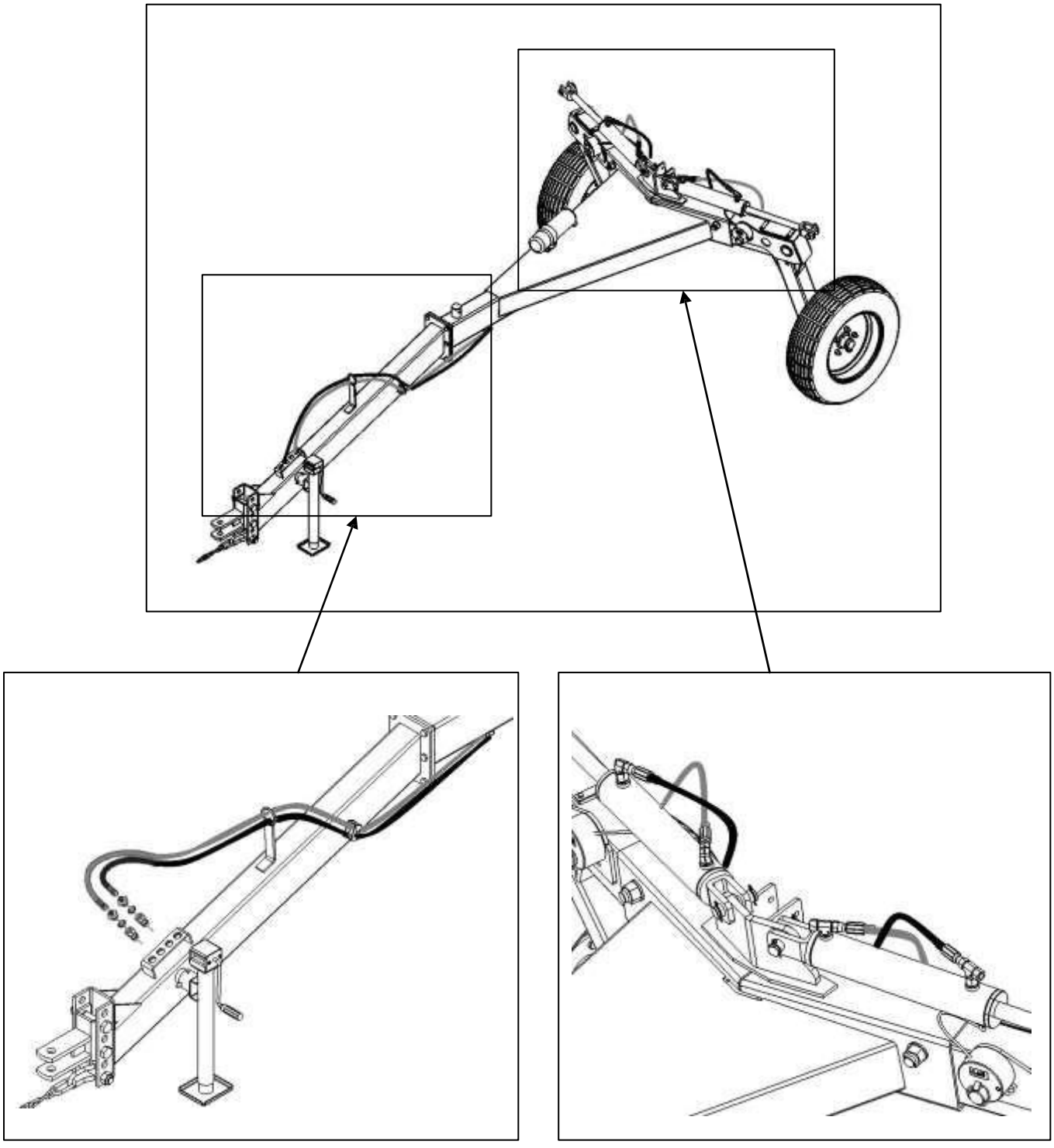




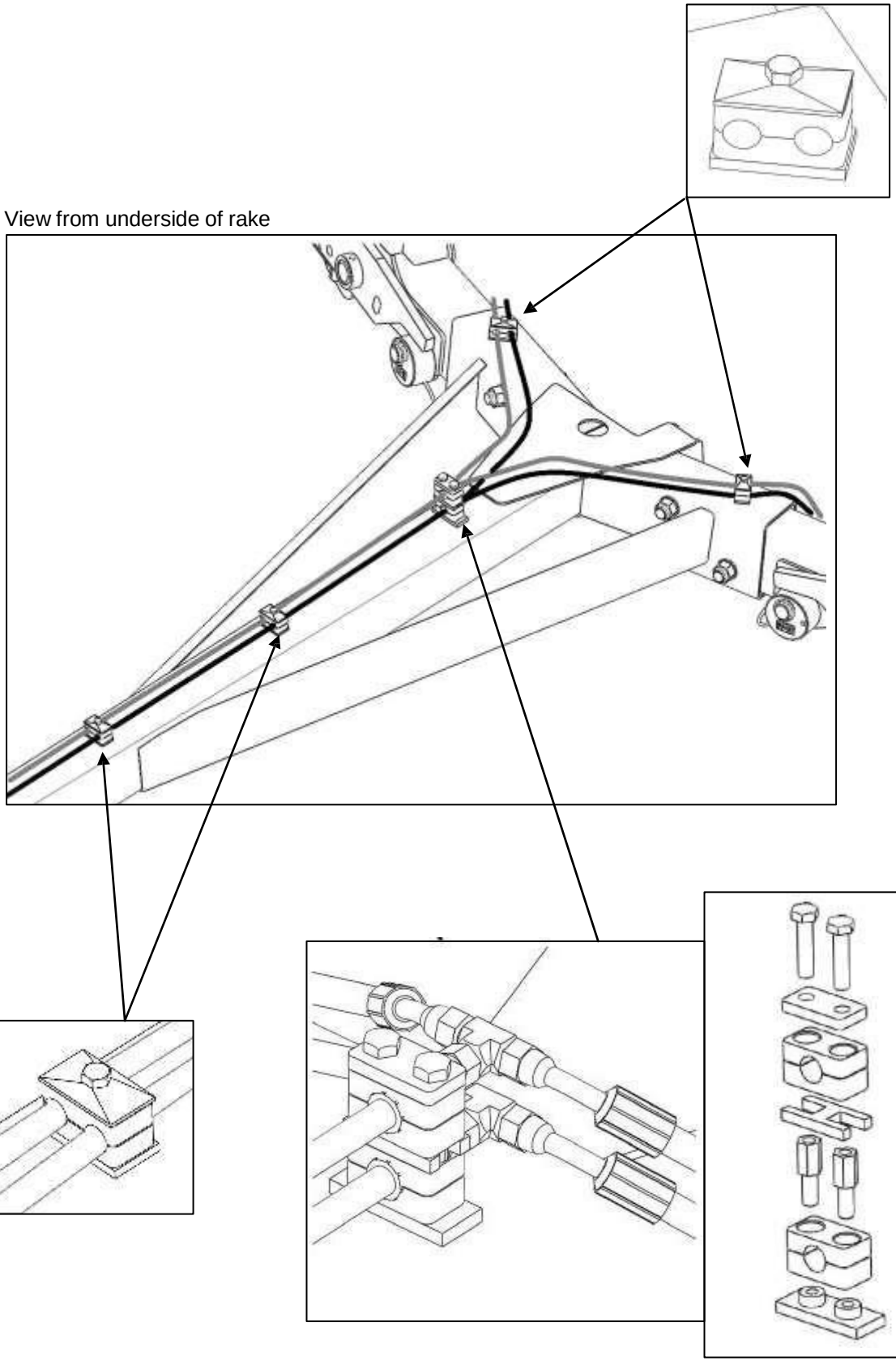
To prevent any leaks use Teflon tape on NPTF threads. (Only on cylinder threaded holes). Do not use Teflon on JIC threads!

