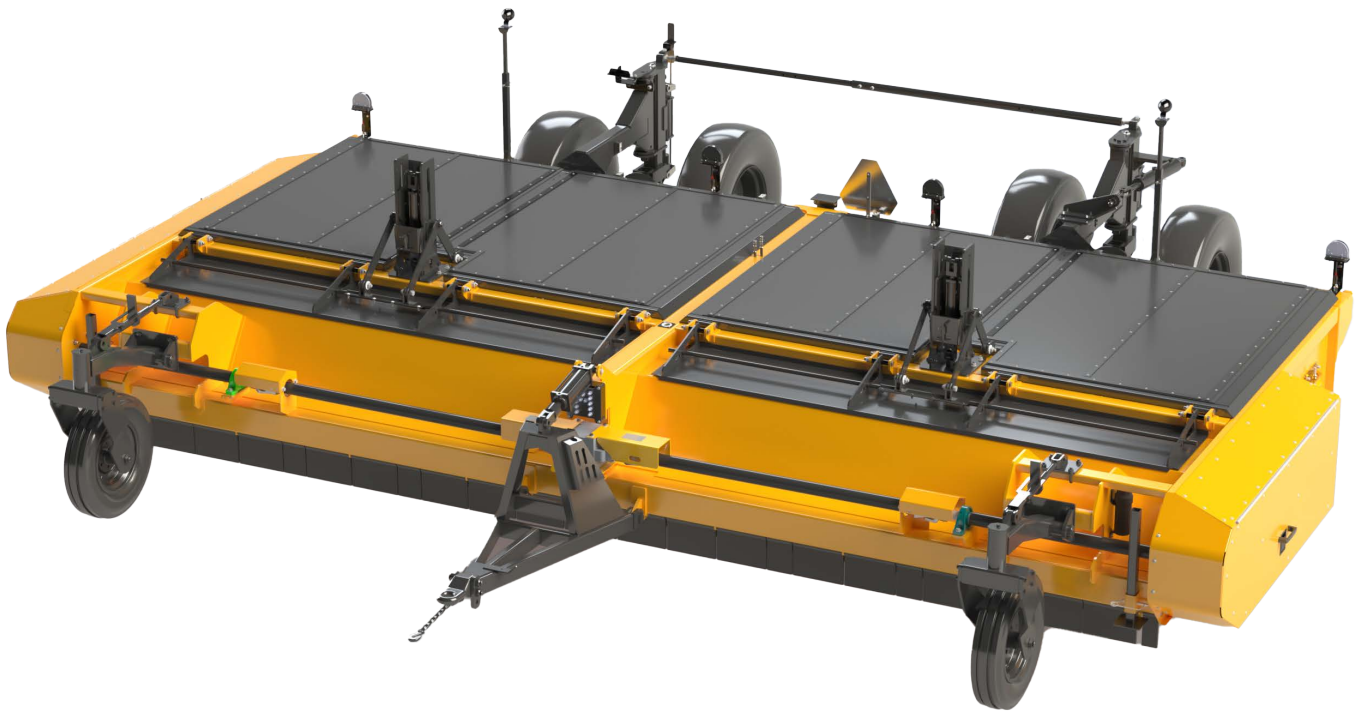


RIGID S-SERIES BEET DEFOLIATOR 2025

ALLOWAY



RDS 12R22

OPERATOR'S MANUAL

TO THE DEALER:

Assembly and proper installation of this product is the responsibility of the Alloway dealer. Read manual instructions and safety rules. Make sure all items on the Dealer's Pre-Delivery and Delivery Check Lists in the Operator's Manual are completed before releasing equipment to the owner.

The dealer must complete the Warranty Registration included in this manual. Both dealer and customer must sign the registration which certifies that all Dealer Check List items have been completed. The dealer is to return the prepaid postage portion to Alloway, give one copy to the customer, and retain one copy.

Note: Warranty credit is subject to this form being completed and returned.

TO THE OWNER:

Read this manual before operating your Alloway equipment. The information presented will prepare you to do a better and safer job. Keep this manual handy for ready reference. Require all operators to read this manual carefully and become acquainted with all the adjustment and operating procedures before attempting to operate. Replacement manuals can be obtained from your dealer.

The equipment you have purchased has been carefully engineered and manufactured to provide dependable and satisfactory use. Like all mechanical products, it will require cleaning and upkeep. Lubricate the unit as specified. Observe all safety information in this manual and safety decals on the equipment.

For service, your authorized Alloway dealer has trained mechanics, genuine Alloway service parts, and the necessary tools and equipment to handle all your needs.

Use only genuine Alloway service parts. Substitute parts will void the warranty and may not meet standards required for safe and satisfactory operation. Record the model number and serial number of your equipment in the spaces provided:

Model: _____ **Date of Purchase** _____

Serial Number: (see Safety Decal section for location) _____

Provide this information to your dealer to obtain correct repair parts.

Throughout this manual, the term **IMPORTANT** is used to indicate that failure to observe can cause damage to equipment. The terms **CAUTION**, **WARNING** and **DANGER** are used in conjunction with the Safety-Alert Symbol, (a triangle with an exclamation mark), to indicate the degree of hazard for items of personal safety.



This Safety-Alert Symbol indicates a hazard and means **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**



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, and includes hazards that are exposed when guards are removed



CAUTION

Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury.

IMPORTANT

Indicates that failure to observe can cause damage to equipment.

NOTE

Indicates helpful information.

ALLOWAY

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GENERAL INFORMATION

The purpose of this manual is to assist you in operating and maintaining your Beet Defoliator. Read it carefully. It furnishes information and instructions that will help you achieve years of dependable performance. These instructions have been compiled from extensive field experience and engineering data. Some information may be general in nature due to unknown and varying operating conditions. However, through experience and these instructions, you should be able to develop procedures suitable to your particular situation.

The illustrations and data used in this manual were current at the time of printing, but due to possible inline production changes, your machine may vary slightly in detail. We reserve the right to redesign and change the machines as may be necessary without notification.



WARNING

- **Some illustrations in this manual show the Beet Defoliator with safety shields removed to provide a better view. The Beet Defoliator should never be operated with any safety shielding removed.**

Throughout this manual, references are made to right and left direction. These are determined by standing behind the equipment facing the direction of forward travel.

SPECIFICATIONS

Number of Rows: 8 - 12

Row Spacing: 20 - 30 in (51 - 76 cm)

Transport Width: 303" (7.7 m)

Transport Height: 69" (1.7 m)

Tractor PTO Speed: 1000 RPM

Tire Size: (Traction Tire) 12.4 X 24

Tire Pressure: 32 PSI (220.6 kPa) 25mph

Flail Types: Steel (Cup-knife / L-Knife) or Rubber

Scalper (Rotating Disc Type): Optional

Weight (Cup-Knife): 14,400 lbs (6,545 kg)

Weight (L-Knife): 13,800 lbs (6,273 kg)

Weight (Rubber Flail): 13,200 lbs (6,000 kg)

Weight (Scalper Attachment): 1,679 lbs (763 kg)



SAFETY RULES

ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!



Safety is a primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by a single careless act of an operator.

In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of equipment.

It has been said *"The best safety device is an informed, careful operator."* We ask you to be that kind of an operator.

The designed and tested safety of this equipment depends on it being operated within the limitations as explained in this manual.

TRAINING

- **Safety instructions are important! Read all attachment and power unit manuals; follow all safety rules and safety decal information. (Replacement manuals are available from dealer). Failure to follow instructions or safety rules can result in serious injury or death.**
- **If you do not understand any part of this manual and need assistance, see your dealer.**
- **Know your controls and how to stop engine and attachment quickly in an emergency.**
- **Operators must be instructed in and be capable of the safe operation of the equipment, its attachments and all controls. Do not allow anyone to operate this equipment without proper instructions.**
- **Keep hands and body away from pressurized lines. Use paper or cardboard, not body parts to check for leaks. Wear safety goggles. Hydraulic fluid under pressure can easily penetrate skin and will cause serious injury or death.**
- **Make sure that all operating and service personnel know that in the event hydraulic fluid penetrates skin, it must be surgically removed as soon as possible by a doctor familiar with this form of injury, or gangrene, serious injury or death will result. CONTACT A PHYSICIAN IMMEDIATELY IF FLUID ENTERS SKIN OR EYES. DO NOT DELAY.**

- **Never allow children or untrained persons to operate equipment.**

PREPARATION

- **Check that all hardware is tight and properly installed. Always tighten to torque chart specifications unless instructed otherwise in this manual.**
- **Air in hydraulic systems can cause erratic operation and allows loads or equipment components to drop unexpectedly. Before operating or allowing anyone to approach the equipment, purge any air in the system by operating all hydraulic functions several times after connecting equipment, connecting hoses, or doing any hydraulic maintenance.**
- **Make sure all hydraulic hoses, fittings and valves are in good condition and not leaking before starting power unit or using equipment. Check and route hoses carefully to prevent damage. Hoses must not be twisted, bent sharply, kinked, frayed, pinched, or come into contact with any moving parts. Operate moveable components through full operational range to check clearances. Replace any damaged hoses immediately.**
- **Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing and head; and respirator or filter mask where appropriate.**
- **Ensure implement is properly attached, adjusted and in good operating condition.**
- **Make sure spring-activated locking pin or collar slides freely and is seated firmly in tractor PTO spline groove.**
- **Before starting power unit, check all equipment driveline guards for damage and make sure they rotate freely on all drivelines. Replace any damaged guards. If guards do not rotate freely on drivelines, repair and replace bearings before operating.**

(Safety Rules continued on next page)



SAFETY RULES

ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!



(Safety Rules continued from previous page)

- Power unit must be equipped with ROPS or ROPS CAB and seat belt. Keep seat belt securely fastened. Falling off power unit can result in death from being run over or crushed. Keep foldable ROPS systems in “locked up” position at all times.
- Connect PTO driveline directly to power unit PTO shaft. Never use adapter sleeves or adapter shafts. Adapters can cause driveline failures due to incorrect spline or incorrect operating length and can result in personal injury or death.
- Inspect rubber flaps and swing rod before each use. Replace if damaged or missing. Flaps must pivot and hang freely so there are no gaps. Do not put equipment into service until repaired.
- Remove accumulated debris from this equipment, tractor and engine to avoid fire hazard.
- Ensure all safety decals are installed. Replace if damaged. (See Safety Decals section for location.)
- Ensure shields and guards are properly installed and in good condition. Replace if damaged.
- A minimum 20% of tractor and equipment weight must be on tractor front wheels when attachments are in transport position. Without this weight, tractor could tip over, causing personal injury or death. The weight may be attained with a loader, front wheel weights, ballast in tires or front tractor weights. When attaining the minimum 20% weight on the front wheels, you must not exceed the Roll Over Protection Structure (ROPS) weight certification. Weigh the tractor and equipment. Do not estimate.
- Make sure hydraulic hoses and cylinders are fully purged of air before operating. Keep all persons away and fill the system by raising and lowering all functions several times. Air in the system can allow components to fall unexpectedly.
- Inspect and clear area of stones, branches, or other hard objects that might be thrown, causing injury or damage.

TRANSPORTING

- Power unit must be equipped with ROPS or ROPS cab and seat belt. Keep seat belt securely fastened. Falling off power unit can result in death from being run over or crushed. Keep foldable ROPS systems in “locked up” position at all times.
- Always sit in power unit seat when operating controls or starting engine. Securely fasten seat belt, place transmission in neutral, engage brake, and ensure all other controls are disengaged before starting power unit engine.
- A minimum 20% of tractor and equipment weight must be on the tractor front wheels when attachments are in transport position. Without this weight, tractor could tip over, causing personal injury or death. The weight may be attained with a loader, front wheel weights, ballast in tires or front tractor weights. Weigh the tractor and equipment. Do not estimate.
- Always attach safety chain to tractor drawbar when transporting unit.
- Always raise unit and install transport locks before transporting. Leak down or failure of mechanical or hydraulic system can cause equipment to drop.
- Never exceed 20 MPH during transport. See the Speed vs. Weight Ratio Table in "Field Operation, Transporting the Unit" for proper tow vehicle to machine weight ratios.
- Watch for hidden hazards on the terrain.
- Always comply with all state and local lighting and marking requirements.
- Never allow riders on power unit or attachment.
- Do not operate PTO during transport.
- Look down and to the rear and make sure area is clear before operating in reverse.
- Do not operate or transport on steep slopes.

(Safety Rules continued on next page)



SAFETY RULES

ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!



(Safety Rules continued from previous page)

- Use extreme care and reduce ground speed on slopes and rough terrain.
- Do not operate or transport equipment while under the influence of alcohol or drugs.

OPERATION

- Equipment may be pictured with covers open for instructional purposes. Never operate equipment with covers open.
- Do not allow bystanders in the area when operating, attaching, removing, assembling, or servicing equipment.
- Do not allow anyone to stand between tractor and unit when backing up to unit.
- Never go underneath equipment (lowered to the ground or raised) unless it is properly blocked and secured. Never place any part of the body underneath equipment or between moveable parts even when the engine has been turned off. Hydraulic system leak down, hydraulic system failures, mechanical failures, or movement of control levers can cause equipment to drop or rotate unexpectedly and cause severe injury or death. Follow Operator's Manual instructions for working underneath and blocking requirements or have work done by a qualified dealer.
- Keep bystanders away from equipment.
- Do not operate or transport equipment while under the influence of alcohol or drugs.
- Operate only in daylight or good artificial light.
- Avoid contact with electrical wires.
- Keep hands, feet, hair, and clothing away from equipment while engine is running. Stay clear of all moving parts.
- Always comply with all state and local lighting and marking requirements.

- Never allow riders on power unit or attachment.
- Power unit must be equipped with ROPS or ROPS cab and seat belt. Keep seat belt securely fastened. Falling off power unit can result in death from being run over or crushed. Keep foldable ROPS systems in "locked up" position at all times.
- Always sit in power unit seat when operating controls or starting engine. Securely fasten seat belt, place transmission in neutral, engage brake, and ensure all other controls are disengaged before starting power unit engine.
- Operate tractor PTO at the RPM speed stated in "Specifications" section.
- Do not operate PTO during transport.
- Look down and to the rear and make sure area is clear before operating in reverse.
- Do not operate or transport on steep slopes.
- Do not stop, start, or change directions suddenly on slopes.
- Use extreme care and reduce ground speed on slopes and rough terrain.
- Watch for hidden hazards on the terrain during operation.
- Stop power unit and equipment immediately upon striking an obstruction. Turn off engine, remove key, inspect, and repair any damage before resuming operation.
- Never work on scalper attachment in the raised position. Lower scalpings to the ground and service each unit individually.
- Always raise scalper arms before moving in reverse.
- Always connect safety chain from equipment to towing vehicle when transporting.

(Safety Rules continued on next page)



SAFETY RULES

ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!



(Safety Rules continued from previous page)

■ AVOID INJURY OR DEATH FROM POWER LINES:

- Stay away from power lines.
- Electrocutation can occur without direct contact.
- Check clearances before raising implement.
- Do not leave the operator's seat if any part of the tractor or implement contacts electric lines.

■ Before servicing, adjusting, repairing or unplugging, stop tractor engine, place all controls in neutral, set park brake, remove ignition key, and wait for all moving parts to stop.

■ Before working underneath a raised implement, read and follow all Operator's Manual instructions and safety rules. Implement must be attached to tractor. Lift cylinder locks must be installed and lift cylinders lowered against locks. Hydraulic system leak down, hydraulic system failures, or movement of control levers can cause equipment to drop unexpectedly and cause severe injury or death.

MAINTENANCE

■ Before servicing, adjusting, repairing, or unplugging, stop tractor engine, place all controls in neutral, set park brake, remove ignition key, and wait for all moving parts to stop.

■ Before working under a raised implement, read and follow all Operator's Manual instructions and safety rules. Implement must be attached to tractor. Lift cylinder locks must be installed and lift cylinders lowered against locks. Hydraulic system leak down, hydraulic system failures, or movement of control levers can cause equipment to drop unexpectedly and cause severe injury or death.

■ Service and maintenance work not covered in OWNER SERVICE must be done by a qualified dealership. Special skills, tools and safety procedures may be required. Failure to follow these instructions can result in serious injury or death.

■ Do not modify or alter or permit anyone else to modify or alter the equipment or any of its components in any way.

■ Your dealer can supply original equipment hydraulic accessories and repair parts. Substitute parts may not meet original equipment specifications and may be dangerous.

■ Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing and head; and respirator or filter mask where appropriate.

■ Do not allow other people in the area when operating, attaching, removing, assembling or servicing equipment.

■ Never go underneath equipment lowered to the ground or raised, unless it is properly blocked and secured. Never place any part of the body underneath equipment or between moveable parts even when the engine has been turned off. Hydraulic system leak down, hydraulic system failures, mechanical failures or movement of control levers can cause equipment to drop or rotate unexpectedly and cause severe injury or death. Follow Operator's Manual instructions for working underneath and blocking requirements, or have work done by a qualified dealer.

■ Ensure implement is properly attached, adjusted and in good operating condition.

■ Never perform service or maintenance with engine running.

■ Make sure hydraulic hoses and cylinders are fully purged of air before operating. Keep all persons away and fill the system by raising and lowering all functions several times. Air in the system can allow components to fall unexpectedly.

■ Keep all persons away from operator control area while performing adjustments, service or maintenance.

■ Make certain all movement of implement components has stopped before approaching for service.

(Safety Rules continued on next page)



SAFETY RULES

ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!



(Safety Rules continued from previous page)

- Do not handle blades with bare hands. Careless or improper handling may result in serious injury.
- Tighten all bolts, nuts and screws to torque chart specifications. Check that all cotter pins are installed securely to ensure equipment is in a safe condition before operating.
- Ensure all safety decals are installed. Replace if damaged. (See Safety Decals section for location.)
- Ensure shields and guards are properly installed and in good condition. Replace if damaged.

- Do not disconnect hydraulic lines until machine is securely blocked or placed in lowest position and system pressure is released by operating all valve control levers.

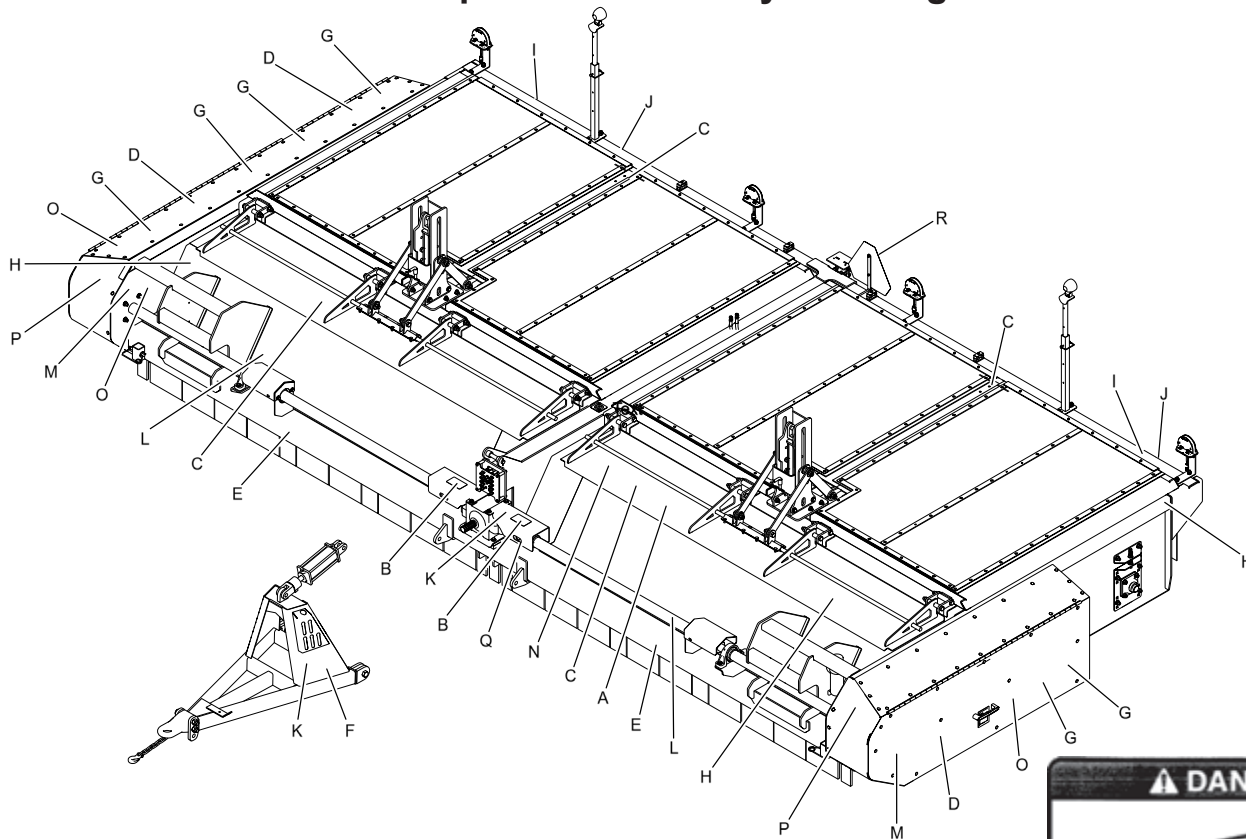
STORAGE

- Follow manual instructions for storage.
- Keep children and bystanders away from storage area.



SAFETY & INSTRUCTIONAL DECALS

ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!
Replace Immediately If Damaged!



CAUTION

1. Read Operator's Manual before starting.
2. Stop tractor engine, place all controls in neutral, lower machine to the ground, set park brake, remove ignition key, and wait for all moving parts to stop before servicing, adjusting, repairing, or unplugging.
3. Keep all guards and access doors closed and secured before operating.
4. Keep hands, feet, hair, and clothing away from moving parts.
5. Do not allow riders.
6. Do not enter rotor area when engine is running.
7. Never exceed a safe travel speed when transporting.
8. Use hazard flashers when transporting.
9. Use drawbar pin with retainer and attach safety pin.
10. Wear appropriate hearing protection for prolonged exposure to excessive noise.
11. Review safety instructions annually.

A. 500-3-0977 Caution (1-11)

WARNING

MISSING SHIELD HAZARD

To prevent serious injury or death:

1. Install and secure shields before operating.
2. Keep hands, feet, hair, and clothing away from moving parts.

50030980-A

D. 500-3-0980 Missing Shields Warning

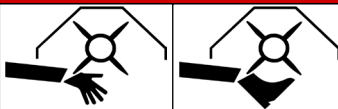
WARNING

SAFETY GUARD DO NOT REMOVE

B. 100-3-1367 Safety Guard

⚠ DANGER

⚠ PELIGRO



ROTATING FLAIL HAZARD

- To prevent serious injury or death from rotating flails:
1. Stop engine, remove ignition key, and wait for moving parts to stop before servicing.
 2. Keep hands and feet away from flails when engine is running.
 3. Keep other people away.

PELIGRO CON LAS CUCHILLAS CORTADORAS ROTATIVAS

- Para evitar heridas graves o la muerte causadas por las cuchillas rotativas:
1. Pare el motor, quite la llave del encendido y espere hasta que las piezas móviles hayan parado antes de dar servicio.
 2. Mantenga las manos y los pies retirados de las cuchillas estando el motor en marcha.
 3. No permita que otra gente se acerque.

50030982-A

E. 500-3-0982 Rotating Flails

⚠ DANGER



ROTATING FLAIL HAZARD

To prevent serious injury or death from rotating flails:

1. Stop engine, remove ignition key and wait for moving parts to stop before opening cover.
2. Open cover fully to prevent accidental closing.
3. Never enter flail area when engine is running.
4. Keep others away.

500-3-0981

C. 500-3-0981 Rotating Flails

⚠ DANGER



ROTATING DRIVELINE CONTACT CAN CAUSE DEATH KEEP AWAY!

DO NOT OPERATE WITHOUT-

- All driveline guards, tractor and equipment shields in place
- Drivelines securely attached at both ends
- Driveline guards that turn freely on driveline

18864-C

F. 506-3-0196 Rotating Driveline
Warning

(Safety Decals continued on next page)



SAFETY & INSTRUCTIONAL DECALS

ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!
Replace Immediately If Damaged!



G. 500-3-0979 Rotating Part Hazard



K. 506-3-0194 Shield Missing Danger



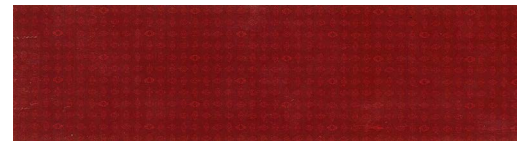
L. 903-17456 Driveline Safety Sign



M. 500-3-1149 Belt Tension



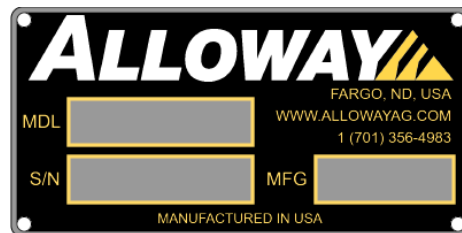
H. 200-3-4004 Amber Reflector 9 x 2



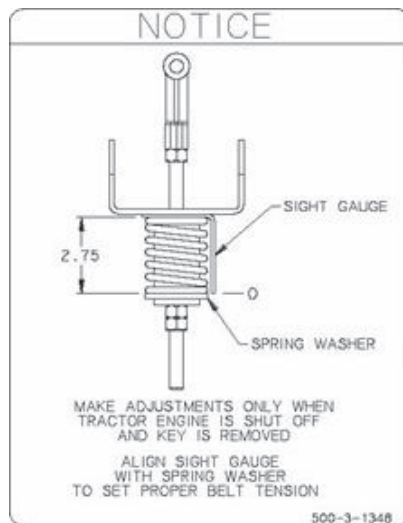
I. 200-3-4005 Red Reflector 9 x 2



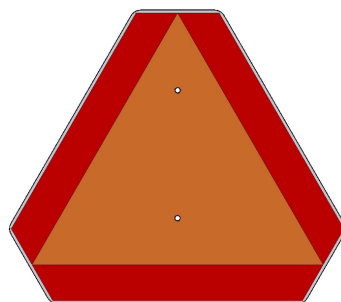
J. 200-3-4034 Orange Fluorescent Reflector 9 x 2



N. 200-3-1366 Serial Number Tag



O. 500-3-1348 Belt Tension



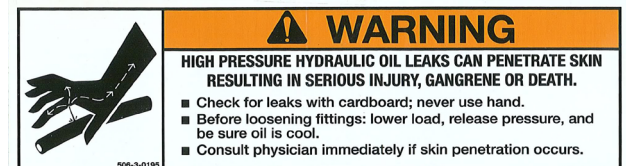
R. 500-3-1696 SMV Sign



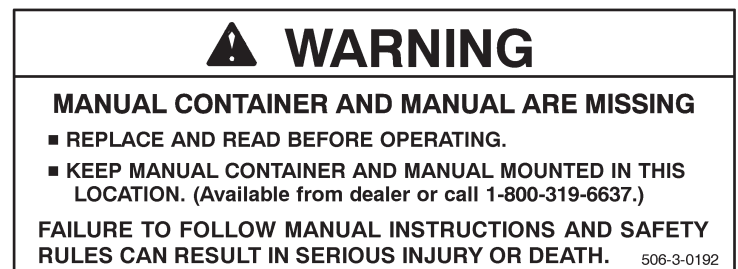
P. 500-3-1690 Do Not Walk / Stand



Q. 700-3-0519 PTO Speed Warning



S. 506-3-0195 Hydraulic Pressure Warning



T. 506-3-0192 Manual Container Warning

OPERATOR SIGN-OFF RECORD

Safety is a primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by an operator's single careless act.

In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, judgement, and proper training of personnel involved in the operation, transport, maintenance and storage of equipment.

It has been said “The best safety device is an informed, careful operator.” We ask you to be that kind of operator.

Alloway Equipment Company follows the general safety standards specified by the American Society of Agricultural Engineers (ASAE) and the

Occupational Safety and Health Administration (OSHA).

Anyone who will be operating and/or maintaining the Beet Defoliator must read and clearly understand all Safety, Operating, and Service & Maintenance information presented in this manual.

Do not operate or allow anyone else to operate this equipment until this information has been reviewed. Review this information annually, before the season start-up. Make periodic reviews of the Safety and Operation sections a standard practice for those using any of your equipment.

Use the following Operator Sign-off Record to verify that each operator has read and understood the information in this manual and has been instructed in the safe operation of the defoliator.

[illegible]

CHECK LISTS

PRE-DELIVERY CHECK LIST

(DEALER'S RESPONSIBILITY)

Inspect the equipment thoroughly after assembly to ensure it is set up properly before delivering it to the customer.

The following check lists are a reminder of points to inspect. Check off each item as it is found satisfactory or after proper adjustment is made.