14.5.- HYDRAULIC PIPES ASSEMBLY

View from upside of rake



View from underside of rake

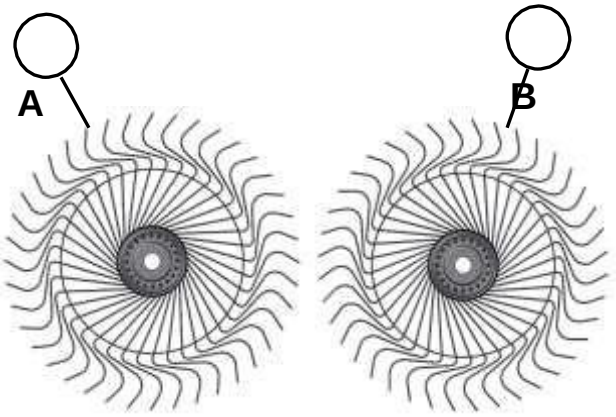


14.6.- RAKE WHEELS ASSEMBLY

1. Identify and separate left-hand and right-hand rake wheels.
2. Lean rake wheels against a wall with tine mounting clip nuts facing outward.

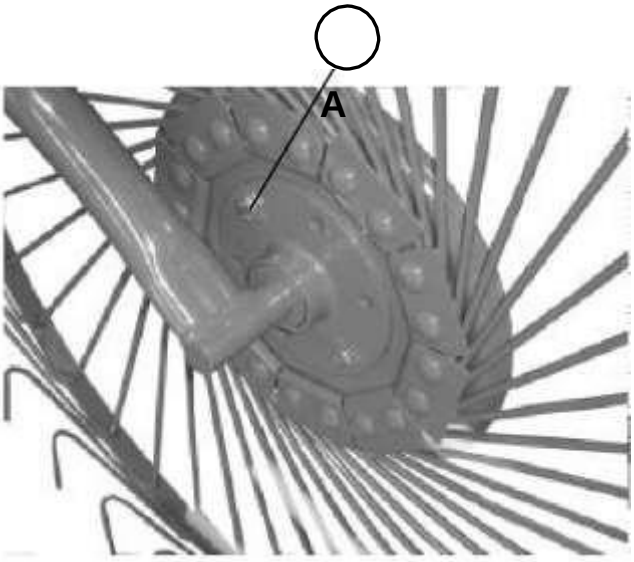
*If the last bend in the tines curve to a clockwise direction, it is a left-hand rake wheel (A).

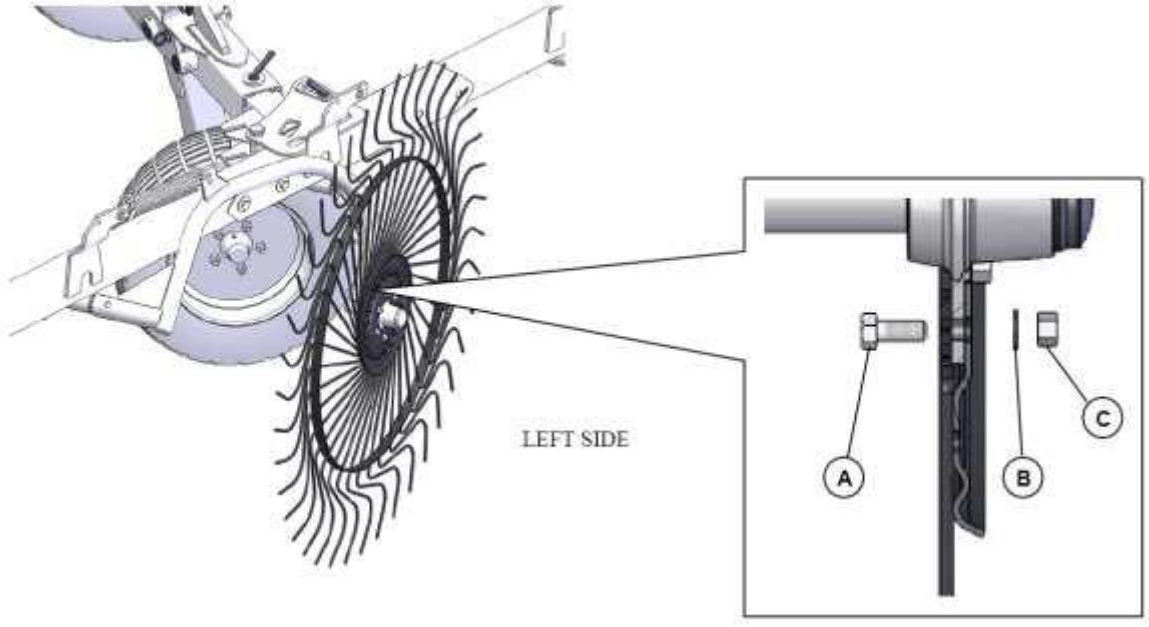
*If the tines curve in a counter-clockwise direction, it is a right-hand rake wheel (B).