- Check that all safety decals are installed and in good condition. Replace if damaged.
- Check that shields and guards are properly installed and in good condition. Replace if damaged.
- Check that PTO shaft is properly installed.
- Properly attach implement to tractor and make all necessary adjustments.
- Check all bolts to be sure they are tight.
- Check wheel lug nuts and adjust to proper torque.
- Check that all cotter pins and safety pins are properly installed. Replace if damaged.
- Check and grease all lubrication points as identified in "Service, lubrication information."
- Check the level of gearbox fluids before delivery. Service, if required, as specified in the "Service, lubrication information."
- Check that tractor hydraulic reservoir has been serviced and that hydraulic system and all functions have been operated through full cylinder stroke to purge air from system.
- After pressurizing and operating all Defoliator functions, stop tractor and make sure there are no leaks in the hydraulic system. Follow all safety rules when checking for leaks.

DELIVERY CHECK LIST

(DEALER'S RESPONSIBILITY)

- Check that all safety decals are installed and in good condition. Replace if damaged.
- Show customer how to make adjustments and select proper PTO speed.
- Show customer how to make adjustments.
- Instruct customer how to lubricate and explain importance of lubrication.
- Point out the safety decals. Explain their meaning and the need to keep them in place and in good condition. Emphasize the increased safety hazards when instructions are not followed.
- Present Operator's Manual and request that customer and all operators read it before operating equipment. Point out the manual safety rules, explain their meanings and emphasize the increased safety hazards that exist when safety rules are not followed.
- Show customer how to make sure driveline is properly installed and that spring-activated locking pin or collar slides freely and is seated in groove on tractor PTO shaft.
- Show customer the safe, proper procedures to be used when mounting, dismounting, and storing equipment.
- Explain to customer that when equipment is transported on a road or highway, safety devices should be used to give adequate warning to operators of other vehicles.
- Explain to customer that when equipment is transported on a road or highway, a Slow Moving Vehicle (SMV) sign should be used to provide adequate warning to operators of other vehicles.
- Explain to customer that when towing on a public road to comply with all state and local lighting/ marking laws and to use a safety tow chain.
- Make customer aware of optional equipment available so that customer can make proper choices as required.
- Point out all guards and shields. Explain their importance and the safety hazards that exist when not kept in place and in good condition.

OPERATION

Safety is a primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by an operator's single careless act.

In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, judgment, and proper training of personnel involved in the operation, transport, maintenance and storage of equipment.

It has been said "The best safety device is an informed, careful operator." We ask you to be that kind of operator.

The Alloway Beet Defoliator is designed to efficiently remove the foliage from sugar beets. A series of rubber or steel flails on three drums cleans the top of the beet, leaving the exposed crown.

Be familiar with the defoliator before starting.

The owner is responsible for training operators in the safe operation of the defoliator.



WARNING

- Safety instructions are important! Read all attachment and power unit manuals; follow all safety rules and safety decal information. (Replacement manuals are available from your dealer). Failure to follow instructions or safety rules can result in serious injury or death.
- Never allow children or untrained persons to operate equipment.
- Make sure shields and guards are properly installed and in good condition. Replace if damaged.
- Keep hands, feet, hair, and clothing away from equipment while engine is running. Stay clear of all moving parts.
- Keep bystanders away from equipment.
- Operate tractor PTO at the RPM speed stated in "Specifications" section.
- Before dismounting power unit or performing any service or maintenance, follow these steps: disengage power to implement, lower the hitch and all raised components to the ground, operate valve levers to release any hydraulic pressure, set parking brake, stop engine, remove key, and unfasten seat belt.



WARNING

- Keep bystanders away from equipment.
- Never allow riders on power unit or attachment.
- Do not allow bystanders in the area when operating, attaching, removing, assembling, or servicing equipment.
- Keep hands, feet, hair, and clothing away from equipment while engine is running. Stay clear of all moving parts.



CAUTION

- Always sit in tractor seat when operating controls or starting engine. Securely fasten seat belt, place transmission in neutral, engage brake, and ensure all other controls are disengaged before starting tractor engine.
- Always comply with all state and local lighting and marking requirements.
- Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head.

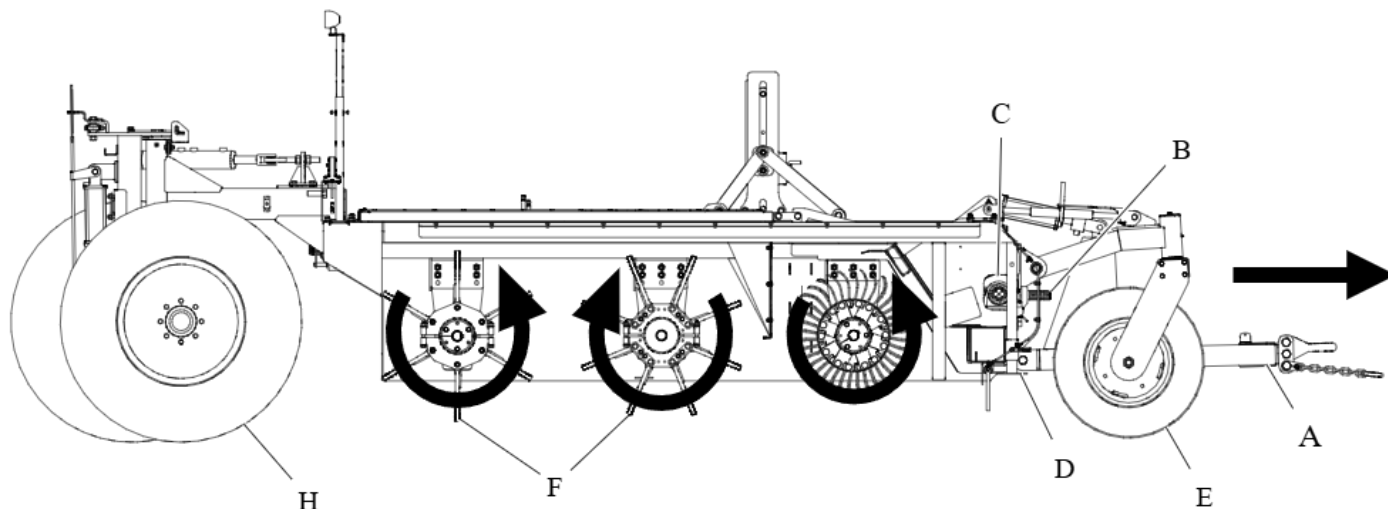
Operation Continued

PRINCIPAL COMPONENTS

The Alloway Beet Defoliator consists of three rotating drums that have steel or rubber flails. The flails remove the foliage from the plant. Rotational power to

the drums is provided from the tractor PTO through a series of belts on each side of the machine.

An optional scalper package is available on the back of the machine to cut off the top of the remaining beet.



A. Hitch
E. Belt

B. Input Driveline
F. Rotor

C. Gearbox
G. Flails

D. Stands
H. Wheels

Figure 1. Beet Defoliator Principal Components

Operation Continued

BEET DEFOLIATOR BREAK-IN

The following should be observed when operating the unit for the first time:

1. Attach PTO shaft. Remove grease zerks to gain access to the set screws for tightening on unit.

After operating for 1/2 hour or five acres

2. Check all nuts, bolts, and other fasteners Tighten to specifications in Bolt Torque Chart, page 113.
3. Check and re-torque fasteners on flail mounting brackets.
4. Tighten wheel lug nuts to specifications in Bolt Torque Chart, page 113.
5. Inspect flail condition and mobility. Replace or repair broken parts and ensure that all swing freely.
6. Check oil level in gearbox. Add oil as required.
7. Confirm that PTO driveline shield turns freely.
8. Lubricate all grease points.

After operating for 5 hours

9. Repeat steps 1 through 6 above.
10. Check tension of drive belts. Refer to Service and Maintenance section for procedure. Adjust as required.

After operating for 10 hours

11. Repeat steps 1 through 6 above.
12. Check tension of drive belts. Adjust as required.

After operating for 15 hours and 20 hours

13. Check tension of drive belts. Adjust as required.

PRE-OPERATION CHECK LIST

(OWNER'S RESPONSIBILITY)

IMPORTANT

- **This Pre-Operation Check List is provided for the operator. It is important to follow for both personal safety and maintenance of the beet defoliator.**

- Check that all safety decals are installed and in good condition. Replace if damaged.
- GENL-LUBE--Check all lubrication points and grease as instructed in Lubrication Schedule.
- Use only a tractor of adequate power and weight to pull the unit.
- Check that the unit is properly attached to the tractor. On pull-type unit, be sure there is a mechanical retainer through the drawbar pin and safety chain is installed.
- Check oil level in gearbox. Add oil as required.
- Check that the PTO driveline turns freely and that the driveline can telescope easily.
- Check tire pressure. Adjust to specified level.
- Check flails. Inspect for damage or breakage. Make sure each swings freely. Replace or repair as required.
- Check condition of all drive belts. Align as required. Replace any that are frayed or broken. Refer to Belt Replacement.
- Check condition of scalpels. Adjust or repair as required. Refer to Scalpers.
- Inspect all hydraulic lines, hoses, couplers, and fittings. Tighten, repair, or replace any leaking or damaged components.
- Close and secure all guards, doors, and covers.

Operation Continued

CHOOSING THE CORRECT EQUIPMENT

To ensure safe and reliable operation of the beet defoliator, use a tractor with the correct specifications. Use the following guidelines to select the correct tractor.

PTO

The defoliator is equipped with a PTO driveline yoke to fit a 1-3/8" 21 spline shaft on the tractor. An optional 1-3/4" 20 spline yoke is available from the factory if required. Be sure to match the yoke to your tractor shaft.

IMPORTANT

- Do not use an adapter on the tractor shaft. It will alter the drawbar dimension and can affect the strength of the shaft.

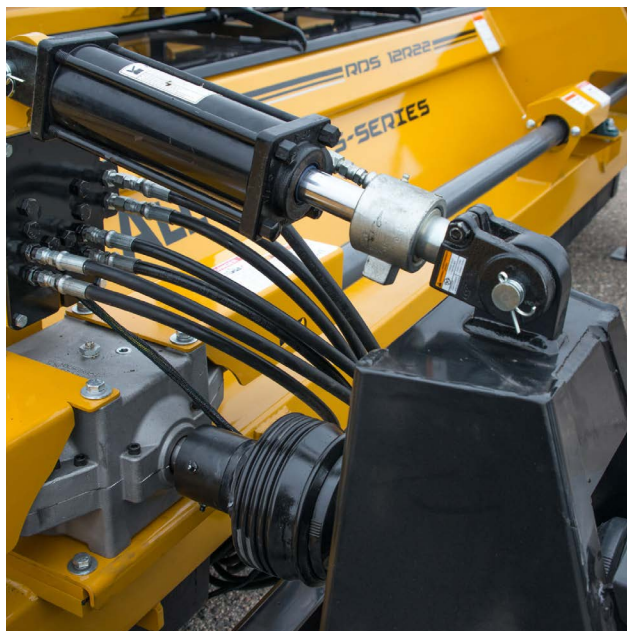


Figure 2a. PTO Driveline

DRAWBAR

The tractor drawbar must be set to provide 16" (406mm) between the end of the PTO shaft and the center of the drawbar pin.

IMPORTANT

- Do not use PTO shaft adapters. They will change the drawbar dimension and can cause driveline failures.

NOTE: Verify that no driveline interference occurs through all phases of operation (bottoming out).

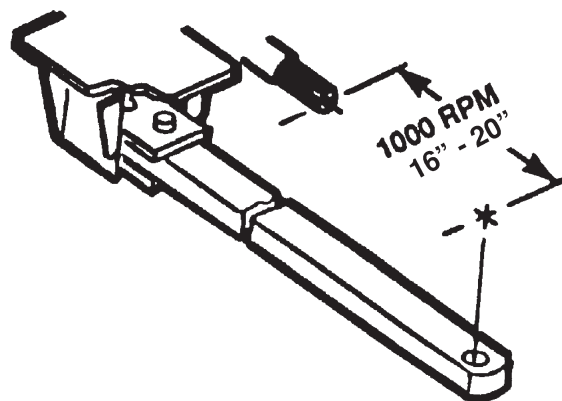


Figure 2b. Drawbar Dimension

HYDRAULIC SYSTEM

The tractor hydraulic system must be capable of 8 gpm (22 lpm) at 2,500 psi (1700 kPa). Either closed-centered or open-centered system can be used. A remote outlet is required for each circuit.

Operation *Continued*

ATTACHING THE DEFOLIATOR TO THE TRACTOR

Place unit on a level, dry area free of debris and other foreign objects



WARNING

■ **Keep bystanders away from equipment.**

1. Clear the area of all bystanders.
2. Provide enough clearance to back the tractor safely into the unit.



CAUTION

■ **Do not allow anyone to stand between tractor and unit when backing up to the unit.**

3. Back slowly and align the drawbar with the hitch.
4. Stop tractor engine, place all controls in neutral, set parking brake, remove ignition key, and wait for all moving parts to stop.

5. Use ratchet on top of hitch A-frame to set height (9 row model and smaller). The operator must supply hydraulic cylinder for 12-row model.

6. On 12-row defoliator, connect hoses from hitch cylinder to tractor hydraulics to raise or lower hitch.

7. Use hardened drawbar pin with provisions for a mechanical retainer. Install a retainer, such as a Klik Pin.

8. Be sure drawbar is pinned in its center position.

9. Attach safety chain around drawbar or cage to prevent unexpected separation. Provide sufficient slack for turning.

10. Connect PTO driveline to implement.

11. Inspect PTO to ensure driveline telescopes easily and shield rotates freely with no interference.

12. To attach driveline to tractor, retract locking collar. Slide yoke over shaft and push forward until the locking collar engages. Pull back on yoke to confirm yoke is locked in position.

13. Attach anchor chain on driveline shield to tractor frame.

Operation Continued

CONNECT THE HYDRAULICS

1. Use a clean cloth or paper towel to clean the couplers on the end of the hoses and the area around the couplers on the tractor.
2. Insert the male ends into the couplers on the tractor. Be sure they are locked in place.
3. Route the hoses along the hitch and secure in position with clips, tape, or plastic ties. Provide sufficient slack for turning.

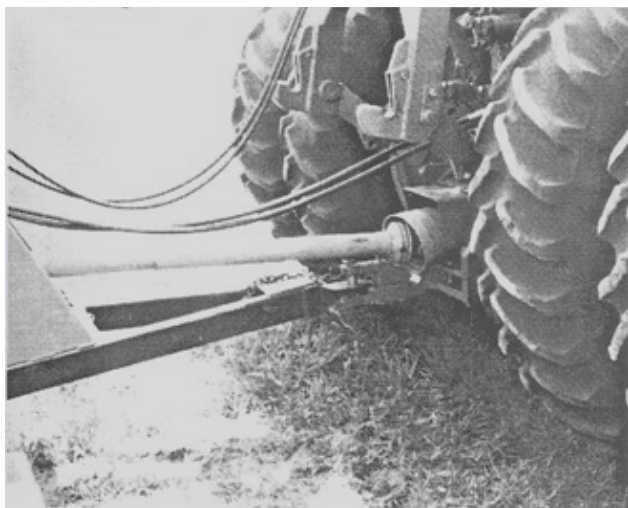


Figure 3. Driveline and Hydraulics Attached



WARNING

- Keep hands and body away from pressurized lines. Use paper or cardboard, not hands or other body parts to check for leaks. Wear safety goggles. Hydraulic fluid under pressure can easily penetrate skin and will cause serious injury or death.
- Make sure all hydraulic hoses, fittings, and valves are in good condition and not leaking before starting power unit or using equipment. Check and route hoses carefully to prevent damage. Hoses must not be twisted, bent sharply, kinked, frayed, pinched, or come into contact with any moving parts. Operate moveable components through full operational range to check clearances. Replace any damaged hoses immediately.

COMPLETE ATTACHMENT

1. Use ratchet or hydraulic cylinder on the hitch to lower the hitch and transfer the weight to the drawbar. See Figure 4.
2. Unpin the front frame stands. Raise the stands and pin them in their stowed positions. See Figure 5.

REMOVING THE DEFOLIATOR FROM THE TRACTOR

Reverse the above procedure when unhooking from the tractor.



Figure 4. Hitch Cylinder



Figure 5. Parking Stand

Operation *Continued*

MACHINE SETTINGS

The machine can give its best performance only if it is properly set to work in the existing conditions. It may be necessary to change the machine settings during the working day if the machine is moved to a new field, or the operating conditions change.

Review this section to be familiar with the adjustments available to match the machine to the working conditions.

MACHINE LEVELING

The frame must be set level when working in the field to be sure that the flails contact the plants evenly at any place under the frame. Set when the machine is on firm, level ground. Use a tape to measure the distance between the frame and the ground, or place a level on top of the frame.

1. Use the ratchet or hydraulic cylinder on the hitch (Figure 4) to level the frame in the direction of travel.
2. Turn the adjustment crank on the rear wheels (Figure 7) to level the machine from side to side. Loosen the “U” bolt on the wheel strut, turn the crank and re-tighten the bolt.



Figure 6. Hitch Cylinder



Figure 7. Rear Wheels

(Machine Settings continued on next page)

Operation Continued

(Machine Settings continued from previous page)

FLAIL HEIGHT

Best results are obtained when the flails contact the sugar beets approximately 1/2 inch (12 mm) below the crown. This will allow the flails to remove the foliage from the beets during a pass.

Set the height of the flails by changing the height of the machine from the ground. Machine height is set with the ratchet or hydraulic cylinder on the hitch and the height of the rear wheels.

IMPORTANT

- **Maintain a level machine at all times.**

In soft or wet conditions, the tires will sink into the soil and the machine should be raised to maintain the flail contact line of 1/2 inch (12 mm) below the crown.

In crop conditions where the beet crown extends above the ground and can be knocked over, the flails can be set so that they just contact the crown.

Do not allow the flails to contact the ground. They will pick up dirt, sticks, stones and other material that can be thrown out and cause injury. This will also cause rapid wear or breakage.

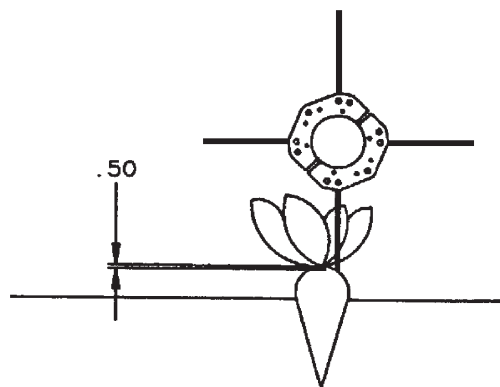


Figure 8. Flail Height



Figure 9. Machine Height

FLAIL SPACING

Set flail position on the drum to follow beet rows exactly and to clean the low foliage from both sides of the crown. Change spacing of flail sets by loosening the clamping bolts on the head, and sliding the entire assembly to its new position on the rotor

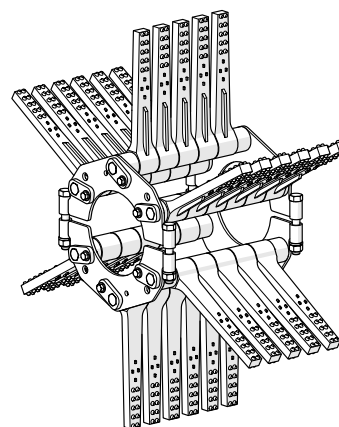


Figure 10. Flail Assembly

(Machine Settings continued on next page)

Operation Continued

(Machine Settings continued from previous page)

WHEEL SPACING

The rear wheels must be set to track directly between rows. Any other positions can lead to beet contact and damage or knocking the beet out of the ground.

Change wheel assembly position by jacking up the machine, loosening top mounting bolts (Figure 11), and sliding the assembly to its desired position. Re-tighten the bolts and remove jacks.



Figure 11. Wheel Mounting Bolts

STABILIZER WHEEL POSITION

Stabilizer wheels are located on front corners of the 12 row machine (Figure 12). They must be set to the correct height to prevent dipping, thus preventing machine and plant damage.



Figure 12a. Stabilizer Wheel Mounting Position

Operation *Continued*

SCALPER SETTINGS (Optional)

Three types of scalpers are available:

- Knife (Figure 13)
- Circular (parallel arms) - (not shown; refer to Parallel Arm Rotary Scalper)
- Circular (arms) - (not shown, refer to Rotary Scalper Long Arm)

Scalpers cut the top of the crown and are positioned on the back of the machine.

The shoe, ahead of the cutting surface, must be set at the proper angle. This will allow sufficient space for the knives to cut the green portion of the beets without tipping them over.

IMPORTANT

- **Severe equipment damage may occur if attempting to go in reverse with the scalper arms down. Always raise scalper arms before going in reverse.**



Figure 13. Knife Scalpers

FIELD OPERATION

The Alloway beet defoliator is designed with the flexibility to operate well in almost any kind of crop and terrain conditions. However, the operator is responsible for being familiar with all operating and safety procedures and following them.

Each operator should review this Field Operation

section at the start of the season and as often as required to be familiar with the unit.

Operators should also review the Pre-Operation Check List, Attaching the Defoliator to the Tractor, and Transporting the Unit.



WARNING

- Operators must be instructed in and be capable of the safe operation of the equipment, its attachments, and all controls. Do not allow anyone to operate this equipment without proper instructions.
- Always comply with all state and local lighting and marking requirements.
- Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head.
- Do not allow bystanders in the area when operating, attaching, removing, assembling, or servicing equipment.
- Never allow riders on power unit or attachment.
- Before dismounting power unit or performing any service or maintenance, follow these steps: disengage power to implement, lower the 3-point hitch and all raised components to the ground, operate valve levers to release any hydraulic pressure, set parking brake, stop engine, remove key, and unfasten seat belt.
- Keep hands, feet, hair, and clothing away from equipment while engine is running. Stay clear of all moving parts.
- Make sure shields and guards are properly installed and in good condition. Replace if damaged.
- Never allow children or untrained persons to operate equipment.



WARNING

- Safety instructions are important! Read all attachment and power unit manuals; follow all safety rules and safety decal information. (Replacement manuals are available from dealer. Failure to follow instructions or safety rules can result in serious injury or death.
- Keep hands, feet, hair, and clothing away from equipment while engine is running. Stay clear of all moving parts.
- Inspect and clear area of stones, branches, or other hard objects that might be thrown, causing injury or damage.
- Operate tractor PTO at the RPM speed stated in "Specifications" section.



CAUTION

- Always sit in tractor seat when operating controls or starting engine. Securely fasten seat belt, place transmission in neutral, engage brake, and ensure all other controls are disengaged before starting tractor engine.

Field Operation *Continued*

TRANSPORTING THE UNIT



WARNING

■ **Never allow riders on power unit or attachment.**



CAUTION

■ **Always comply with all state and local lighting and marking requirements.**

1. Be sure all bystanders are clear of the unit.
2. Be sure center cutter is disengaged and has stopped turning (if so equipped).
3. Be sure the unit is securely attached to the tractor and all retainer pins are installed.
4. Be sure safety chain is installed on pull-type model.
5. Raise the machine.
6. Clean the SMV emblem, lights, and reflectors and be sure they are working.
7. Be sure you are in compliance with all applicable lighting and marking regulations when transporting. Check with your local authorities.
8. Never transport the unit faster than 20 mph (32 km/h). The ratio of the tractor weight to the defoliator weight plays an important role in defining acceptable travel speed. Table 1 summarizes the recommended travel speed-to-weight ratio.

Table 1: Speed vs. Weight Ratio

Road Speed	Fully equipped or loaded implement(s) weight relative to towing machine weight
Up to 32 km/h (20 mph)	1 to 1 or less
Up to 16 km/h (10 mph)	2 to 1 or less
Do not tow	more than 2 to 1

PREPARING FOR OPERATION

1. Attach the machine to the tractor
2. Lubricate the machine.
3. Review and follow the pre-operation checklist. See Pre-Operation Check List.
4. Review Transporting the Unit, before transporting to the field.
5. Pull into the field and line up with the first set of rows.
6. Determine the machine parameters that require setting before starting use. See Machine Settings.
7. Close and secure all guards, covers and access doors.

STARTING THE MACHINE

1. Start the tractor engine and run at low idle.
2. Slowly engage the tractor PTO.

IMPORTANT

■ **Engage and disengage the PTO at low idle engine RPM to minimize shock loads to the drive train.**

3. Slowly increase engine speed to the rated PTO speed of 1000 RPM.
4. Put the tractor in gear and proceed down the field.

STOPPING THE MACHINE

1. Take the tractor out of gear.
2. Slowly decrease engine speed down to the idle RPM.
3. Slowly disengage PTO clutch.

IMPORTANT

■ **Disengage clutch slowly. On newer tractors the PTO brake will stop the shaft in less than one revolution and create shock loads in the drive train if the clutch is not disengaged slowly.**

4. Stop engine and set park brake before dismounting.

Field Operation *Continued*

GROUND SPEED

The defoliator works well at 3 to 6 mph (5 to 10 Kmph) depending on density of foliage and type of job. The operator is responsible for checking condition of beets and setting speed required for best defoliating. For best results:

1. Increase speed if beet tops are completely cleaned of foliage.
2. Increase speed or raise flails if beets are being pulled out of the ground.
3. Decrease speed or lower flails if foliage is left on crown or sides.

FLAIL PATTERNS

When delivered from the factory, the flail patterns are set as shown in Figure 14. Maintain this pattern at all times.

Do not allow the flails to hit the ground where they might pick up dirt, sticks, stones and other debris that can be thrown out and cause injury. This will also cause rapid wear or breakage.

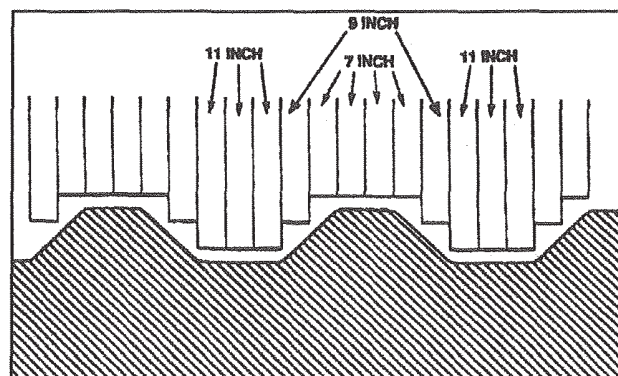
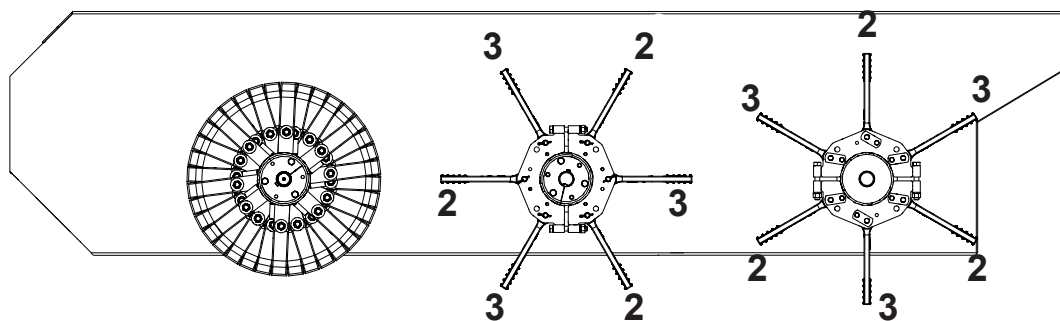
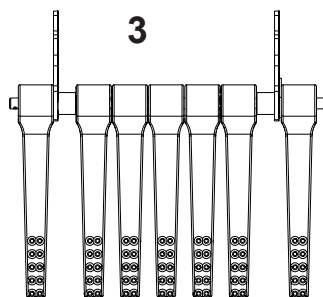
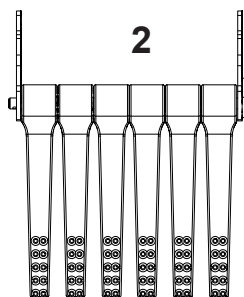
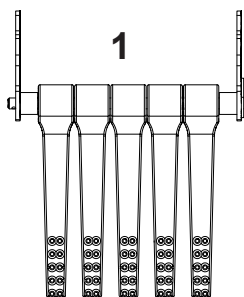
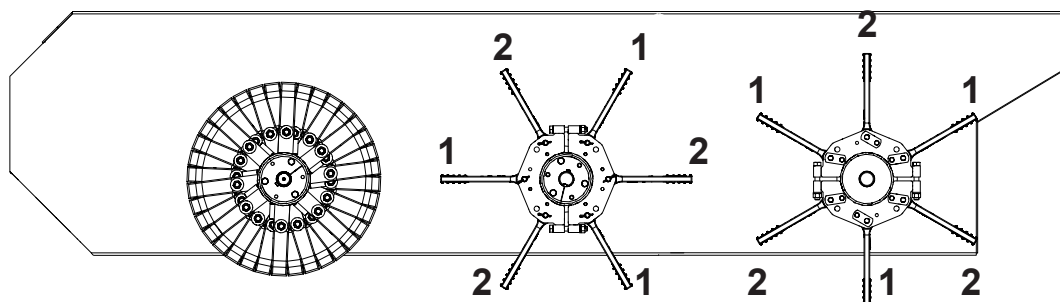


Figure 14. Standard Flail Contour

30" ROWS



22" - 26" ROWS



Field Operation *Continued*

OPERATING THE DEFOLIATOR

1. Operate the machine at its rated speed of 1000 rpm at all times. Effective removing of beet tops depends on the flail tip speed. A slower speed can result in foliage being left on the beets.
2. Operate the machine at rated speed at the end of the row until the last drum has passed over the beets.
3. When turning at the end of the field, it may be necessary to skip a machine width of rows before turning back into the field. This will depend on the width of the machine, the width of the headland, and the turning radius of the tractor.
4. Although the driveline may be equipped with an optional constant velocity (CV) joint, turning angles are limited. (See Figure 15.) Do not exceed the working angles. Turn off the machine when making sharp turns.
5. When starting a new field, or when operating conditions change:
 - a. Travel 50 feet into the field.
 - b. Shut off the tractor, place all controls in neutral, set the parking brake, remove the key, and wait for all moving parts to stop.
 - c. Go behind the machine and inspect the beets.
 - d. Check the flail spacing, wheel spacing, machine height, and scalper setting (if so equipped.)
 - e. Adjust as needed.