Install left-hand rake wheel with tine clips to the front. Fasten with six M10x25 cap screws (A), flat washers (B), and nuts (C). Install bolt heads to the inside with washer and nuts to the outside.

ATTENTION TO THE CORRECT ASSEMBLY OF THE R.H. AND L.H. RAKE WHEELS





15 - FINAL INSPECTION AND LUBRICATION

15.1 - FINAL INSPECTION AND LUBRICATION

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

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

1. Attach rake to tractor (Refer to Attaching and Detaching section in operator's manual.)

2. Make sure rake has enough clearance to raise and lower.

3. Raise and lower rake.

4. Shut off tractor. Check hydraulic system for leaks. **Oil coming out of lift cylinder vent for the first few cycles is normal.**

5. Lubricate entire machine. (See Lubrication and Maintenance section in operator's manual.)

16- SPECIFICATIONS

16.1 - CARTED WHEEL RAKE

Tractor Requirement:
Horsepower (Minimum) ..... 22,4 kW (30 hp)
Hydraulic Pressure Required ..... 8273 kPa (1200 psi) (83 bar)
Hydraulic Flow Required ..... 23 L/min (6 gal/min)
Hydraulic Outlets ..... ……..One remote outlet

Raking Width:
8 Wheel Rake ..... 5.8 m (19 ft 0 in.) maximum
10 Wheel Rake ..... 6.3 m (20 ft 8 in.) maximum
12 Wheel Rake ..... 7.4 m (24 ft 3 in.) maximum

Windrow Width:
8 Wheel Rake ..... 0.8 —2.1 m (2 ft 7 in. to 6 ft 11 in)
10 Wheel Rake ..... 0.8 —2.1 m (2 ft 7 in. to 6 ft 11 in)
12 Wheel Rake ..... 0.8 —2.1 m (2 ft 7 in. to 6 ft 11 in)

Overall Transport Width:
8 Wheel Rake ..... 3.4 m (11 ft 2 in)
10 Wheel Rake ..... 3.5 m (11 ft 6 in)
12 Wheel Rake .....3.7 m (12 ft 2 in)

Transport Height
8 Wheel Rake .....2.60m (8 ft 6 in)
10 Wheel Rake ..... 2.6 m (8 ft 6 in)
12 Wheel Rake ..... 2.6 m (8 ft 6 in)

Overall Length:
8 Wheel Rake ..... 6.2 m (20 ft 4 in)
10 Wheel Rake ..... 7.1 m (23 ft 4 in)
12 Wheel Rake ..... 7.5 m (24 ft 7 in)

Weight machine (Approximate):
8 Wheel Rake ..... 750 kg (1653 lb)
10 Wheel Rake ..... 850 kg (1873 lb)
12 Wheel Rake ..... 970 kg (2138 lb)

Fold/Unfold ..... Hydraulic cylinders

Adjustments:
Raking Width ..... Manual
Wheel Height ..... Manual
Wheel Ground Pressure ..... Manual
Windrow Width ..... Manual

Raking Wheels:
Drive System ..... Ground Driven

Number of Ground Wheels:
8 Wheel Rake..... 2
10 Wheel Rake..... 2
12 Wheel Rake..... 2

Tires ..... 205/75—15

Number of Finger Wheels & diameter:
8 Wheel Rake .....n.8 – Ø1,4m (4 ft 7 in)
10 Wheel Rake .....n.10– Ø1,4m (4 ft 7 in)
12 Wheel Rake .....n.12– Ø1,4m (4 ft 7 in)

16.2 - RECORD PRODUCT IDENTIFICATION NUMBER

When ordering parts, always furnish model and serial number as given on serial number plate. It will assist your Tufline dealer in giving you prompt and efficient Service

16.3 - TIGHTENING FLARE TYPE TUBE FITTINGS

1. Check flare and flare seat for defects that might cause leakage.

2. Align tube with fitting before tightening.

3. Lubricate connection and hand tighten swivel nut until snug.

4. To prevent twisting the tube(s), use two wrenches. Place one wrench on the connector body and with the second, tighten the swivel nut to the torque shown in this chart.

Tube Size OD	Nut Size Across Flats	Torque Value [a]		Recommended Turns To Tighten (After Finger Tightening)	
(in.)	(in.)	(Nm)	(lb-ft)	(Flats)	(Turns)
3/16	7/16	8	6	1	1/6
1/4	9/16	12	9	1	1/6
5/16	5/8	16	12	1	1/6
3/8	11/16	24	18	1	1/6
1/2	7/8	46	34	1	1/6
5/8	1	62	46	1	1/6
3/4	1-1/4	102	75	3/4	1/8
7/8	1-3/8	122	90	3/4	1/8

[a]The torque values shown are based on lubricated connections as in reassembly.