TURNING

The front universal is equipped with a constant velocity (CV) joint to allow for turning. Although the CV joint allows for sharper turns than a regular driveline, it does have some limitations. Refer to Figure 16.

CV joint angle should not exceed 80 degrees in either operating or standstill condition of the driveline. Larger angles will damage the joint.

The angle should never exceed 35 degrees when the driveline is under full load.

IMPORTANT

- Disengage PTO when making sharp turns.

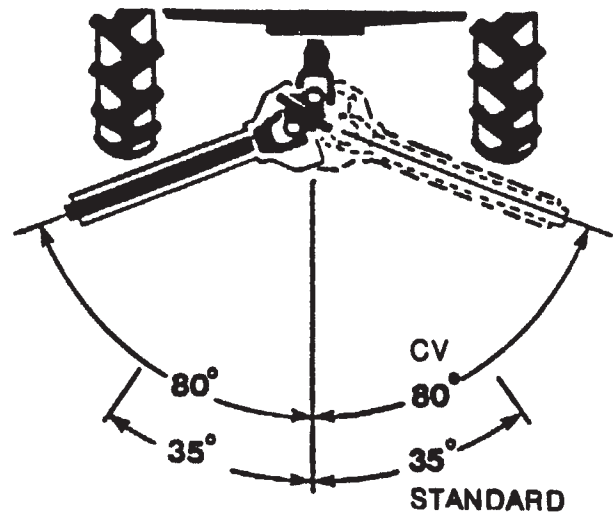


Figure 15. Driveline Angles

HAZARD AREA



WARNING

- Make certain all movement of implement components has stopped before approaching for service.

Stay away from front, side and rear of unit while it is running. Flails can pick up stones, sticks, wire or other debris and throw it out with enough force to severely injure bystanders.

Keep out of shaded area shown in Figure 16.

Shut down unit and wait for moving parts to stop before approaching.

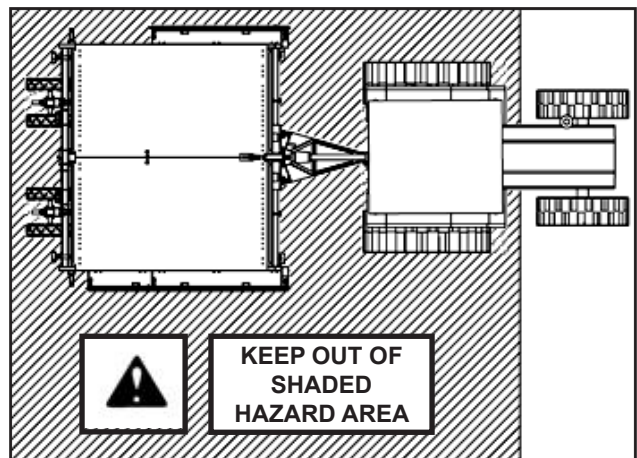


Figure 16. Hazard Area

PN : 500-5-0024 (2025)

ADDITIONAL EQUIPMENT (Optional)

REAR STEER

1. Mount rear steer components to back of defoliator body. Refer to Rear Steer Components, and Rear Steer Plumbing Components, in the parts section for hardware and assembly instructions.
2. Attach the sight gauge on defoliator and the hose clamp to adjustable bar. Be sure the sight gauge and hose clamp are aligned when wheels are straight.

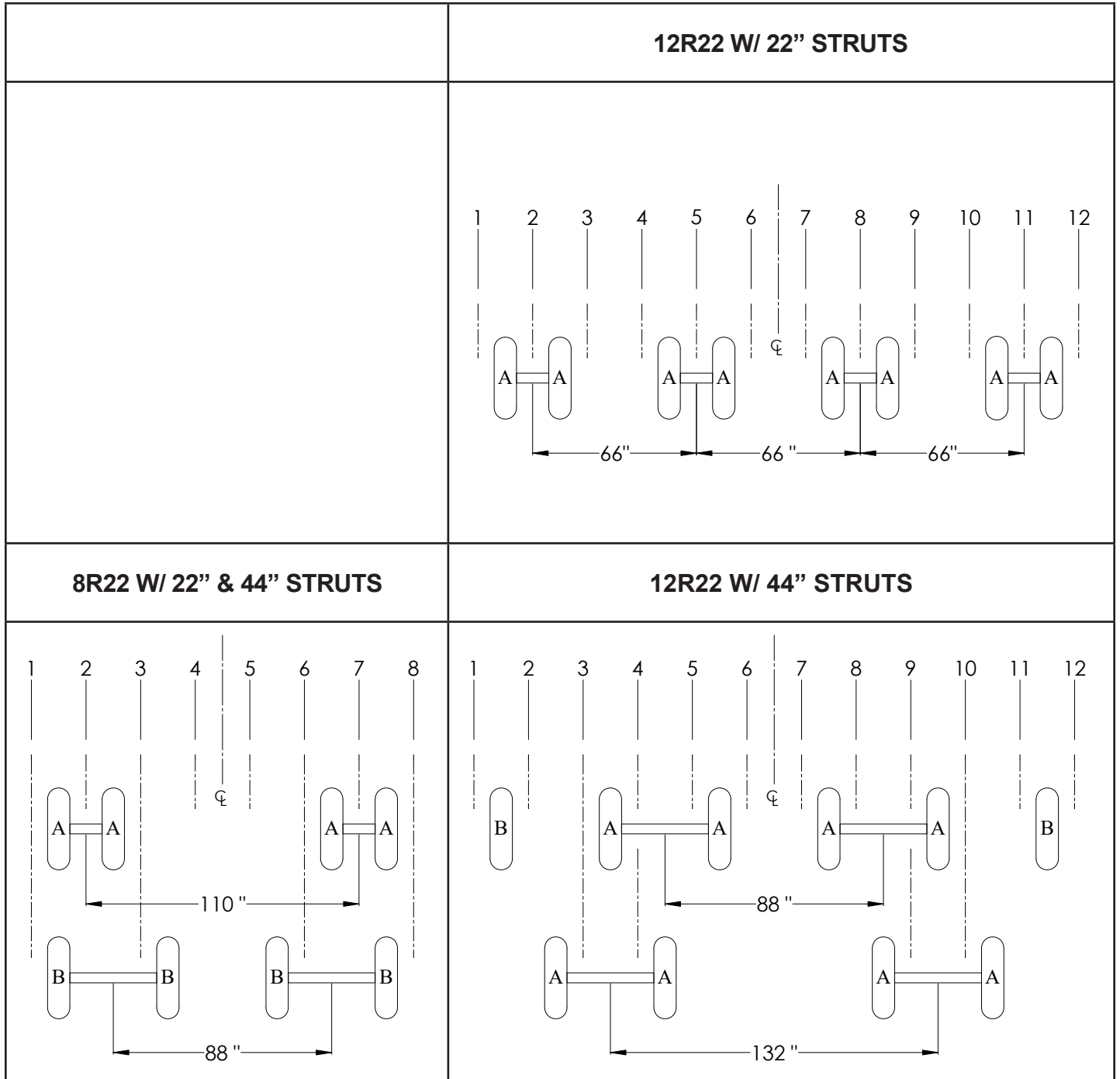


Figure 18a. Rear Steer Spacing

Additional Equipment *Continued*

STEERING VALVE

The Steering valves (Figure 18) reacts to the rowfinder allowing the machine to stay on the rows as you are going down the field. It also allows for steering override to manually move the struts left or right. 2 sets of hoses run to the tractor, 1 for rowfinder rear steer control and 1 for manual rear steer control.

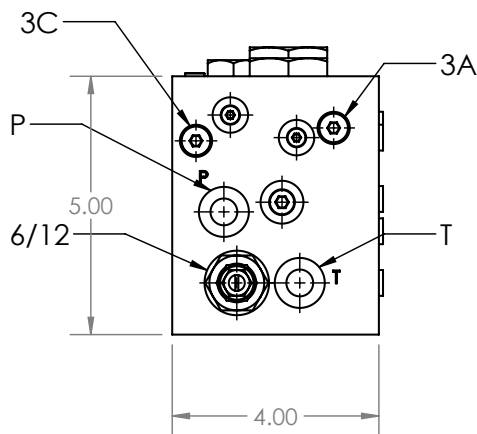


Figure 18a. Steering Valve Right

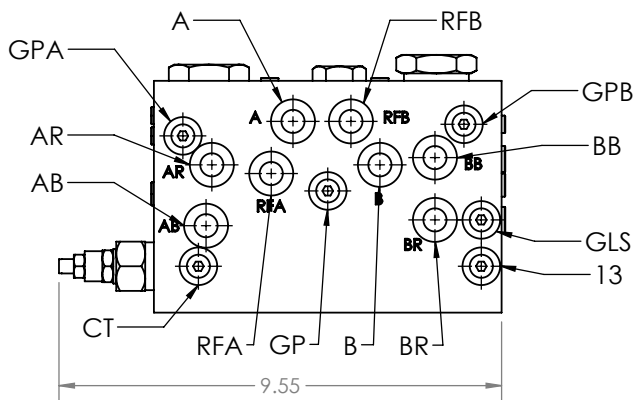


Figure 18b. Steering Valve Front

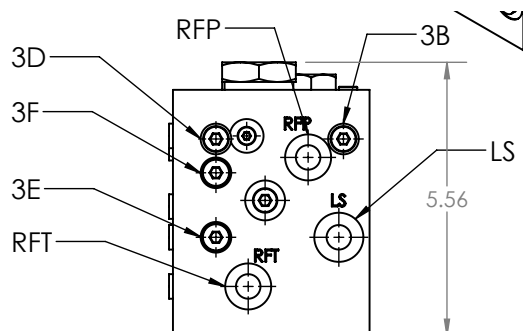


Figure 18c. Steering Valve Left

STABILIZER STRUTS

1. Mount stabilizer struts to the front of defoliator. Refer to Stabilizer Wheel Components, in the parts section, for assembly.

2. Adjust up and down so the parallel linkage is low in the front in operating position. See Figure 19. This allows maximum upward travel when operating. Pin #10 limits the downward travel of the wheel for road transport. This may be left installed when operating.

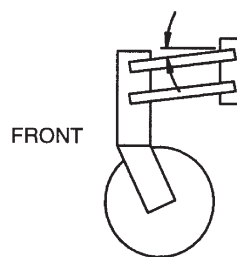


Figure 19a. Stabilizer Strut

STEEL FLAIL UNITS

This is not a field adjustment, but rather a seasonal adjustment.

Set the front drum in either the upper or lower position that best accommodates the variety of sugar beet you are defoliating. The machine is shipped from the factory with the drum in the upper (normal) position. This setting has the steel flail tips 4" higher than the rubber flail tips. The lower setting would put the steel flails only 2" higher than the rubber flails.

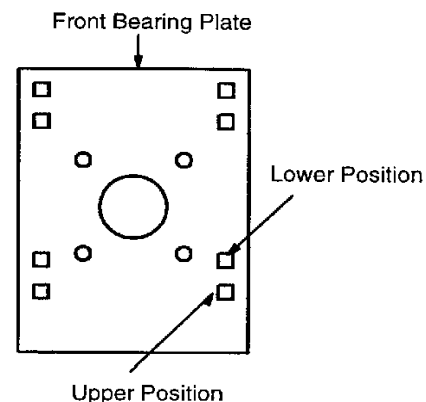


Figure 19b. Steel Flail Adjustment

Additional Equipment *Continued*

DOOR OPENER

The Door Opener is designed to make door opening quick and safe.

To Open Doors :

1. Move lever in tractor cab to raise doors.
2. Insert pin to lock doors in open position.

To Close Doors :

1. Remove lock pin.
2. Move lever in tractor cab to lower doors.

IMPORTANT

- **Always make sure valve is in neutral position when not controlling door opener, to prevent doors from lifting while defoliating.**



Figure 20a. Doors Closed

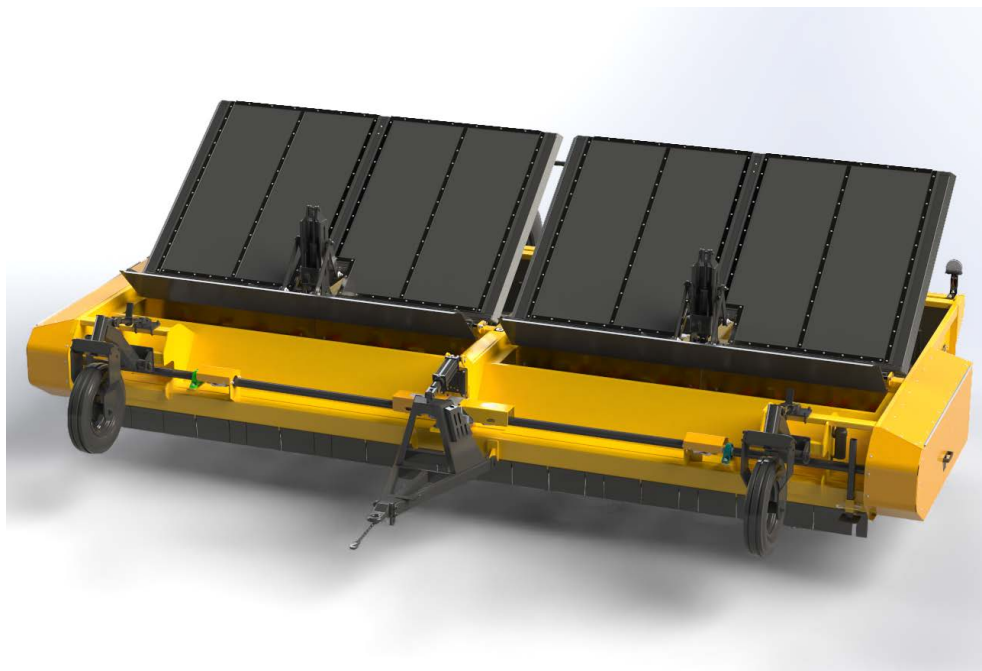


Figure 20b. Doors Opened

Additional Equipment *Continued*

RECOMMENDED SCALPER LOCATIONS

(Depending on Additional Equipment)

1. Measure and mark locations as shown below (Figure 21) for desired scalper arrangement.

2. Mount Scalper Arms on back of defoliator body by sliding on rear tube of body and securing with 3/4 x 8-1/2 bolts.

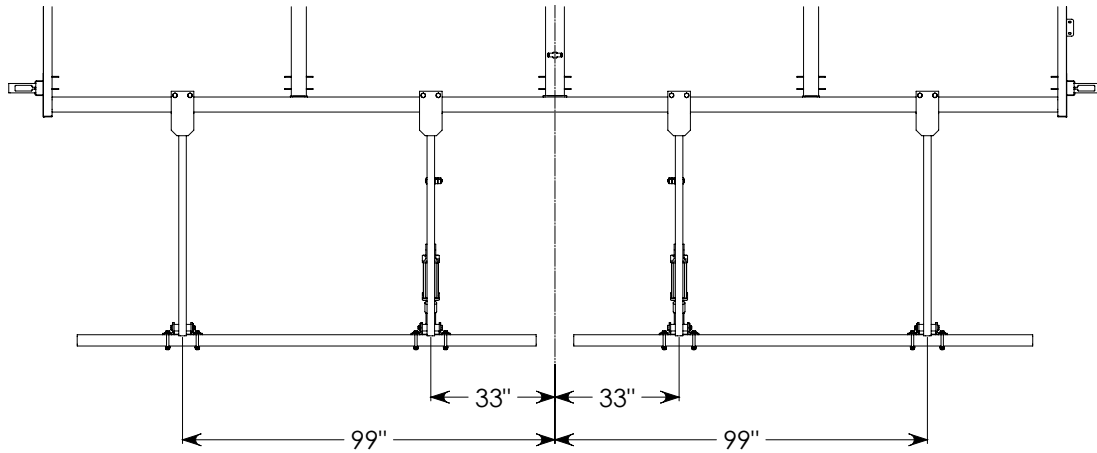


Figure 21a. 12 Row 22" Spacing

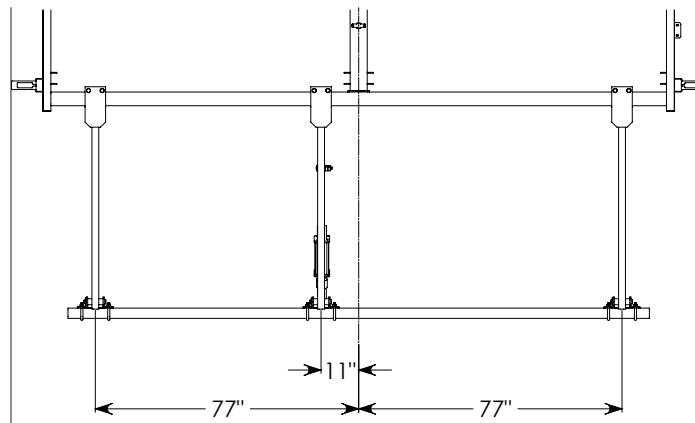


Figure 21b. 8 Row 22" Spacing

STORAGE



WARNING

- **Keep children and bystanders away from storage area.**

IMPORTANT

- **Store in a dry, level area. Support the base with planks if required.**

After the season's use, inspect all major components of the defoliator. Repair or replace any worn or damaged components to prevent unnecessary downtime at the start of next season.

To assure a long, trouble-free life, follow this procedure when preparing the unit for storage:

1. Open all access doors and canvas covers. Be sure the door locks are in place and secured.



WARNING

- **Equipment may be pictured with covers open for instructional purposes. Never operate equipment with covers open.**

2. Thoroughly wash the machine using a pressure washer to remove all dirt, mud, debris and residue.
3. Inspect the flails, flail assemblies and drums for damage or entangled material. Repair or replace damaged parts. Remove all entangled material.
4. Inspect all hydraulic hoses, hardlines, couplers and fittings. Tighten any loose fittings. Replace any hose that is badly cut, nicked, abraded, or is separating from the crimped end of a fitting.
5. Inspect drive belts. Replace any that are damaged. Adjust to specified tension as needed.
6. Lubricate all grease fittings. Ensure that all grease cavities have been filled with grease to force out residual water from washing.
7. Touch up paint nicks and scratches to prevent rusting.
8. Close and secure access doors and canvas covers.
9. Move to storage area.

10. Select an area that is dry, level and free of debris.

11. Unhook from tractor (see Removing the Defoliator from the Tractor, page 15).

12. Lower the scalpers to the ground for storage.

13. Store the machine in an area away from human activity.

14. Do not allow children to play on or around the stored machine.



Figure 22a. Open Covers



Figure 22b. Scalper Storage

SERVICE & MAINTENANCE



WARNING

- Keep children and bystanders away from storage area.
- Operators must be instructed in and be capable of the safe operation of the equipment, its attachments, and all controls. Do not allow anyone to operate this equipment without proper instructions.
- Equipment may be pictured with covers open for instructional purposes. Never operate equipment with covers open.
- Keep all persons away from operator control area while performing adjustments, service, or maintenance.
- Ensure that shields and guards are properly installed and in good condition. Replace if damaged.
- Never go underneath equipment (lowered to the ground or raised) unless it is properly blocked and secured. Never place any part of the body underneath equipment or between moveable parts even when the engine has been turned off.

Hydraulic system leak down, hydraulic system failures, mechanical failures, or movement of control levers can cause equipment to drop or rotate unexpectedly and cause severe injury or death. Follow Operator's Manual instructions for working underneath and blocking requirements or have work done by a qualified dealer.

■ Do not handle blades with bare hands. Careless or improper handling may result in serious injury.

■ Before servicing, adjusting, repairing or unplugging, stop tractor engine, place all controls in neutral, set park brake, remove ignition key, and wait for all moving parts to stop.



CAUTION

■ Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.

■ Make certain all movement of equipment components has stopped before approaching for service.

LUBRICANTS

Use the Lubrication Service Record (Page 36), to keep a record of all scheduled maintenance.

1. Grease

Use and SAE multi-purpose high temperature grease with extreme pressure (EP) performance. A SAE multi-purpose lithium-based grease is also acceptable.

2. Gearbox Oil

Use an SAE 85W90 gear oil for all operating conditions. Capacity: 2-1/2 U.S. quarts (2.13 liters).

3. Storing Lubricants

Your unit can operate at top efficiency only if clean lubricants are used. Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture, and other contaminants.

GREASING

Use the Lubrication Service Record (Page 31), to keep a record of all scheduled maintenance.

1. Use a hand-held grease gun for all greasing.

2. Wipe grease fitting with a clean cloth before greasing to avoid injecting dirt and grit.

3. Replace or repair broken fittings immediately.

4. If fittings will not take grease, remove and clean thoroughly. Also clean lubricant passageway. Replace fitting if necessary.

Service & Maintenance *Continued*

LUBRICATION SCHEDULE

The period recommended is based on normal operating conditions. Severe or unusual conditions may require more frequent lubrication or oil changes. Refer to Figure 24 for details.

DAILY OR EVERY 10 HOURS

1. Lubricate PTO driveline, position A, Figure 22 and Figure 24.
2. Use dipstick to check gearbox oil level.

EVERY 20 HOURS

1. Lubricate bearing zerk with one shot of grease at each B position (13 positions). See Figure 25.
2. Lubricate couplers with 10 shots of grease at each C position.

For PTO installation, attach with clamps.

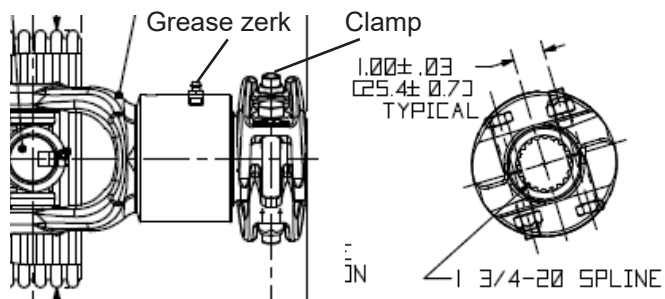


Figure 22a. PTO Shaft Grease/Removal

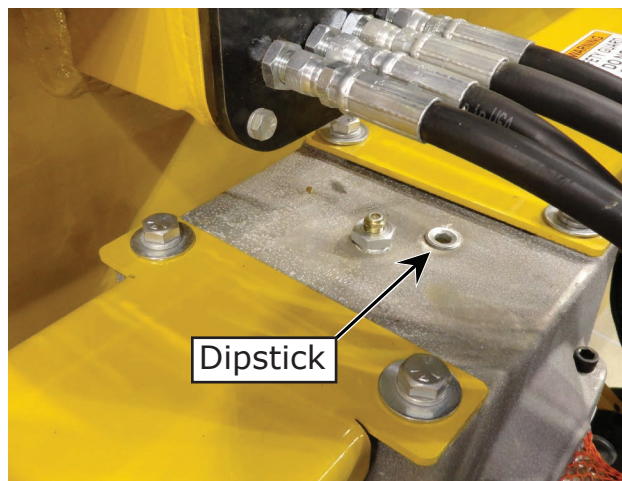


Figure 23. Dipstick

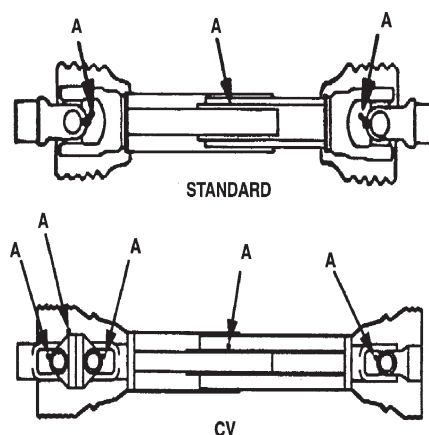


Figure 22b. Driveline

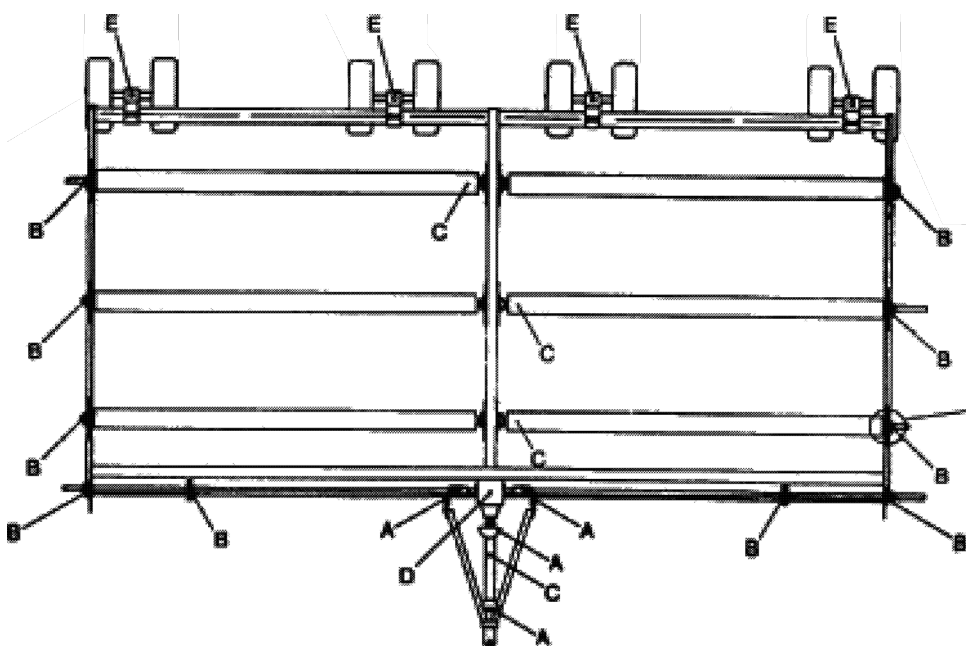


Figure 24a. Lubrication Diagram



Figure 24b. Position E Detail

Service & Maintenance *Continued*

3. If you remove the flail tube from 9 - 12 row defoliators, thoroughly clean both halves of drive couplers and apply new grease to all gear teeth. Remove grease zerk C when replacing flail tube to allow air to purge from coupler assembly. Replace grease zerk and follow lubrication schedule.

EVERY 40 HOURS

1. Lubricate PTO driveline (1 location).
2. Lubricate scalper pivot bearings (4 locations each scalper).

ANNUALLY

1. Change gearbox oil (twice annually in very dusty or dirty conditions).
2. At start and end of season, lubricate scalper and hitch screw jacks (1 location each screw jack).
3. At start and end of season, lubricate trailing wheel pivots - position E (1 location each pivot).

CHANGING GEARBOX OIL

Although the oil in the gearbox never wears out, dust, dirt and moisture can enter through the breather when oil heats up and cools down during operation. These contaminants must be removed on a regular basis to ensure long life of working components.