16.4 - UNIFIED INCH BOLT AND CAP SCREW TORQUE VALUES

SAE Grade and Head Markings	NO MARK	1 or 2[b]	5 5.1 5.2	8 8.2
SAE Grade and Nut Markings	NO MARK	2	5	8

Size	Grade 1				Grade 2[b]				Grade 5, 5.1, or 5.2				Grade 8 or 8.2			
	Lubricated[a]		Dry[a]		Lubricated[a]		Dry[a]		Lubricated[a]		Dry[a]		Lubricated[a]		Dry[a]	
	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft
1/4	3.7	2.8	4.7	3.5	6	4.5	7.5	5.5	9.5	7	12	9	13.5	10	17	12.5
5/16	7.7	5.5	10	7	12	9	15	11	20	15	25	18	28	21	35	26
3/8	14	10	17	13	22	16	27	20	35	26	44	33	50	36	63	46
7/16	22	16	28	20	35	26	44	32	55	41	70	52	80	58	100	75
1/2	33	25	42	31	53	39	67	50	85	63	110	80	120	90	150	115
9/16	48	36	60	45	75	56	95	70	125	90	155	115	175	130	225	160
5/8	67	50	85	62	105	78	135	100	170	125	215	160	240	175	300	225
3/4	120	87	150	110	190	140	240	175	300	225	375	280	425	310	550	400
7/8	190	140	240	175	190	140	240	175	490	360	625	450	700	500	875	650
1	290	210	360	270	290	210	360	270	725	540	925	675	1050	750	1300	975
1-1/8	400	300	510	375	400	300	510	375	900	675	1150	850	1450	1075	1850	1350
1-1/4	570	425	725	530	570	425	725	530	1300	950	1650	1200	2050	1500	2600	1950
1-3/8	750	550	950	700	750	550	950	700	1700	1250	2150	1550	2700	2000	3400	2550
1-1/2	1000	725	1250	925	990	725	1250	930	2250	1650	2850	2100	3600	2650	4550	3350

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

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

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

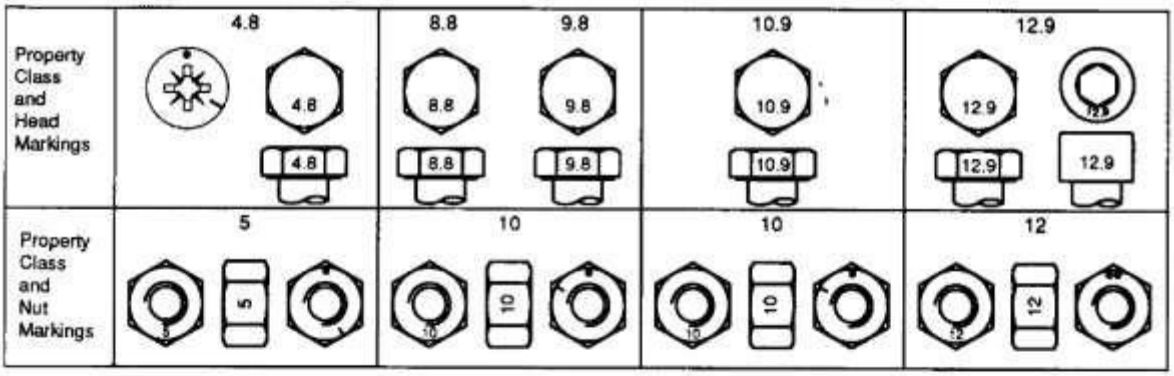
Make sure fasteners threads are clean and that you properly start thread engagement. This will prevent them from failing when tightening.

Tighten plastic insert or crimped steel-type lock nuts to approximately 50 percent of the dry torque shown in the chart, applied to the nut, not to the bolt head. Tighten toothed or serrated-type lock nuts to the full torque value.

[a] "Lubricated" means coated with a lubricant such as engine oil, or fasteners with phosphate and oil coatings. "Dry" means plain or zinc plated without any lubrication.

[b] Grade 2 applies for hex cap screws (not hex bolts) up to 152 mm (6-in.) long. Grade 1 applies for hex cap screws over 152 mm (6-in.) long, and for all other types of bolts and screws of any length.

16.5 - METRIC BOLT AND CAP SCREW TORQUE VALUES



Size	Class 4.8				Class 8.8 or 9.8				Class 10.9				Class 12.9			
	Lubricated[a]		Dry[a]		Lubricated[a]		Dry[a]		Lubricated[a]		Dry[a]		Lubricated[a]		Dry[a]	
	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft
M6	4.8	3.5	6	4.5	9	6.5	11	8.5	13	9.5	17	12	15	11.5	19	14.5
M8	12	8.5	15	11	22	16	28	20	32	24	40	30	37	28	47	35
M10	23	17	29	21	43	32	55	40	63	47	80	60	75	55	95	70
M12	40	29	50	37	75	55	95	70	110	80	140	105	130	95	165	120
M14	63	47	80	60	120	88	150	110	175	130	225	165	205	150	260	190
M16	100	73	125	92	190	140	240	175	275	200	350	255	320	240	400	300
M18	135	100	175	125	260	195	330	250	375	275	475	350	440	325	560	410
M20	190	140	240	180	375	275	475	350	530	400	675	500	625	460	800	580
M22	260	190	330	250	510	375	650	475	725	540	925	675	850	625	1075	800
M24	330	250	425	310	650	475	825	600	925	675	1150	850	1075	800	1350	1000
M27	490	360	625	450	950	700	1200	875	1350	1000	1700	1250	1600	1150	2000	1500
M30	675	490	850	625	1300	950	1650	1200	1850	1350	2300	1700	2150	1600	2700	2000
M33	900	675	1150	850	1750	1300	2200	1650	2500	1850	3150	2350	2900	2150	3700	2750
M36	1150	850	1450	1075	2250	1650	2850	2100	3200	2350	4050	3000	3750	2750	4750	3500

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

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

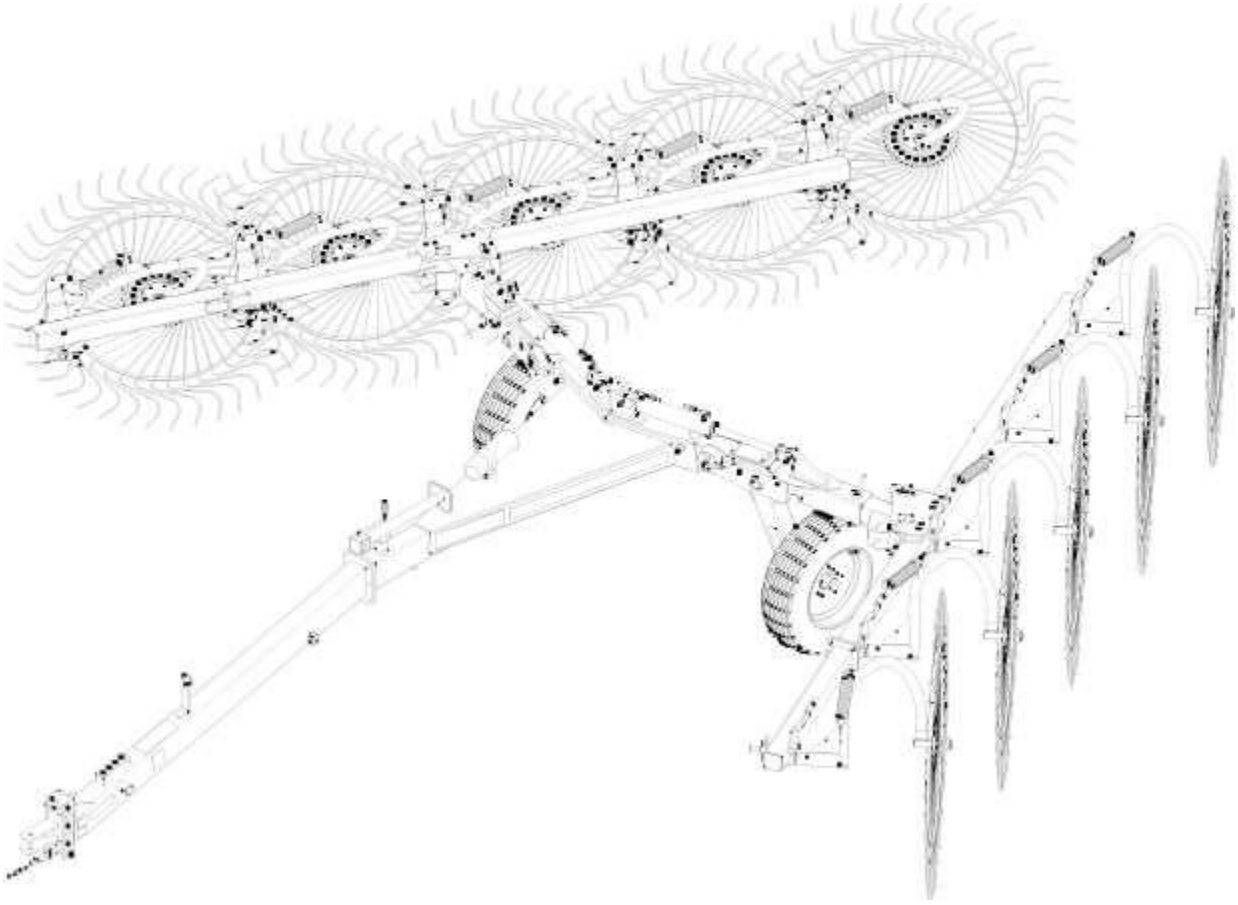
Fasteners should be replaced with the same or higher property class. If higher property class fasteners are used, these should only be tightened to the strength of the original.

Make sure fasteners threads are clean and that you properly start thread engagement. This will prevent them from failing when tightening.

Tighten plastic insert or crimped steel-type lock nuts to approximately 50 percent of the dry torque shown in the chart, applied to the nut, not to the bolt head. Tighten toothed or serrated-type lock nuts to the full torque value.

[a] *"Lubricated" means coated with a lubricant such as engine oil, or fasteners with phosphate and oil coatings. "Dry" means plain or zinc plated without any lubrication.*

A2



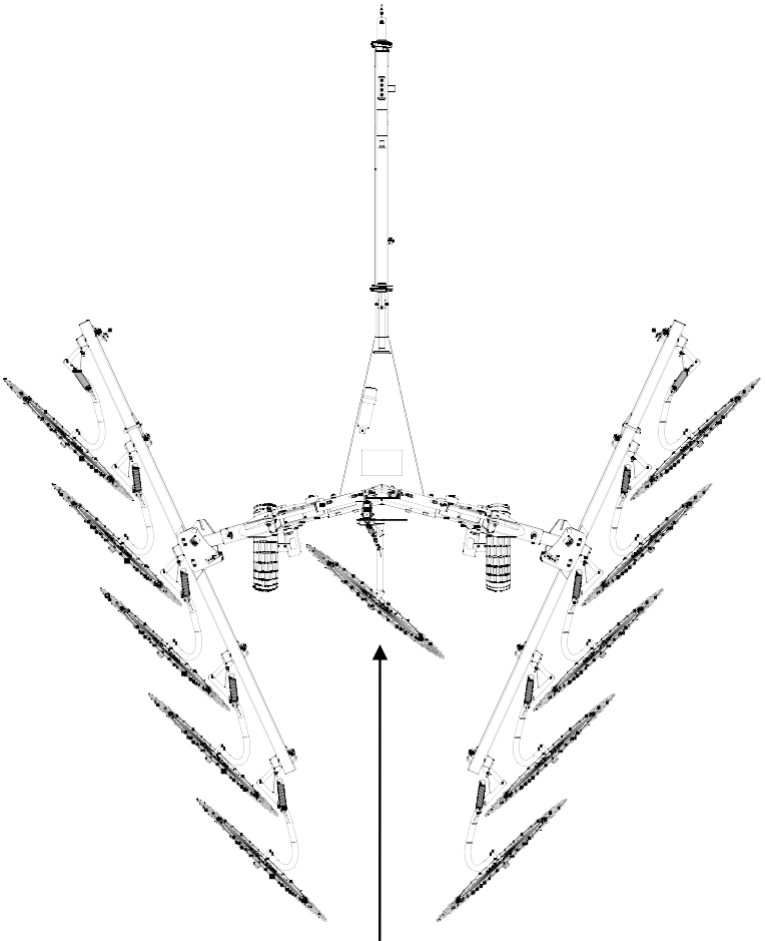
*TUFLINE CARTED **8-WHEEL RAKE***
MANUFACTURED (2019)

*TUFLINE CARTED **10-WHEEL RAKE***
MANUFACTURED (2019)

*TUFLINE CARTED **12-WHEEL RAKE***
MANUFACTURED (2019)

(SPECIFICATIONS AND DESIGN SUBJECT TO CHANGE WITHOUT NOTICE.)