To change oil, follow this procedure:

1. Shut off tractor, place all controls in neutral, set parking brake, remove key and wait for all moving parts to stop.
2. Clear area of all bystanders.
3. Place a pan under drain plug. Remove drain, fill and level plugs.
4. Allow the gearbox to drain for 10 minutes.
NOTE: It is best to drain oil when gearbox is hot to remove the most contaminants. Use a stiff probe to clean breather hole in fill plug.
5. Install and tighten drain plug.
6. Dispose of used oil in an approved container.
7. Add 1 quart of SAE 85W90 gear oil through fill



Figure 25. Position B Detail

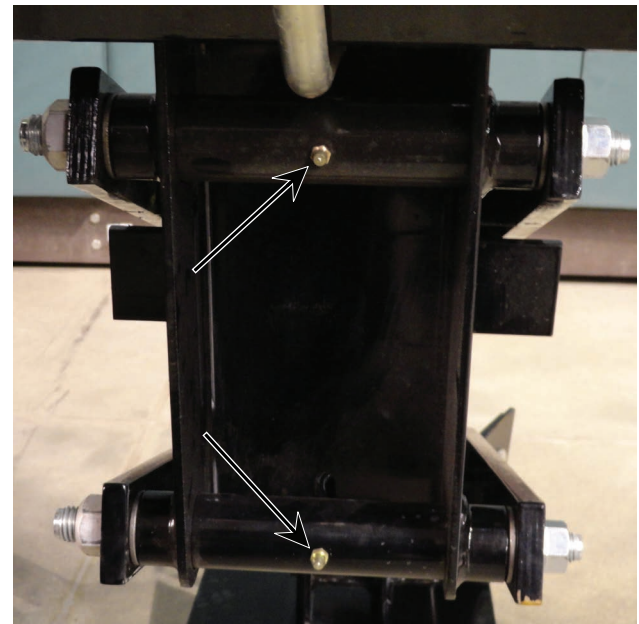


Figure 26. Scalper Pivot Bearings

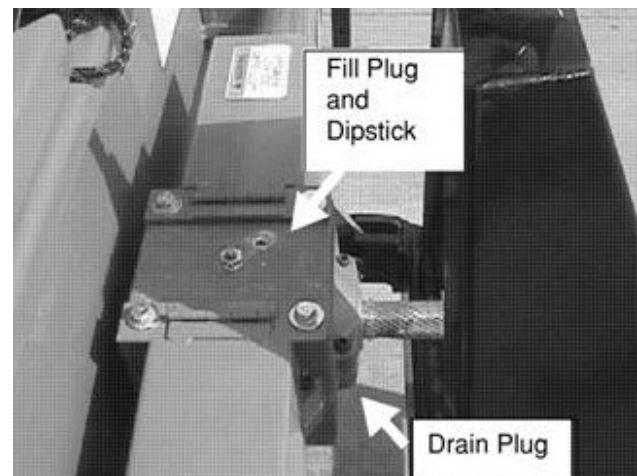


Figure 27. Gearbox, Fill & Drain Plugs plug. Check level, using dipstick.

8. Install and tighten the level and fill plugs

Service & Maintenance *Continued*

Lubrication Service Record

NOTE: See prior pages for details.
Copy this page to continue service record.

✓ = CHECK
L = LUBRICATE

C = CHANGE
R = REPACK

[illegible]

Service & Maintenance *Continued*

WHEEL SPACING

Rear wheels are designed to move along frame to align with rows. To adjust spacing of wheels, follow this procedure:

1. Shut off tractor, place all controls in neutral, set parking brake, remove key, and wait for all moving parts to stop.
2. Clear the area of all bystanders.
3. Use a jack with sufficient capacity to lift frame. Place planks under jack for extra support if required.
4. Measure from the centerline of the machine to determine the required spacing. Mark position on frame.
5. Lift frame until wheels have cleared the ground.
6. Loosen wheel assembly mounting bolts.
7. Slide assembly along frame to desired position.



Figure 28. Wheel Mounting Bolts

8. Tighten mounting bolts to specifications in Bolt Torque Chart, page 113.
9. Lower frame and remove jack.

FLAIL SPACING

Flails are mounted to an assembly or head that clamps to the rotating drum. To adjust head position, follow this procedure:

1. Shut off tractor, place all controls in neutral, set parking brake, remove key, and wait for all moving parts to stop.
2. Clear the area of all bystanders.
3. Disconnect driveline from the tractor.
4. Open canvas covers.
5. Measure from center line of machine to determine required spacing.
6. Loosen assembly clamping nuts.



CAUTION

■ Equipment may be pictured with covers open for instructional purposes. Never operate equipment with covers open.

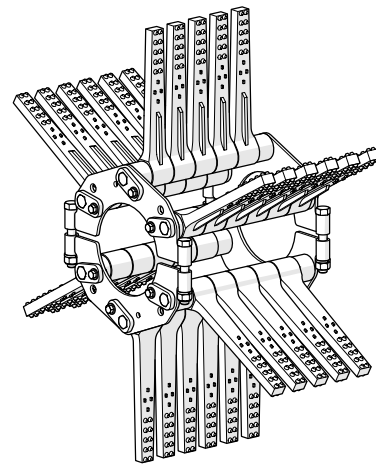


Figure 29. Rubber Flails

7. Slide or tap assembly to desired position
8. Tighten clamping bolts to specifications in Bolt Torque Chart, page 113.
9. Repeat with other head assemblies as required.
10. Close and secure canvas covers.
11. Attach driveline to tractor.

Service & Maintenance *Continued*

FLAIL REPLACEMENT

The flails swing on pins through the head. When replacing damaged or broken flails, follow this procedure:

1. Shut off tractor, place all controls in neutral, set parking brake, remove key, and wait for all moving parts to stop.
2. Clear the area of all bystanders.
3. Disconnect driveline from tractor.
4. Open canvas covers.
5. Remove the mounting bolt and cotter pin.
6. Slide pin out to release flail.
7. Replace with new flail. Be sure to assemble the spacers and bushings in their appropriate positions. See Parts Section and Flail Patterns.
8. Re-install bolt and cotter pin. Tighten bolt per specifications in Bolt Torque Chart, page 113.
9. Repeat with other flails as required.



CAUTION

■ Equipment may be pictured with covers open for instructional purposes. Never operate equipment with covers open.

10. Remove 5/8 locknut.
11. Tap out 5/8 x 3 1/2 carriage bolt.
12. Remove flails and bushing.
13. Install new bushing and flail.
14. Install bolt and nut.
15. Tighten bolt and nut.
16. Close and secure access doors and covers and install secure guards before resuming work.
17. Attach driveline to tractor.



Figure 30. Steel Flails

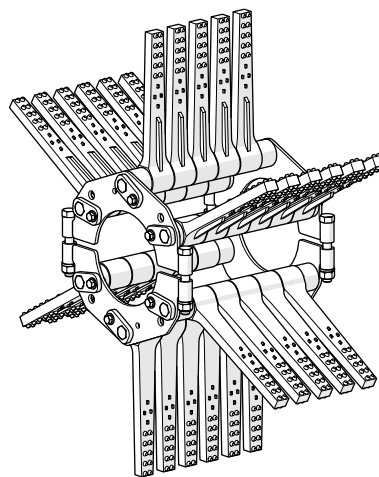


Figure 31. Flail Assembly

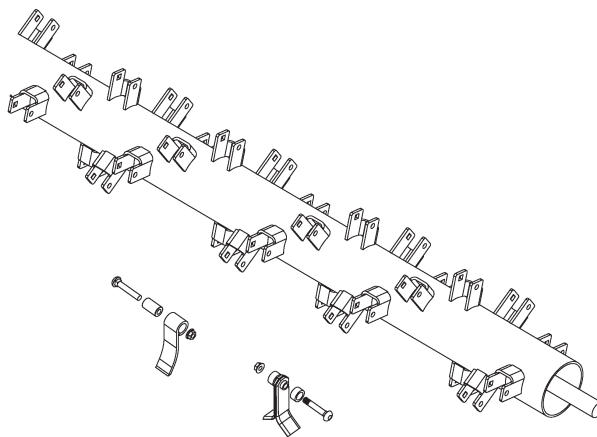


Figure 32. Steel Flails

Service & Maintenance *Continued*

BELT TENSION

Drive belts transmit power to turn drums and flails. Belt tension must be maintained to insure proper machine performance. Overtightening will cause belts and pulleys to run hot; loose belts will allow slipping. Either condition will cause rapid wear and failure.

When machine is new, or after installing new belts, tension should be checked and adjusted as required every 4 to 5 hours for 2 to 3 days - until belts have "run in."

To check belt tension, follow this procedure:

1. Shut off tractor, place all controls in neutral, set parking brake, remove key, and wait for all moving parts to stop.
2. Clear the area of all bystanders.
3. Disconnect driveline from tractor.
4. Open belt access doors and fasten prop rods.
5. Align sight gauge with spring washer as shown in Figure 33 to set proper belt tension. Do not over-tighten.
6. Close and secure access doors and covers and install secure guards before resuming work.
7. Attach driveline to tractor.

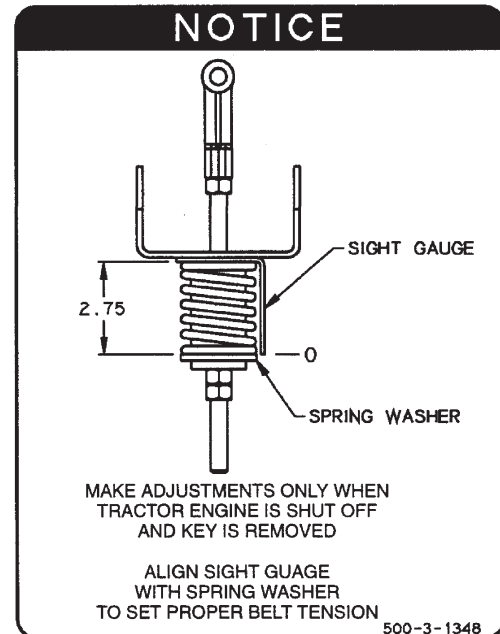


Figure 33. Belt Tension Gauge

BEARING LOCK COLLARS

Bearings are held on shafts by locking collars. Always install locking collars to lock by rotating in the direction of shaft rotation.

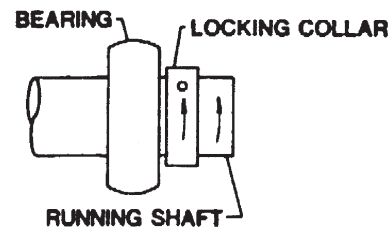


Figure 34. Locking Collar

Service & Maintenance *Continued*

BELT REPLACEMENT

Belts must be maintained in good condition at the proper tension to obtain expected performance. Replace frayed or separated belts. Do not use belt dressings at any time. Keeping the belts at the required tension will prevent slippage.

To replace belts, follow this procedure:

1. Shut off tractor, place all controls in neutral, set parking brake, remove key, and wait for all moving parts to stop.
2. Clear the area of all bystanders.
3. Disconnect driveline from tractor.
4. Open the belt access doors.
5. Loosen the bolts on the belt tensioner arm.

6. Remove belt.

7. Install new belt. Do not force belt over pulley and damage the cords.

IMPORTANT

Use only genuine Alloway replacement parts

8. Tension the belt. See Belt Tension, page 34.
9. Check that all pulleys are aligned.
10. Check the tension of the new belt every 4 to 5 hours the first 2 or 3 days of operation. Adjust as required.
11. Close and secure access doors and covers and install secure guards before resuming work.
12. Attach driveline to the tractor.

FLAIL TUBE HANGER BEARING

Flail tube hanger bearings on 6 row, 9 row, and 12 row: 30" steel machines require annual maintenance (lubrication) and inspection.

Follow this procedure:

1. Shut off tractor, place all controls in neutral set parking brake, remove key, and wait for all moving parts to stop.
2. Clear the area of all bystanders.
3. A rolling floor jack is required to slide the flail tube away from the bearing hanger plate for annual greasing and inspection.
4. Locate the bearing. The hanger bearing is located on the tail shaft flail tube (tube without a drive sheath attached).
5. Support center hanger plate with floor jack.
6. Remove the four 5/8 x 1 -1/2 carriage bolts from the tail shaft bearing plate and 3/4 hanger plate bolt.
7. Lower and move back until tubes can be separated.
8. Remove the bearing protector lock/collar.

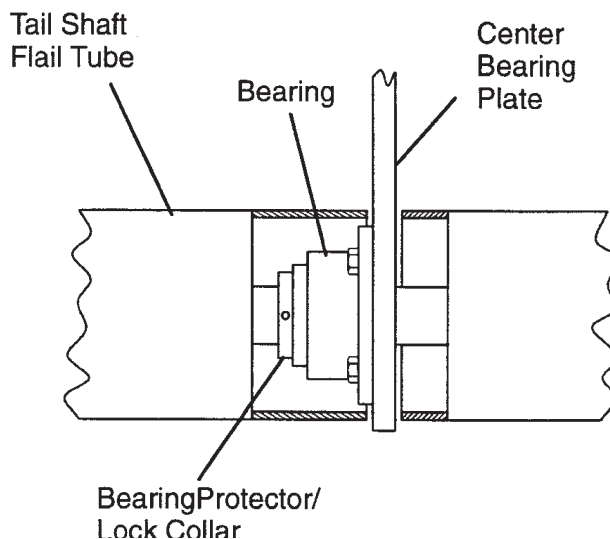


Figure 35. Hanger Bearings

9. Wipe the bearing clean and inspect the grease seal.
10. Lubricate bearing zerk with 3 to 4 shots of grease.
11. Slide tube back onto coupler and re-attach tail shaft bearing.
12. Repeat for all three hanger bearings.

NOTE: Do not lubricate new bearings.

Service & Maintenance *Continued*

SCALPERS

Scalpers must be set for each crop and operating condition. The scalper should be set to cut off only the green portion of beet.

Set the shoe angle:

- a. Loosen bolts (1) and (2), Figures 36a & 36b..
- b. Move shoe to desired angle.
- c. Tighten bolts to torque values specified in Bolt Torque Chart page 113.

KNIFE SCALPER

To adjust knife scalper, follow this procedure:

1. Set cutting edge of the knife at the lowest portion of the assembly to prevent skipping over the beets.
2. Set knife height and angle:
 - a. Loosen bolts (3) and (4), Figures 36a & 36b.
 - b. Move knife to desired height and angle.
 - c. Tighten bolts to torque values specified in Bolt Torque Chart page 113.
3. Down pressure position:
 - a. Increase spring tension to decrease skipping (5).
 - b. Decrease spring tension if scalper pulls beets out of ground.
4. Float position:
 - a. Increase spring tension for less pressure on shoe (5).
 - b. Decrease spring tension for more pressure on shoe.