V RAKE
Carted Wheel Rake

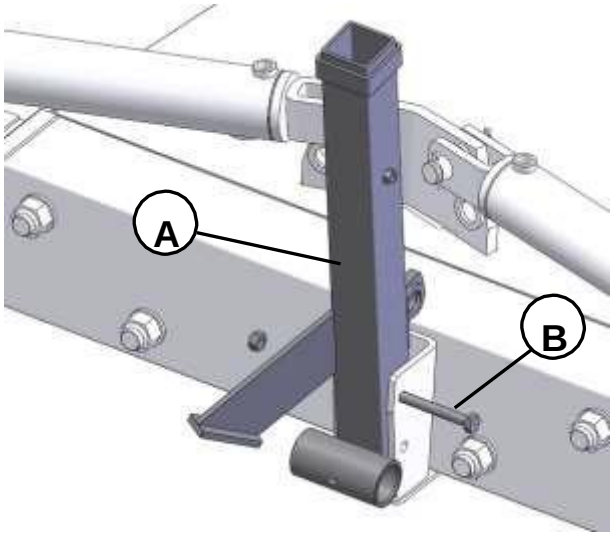


CenterKicker Wheel (OPTION)

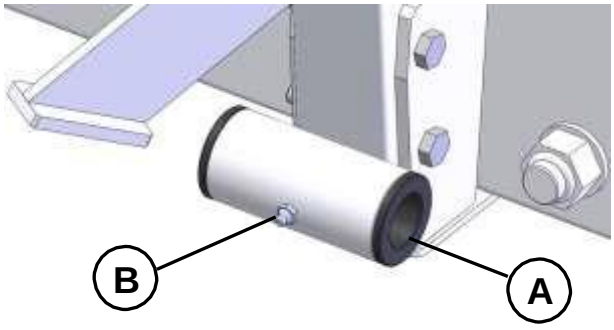
17 - CENTER KICKER WHEEL INSTRUCTION

17.1 - INSTALLATION WHEEL

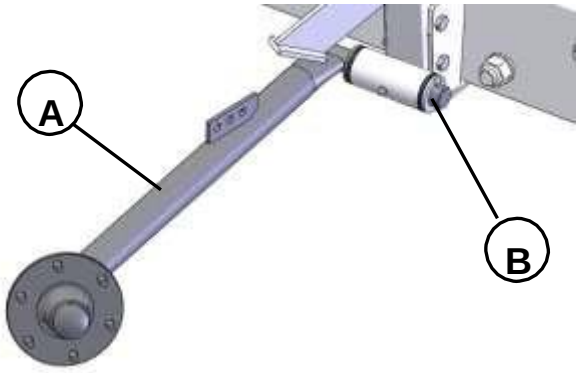
1. Install wheel support (A) and fasten with M12 x 90 cap screws (B) and nuts.



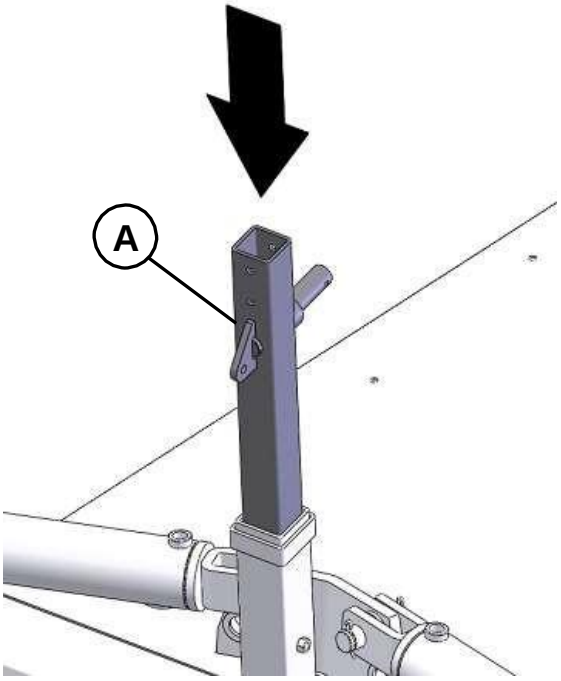
2. Install nylon bushings (A) in mounting bracket. Seat bushings with rubber mallet. Install grease zerk (B).



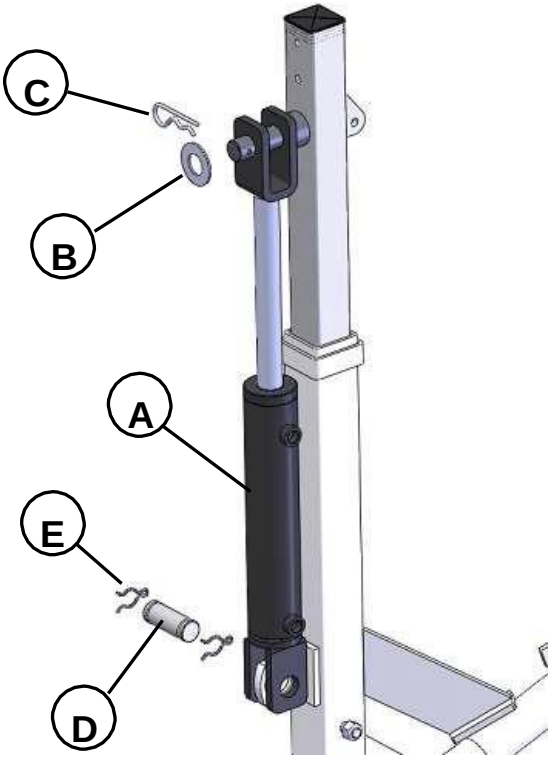
3. Install rake wheel arm (A) to mounting bracket. Fasten with 5 x 32 x 53 mm washer (B) and cotter pin.



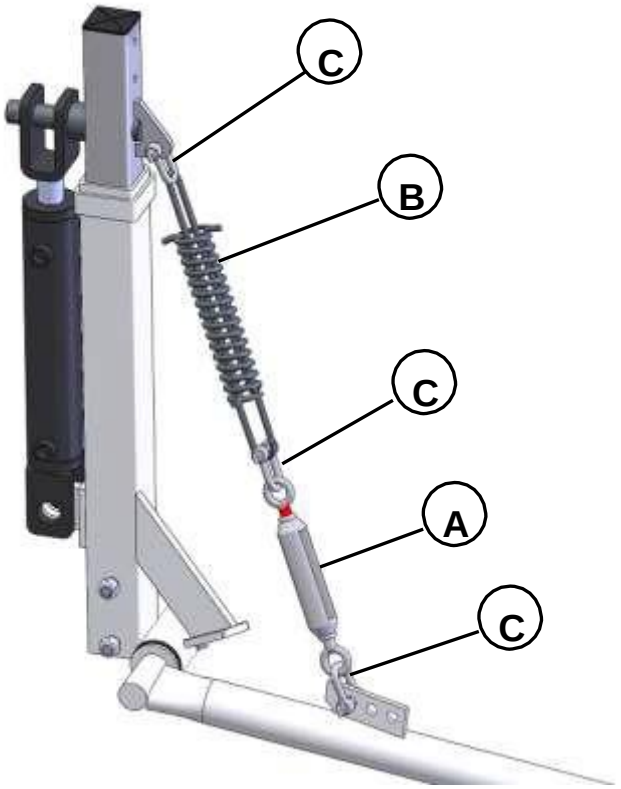
4. Insert sliding support (A).



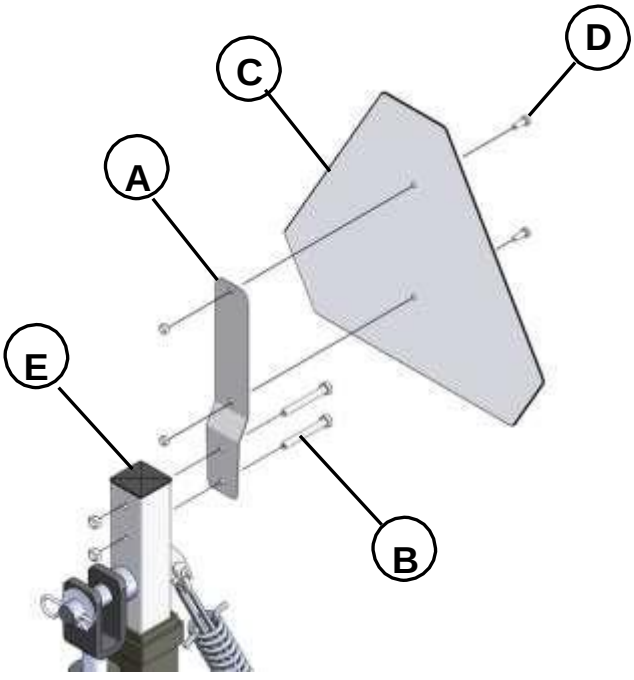
5. Install hydraulic cylinder (A). Fasten with washer (B), Spring lock pin (C), Pin (D) and Circlips (E).



6. Connect rake arm to sliding support using Turnbuckle (A), Spring (B) and U-shackles (C).

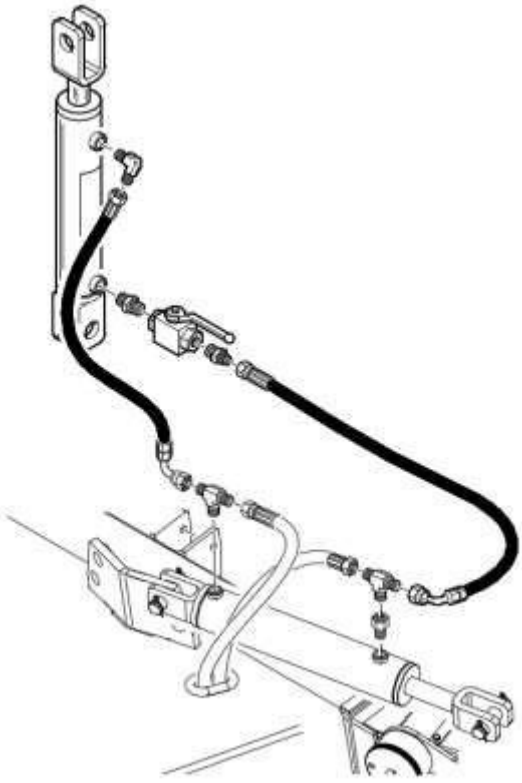


7. Install SMV support (A) with M8x65 hex cap screws (B) and nuts. Install SMV sign (C) and fasten with M6x16 Hex cap screws (D) and nuts). Install cap (E).



11. Install wheel with tine clips to the front of machine. Fasten with six M10 x 25 cap screws with heads to front of machine. Install flat washers and nuts to the rear of machine.

12. Install hydraulic hoses as shown in the picture.



WARRANTY

Please enter information below and save for future reference:

Date Purchase:_____From (Dealer):_____
Model Number: _____ Serial Number: _____

AgLine Distributing & Equipment LLC. (AgLine) warrants this product to be free from defect in material and workmanship. Except as otherwise set forth below, the duration of this Warranty shall be for TWELVE (12) MONTHS COMMENCING ON THE DATE OF DELIVERY OF THE PRODUCT TO THE ORIGINAL PURCHASER.

Under no circumstances will this Warranty apply in the event that the product, in the good faith opinion of AgLine, has been subjected to improper operation, improper maintenance, misuse, or an accident. This Warranty does not apply in the event that the product has been materially modified or repaired by someone other than AgLine, a AgLine authorized dealer or distributor, and/or a AgLine authorized service center. This Warranty does not cover normal wear or tear, or normal maintenance items. This Warranty also does not cover repairs made with parts other than those obtainable through AgLine.

This Warranty is extended solely to the original purchaser of the product. Should the original purchaser sell or otherwise transfer this product to a third party, this Warranty does not transfer to the third party purchaser in any way. There are no third party beneficiaries of this Warranty. AgLine makes no warranty, express or implied, with respect to cutting edges, shanks, tires or other parts or accessories not manufactured by AgLine. Warranties for these items, if any, are provided separately by their respective manufacturers.

AgLine's obligation under this Warranty is limited to, at AgLine's option, the repair or replacement, free of charge, of the product if AgLine, in its sole discretion, deems it to be defective or in noncompliance with this Warranty. Such parts shall be provided by the selling dealer to the user during regular working hours. **If requested, the product must be returned to AgLine with proof of purchase within thirty (30) days after such defect or noncompliance is discovered or should have been discovered, routed through the dealer and distributor from whom the purchase was made, transportation charges prepaid.** AgLine shall complete such repair or replacement within a reasonable time after AgLine receives the product. THERE ARE NO OTHER REMEDIES UNDER THIS WARRANTY. THE REMEDY OF REPAIR OR REPLACEMENT IS THE SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY

THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE OF THIS WARRANTY. AGLINE MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, AND AGLINE SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY AND/OR ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE (EXCEPT WHERE PROHIBITED BY LAW).

AgLine shall not be liable for any incident or consequential losses, damages or expenses, arising directly or indirectly from the product, whether such claim is based upon breach of contract, breach of warranty, negligence, strict liability in tort or any other legal theory. AgLine's obligation under this warranty, to the extent allowed by law, is in lieu of all warranties, implied or expressed for a particular purpose and any liability for incidental and consequential damages with respect to the sale or use of the items warranted. Such incidental and consequential damages shall include but not be limited to: transportation charges other than normal freight charges; loss of crops or any other loss of income; rental of substitute equipment, expenses due to loss, damage, detention or delay in the delivery of equipment or parts resulting from acts beyond the control of AgLine.

This Warranty is subject to any existing conditions of supply which may directly affect AgLine's ability to obtain materials or manufacture replacement parts.

No agent, representative, dealer, distributor, service person, salesperson, or employee of any company, including without limitation, AgLine, its authorized dealers, distributors, and service centers, is authorized to alter, modify, or enlarge this Warranty.

This Warranty is subject to the warranty registration being submitted. For warranty services, contact your selling dealer.

WARRANTY FOR PARTS

Monroe-Tufline Manufacturing Co., Inc. (“Monroe-Tufline”) warrants its parts to be free from defect in material and workmanship for a period of ninety (90) days from the date of delivery of the part(s) to the original purchaser.

Replacement or repair parts installed in the equipment covered by warranty are warranted for ninety (90) days from date of purchase of such part or to the expiration of the applicable new equipment warranty period, whichever occurs later.

Under no circumstances will this Warranty apply in the event that the product the parts are installed in, in the good faith opinion of Monroe-Tufline, has been subjected to improper operation, improper maintenance, misuse, or an accident. This Warranty does not cover normal wear or tear, or normal maintenance items.

This Warranty is extended solely to the original purchaser of the product. Should the original purchaser sell or otherwise transfer this product to a third party, this Warranty does not transfer to a third party purchaser in any way. There are no third party beneficiaries of this Warranty.

Monroe-Tufline’s obligation under this Warranty is limited to, at Monroe-Tufline’s option, the repair or replacement, free of charge, of the product if Monroe-Tufline, in its sole discretion, deems it to be defective or in noncompliance with this Warranty. The selling dealer shall provide such parts to the user during regular working hours. **If requested, the product must be returned to Monroe-Tufline with proof of purchase within thirty (30) days after such defect or noncompliance is discovered or should have been discovered, routed through the dealer and distributor from whom the purchase was made, transportation charges prepaid.** Monroe-Tufline shall complete such repair or replacement within a reasonable time after Monroe-Tufline receives the product. THERE ARE NO OTHER REMEDIES UNDER THIS WARRANTY. THE REMEDY OF REPAIR OR REPLACEMENT IS THE SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY.

THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE OF THIS WARRANTY. MONROE-TUFLINE MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, AND MONROE-TUFLINE SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY AND/OR ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE (EXCEPT WHERE PROHIBITED BY LAW).

Monroe-Tufline shall not be liable for any incidental or consequential losses, damages or expenses, arising directly or indirectly from the product, whether such claim is based upon breach of contract, breach of warranty, negligence, strict liability in tort or any other legal theory. Without limiting the generality of the foregoing, Monroe-Tufline specifically disclaims any damages relating to (i) lost profits, business, revenues or goodwill; (ii) loss of crops; (iii) loss because of delay in harvesting; (iv) any expense or loss incurred for labor, supplies, substitute machinery or rental; or (v) any other type of damage to property or economic loss.

This Warranty is subject to any existing conditions of supply which may directly affect Monroe-Tufline’s ability to obtain materials or manufacture replacement parts.

No agent, representative, dealer, distributor, service person, salesperson, or employee of any company, including without limitation, Monroe-Tufline, its authorized dealers, distributors, and service centers, is authorized to alter, modify, or enlarge this Warranty.

For warranty services, contact your selling dealer.

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