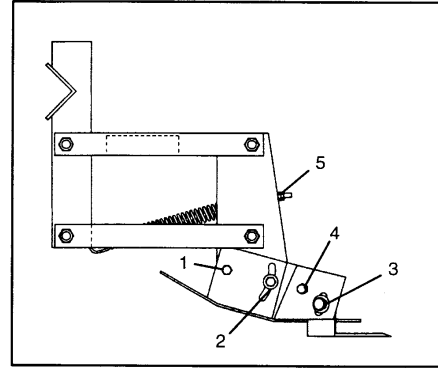


Figure 36a. Knife Scalper (Down Pressure)

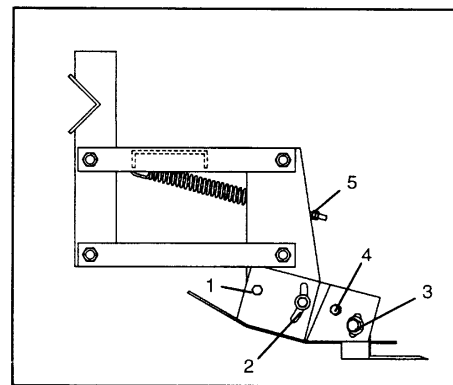


Figure 36b. Knife Scalper (Float)

CIRCULAR SCALPER

To adjust circular scalper, follow this procedure:

1. Set angle of assembly so cutting edge of disc is the lowest portion of scalper. This will prevent skipping over beets.

IMPORTANT

Shoe angle "A" should be set as small as possible without pushing beets over.

2. Set disc height:
 - a. Move disc assembly to desired height.
 - b. Tighten bolts (1), (2) and (3) to torque values specified in Bolt Torque Chart page 113.

IMPORTANT

Do not set disc to run on or below ground level.

3. Use spring bolt to set spring tension (5).
 - a. Increase tension to minimize skipping.
 - b. Decrease tension if disc pulls beet over.

TROUBLE SHOOTING

The Alloway Beet Defoliator uses rubber or steel flails on drums to remove foliage from the tops of sugar beets. It is a simple and reliable system that requires minimal maintenance. The following table lists problems, causes, and solutions that you may

encounter. If you encounter a problem that is difficult to solve even after reading through this table, please call your local Alloway dealer. When calling, please have this manual and your unit's serial number ready.

PROBLEM	CAUSE	SOLUTION
Drums won't turn	Tractor PTO not operating	Repair tractor PTO
	Broken cross shaft or drive coupler on central hanger bearing	Replace (9 or 12 row units only)
Belt wears rapidly	Machine plugged	Remove accumulated debris
	Pulleys out of alignment	Align pulleys
	Loose or overtightened belts	Adjust belt tension
	Overloaded/Running too low	Raise unit or reduce travel speed
Flails break	Machine too low	Raise machine
	Hitting rocks or other debris	Clean field more thoroughly before planting
Tires don't turn	Mud buildup	Adjust tire pressure to 15-20 psi
Beet crown not clean	Machine too high	Lower the machine
	Flails broken	Replace broken flails
	Traveling too fast	Slow down
	Engine speed too slow	Increase speed to rated PTO RPM
	Scalper required	Install and set scalper
	Scalper bounces	Increase scalper spring tension
Beets pulled out of ground	Machine too low	Raise machine
	Traveling too slowly	Increase ground speed
	Scalper too low	Raise scalper
Defoliator vibrates	Driveline doesn't telescope	Remove, disassemble, clean and lubricate telescoping joint
	Flail tube out of balance	Confirm all flails are in place Balance tube if required

TROUBLE SHOOTING

This Troubleshooting section applies specifically to Rear Steering system of the defoliator.

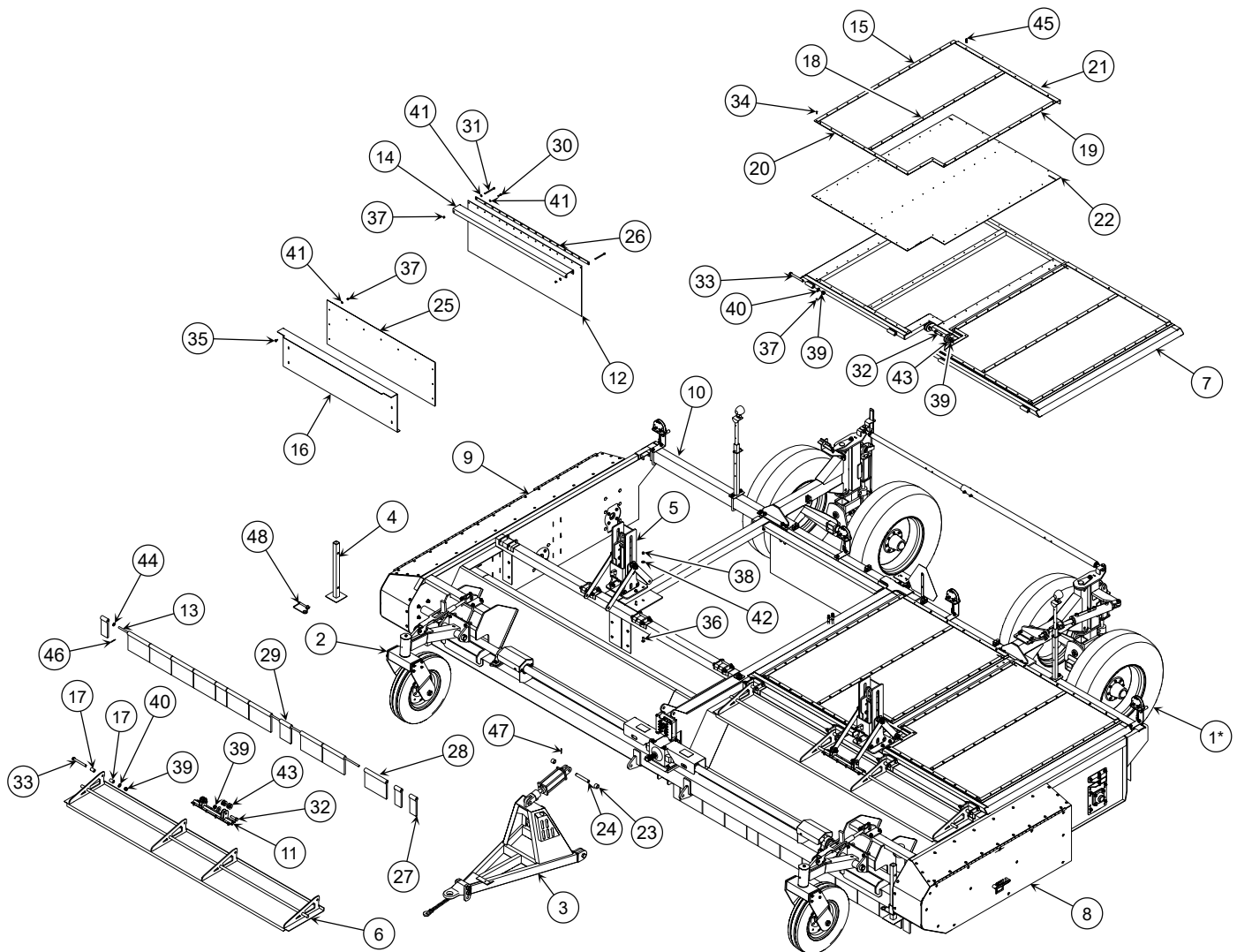
Please contact your dealer's service department if you encounter a malfunction not addressed in this section.

PROBLEM	CAUSE	SOLUTION
Steering valve does not respond when activated	Steering Valve not connected to Power Beyond output Coupler checking flow between tractor and valve Faulty hydraulic couplers	Connect Steering Valve to Power Beyond output Inspect quick coupler on tractor and defoliator Identify and replace faulty coupler
Weak, slow steering operation	Load sensing signal not present. Test by creating deadhead situation to force high pressure standby. Pressure Reducing Valve flow obstructed by debris Tractor hydraulic oil level low	Identify and remove load signal blockage between tractor and steering valve Remove and clean valve 6 Add hydraulic oil to tractor's reservoir
	Tractor hydraulic system has insufficient pressure	Inspect hydraulic system and repair or replace components causing problem
	Tractor load sensing responds with inadequate pressure	Inspect load sensing circuit components to identify problem
Will not maintain neutral steering	Directional Valve not closing because of contamination	Remove and clean valve 5A and/or 5B.
Excessive hydraulic noise	Steering valve connected directly to SCV	Connect Steering Valve to Power Beyond output
Hydraulic system overheating	Row Centering Valve relief valve pressure setting too low	Set relief valve pressure higher

RIGID BEET DEFOLIATOR

Main Components	44 - 45
Driveline Components	46 - 47
Flail Tube Components	48 - 49
RH/LH Drive Components	50 - 57
Center Hydraulics and Sign Components	58 - 59
Belt Cover Components	60 - 63
Hitch Components	64 - 65
Tower Components	66 - 67
Knife/Flail Components	68 - 77
Front Stabilizer Components	78 - 81
Rear Stabilizer Components	82 - 85
Rear Rigid/Steerable Strut Components	86 - 97
Row Finder/Toolbar Components	98 - 101
Circular Scalpers/Toolbar Components	103 - 107
Knife Scalpers/Toolbar Components	108 - 113
Light Kit Components	114 - 119
Globe Tower Components	120 - 121
Hydraulic Components	122 - 133
PTO/Driveline Shaft Components	134 - 138
Gearbox Components	139

12R22 RIGID DEFOLIATOR 500-2-1637 (MAIN COMPONENTS DRAWING)

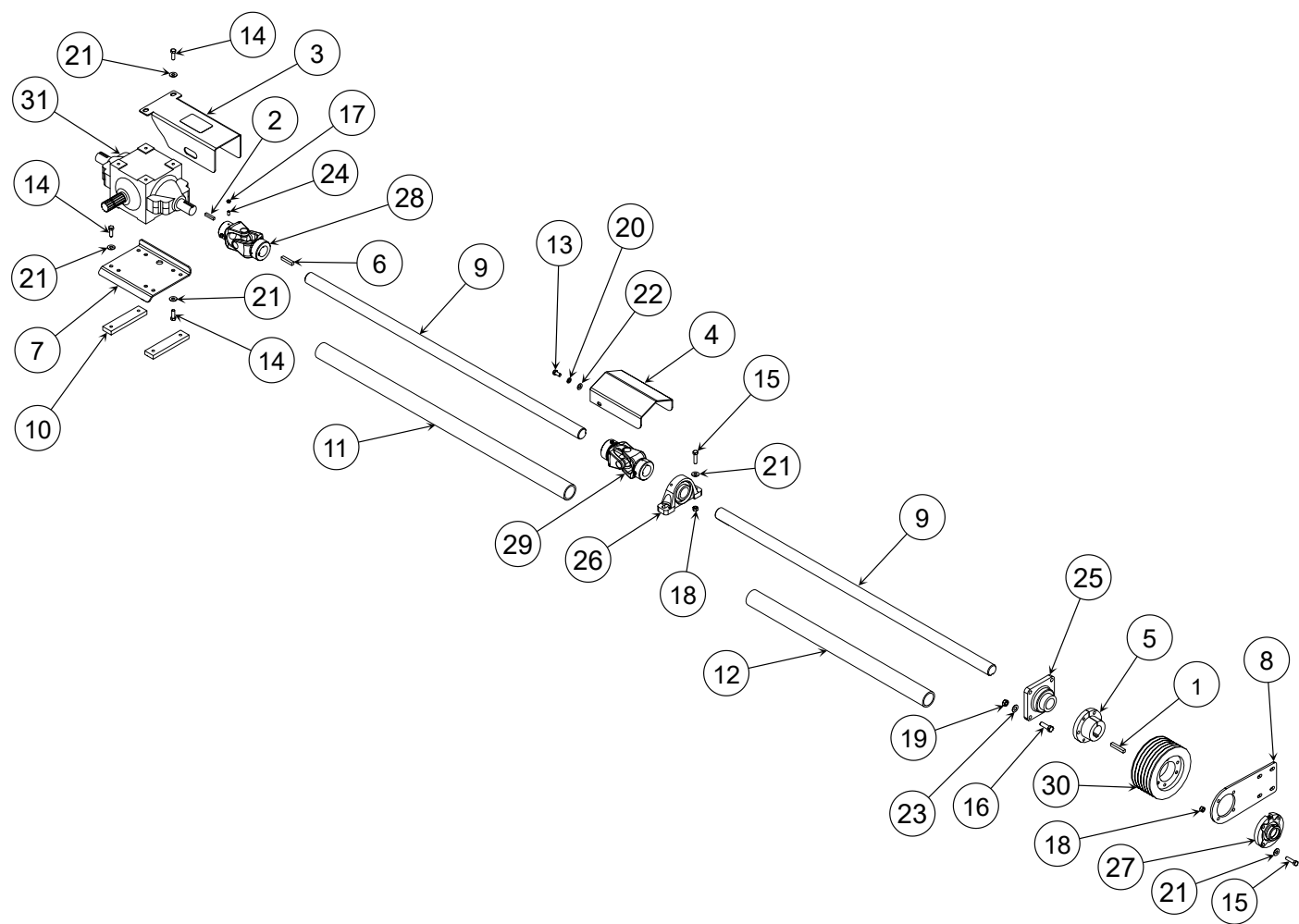


*OPTIONS AVAILABLE

12R22 RIGID DEFOLIATOR
500-2-1637
(MAIN COMPONENTS BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1-1	500-1-0328	LARGE TIRES - 44" RIGID PIVOT STRUTS AT 88" SPACING	1
1-2	500-1-0398	LARGE TIRES - 44" STEERABLE PIVOT STRUTS AT 88" SPACING	1
1-3	500-1-0527	LARGE TIRES 40/44" OFFSET STEERABLE PIVOT STRUTS	1
2	500-1-0380	FRONT STABILIZER WHEEL (PAIR)	1
3	500-1-0403	HITCH ASSY - STD KIT	1
4	500-2-0531	PARK STAND	2
5	500-2-1504	CYLINDER TOWER ASSY - 12R22	2
6	500-2-1505	FRONT DOOR	2
7	500-2-1506	DOOR FRAME WELDMENT S SERIES 12R22	2
8	500-2-1625	S-SERIES RIGID SIDE DOOR ASSY LH	1
9	500-2-1628	S-SERIES RIGID SIDE DOOR ASSY (PANEL LATCH)	1
10	500-2-1635	1222 S-SERIES BODY WELDMENT- 2016	1
11	500-2-1859	12R22 S-SERIES LIFTING MOUNT ASM	2
12	500-3-0969	REAR FLAP 622 AND 1222	4
13	500-3-1142	ROD, FLAP-1222	2
14	500-3-2697	REAR CROSS CHANNEL - 1222	4
15	500-3-4643	S SERIES TOP STRAP #1	4
16	500-3-4647	SHROUD MOUNT COVER	4
17	500-3-4676	FRONT DOOR SPACER	16
18	500-3-4781	S SERIES TOP STRAP #2	4
19	500-3-4782	S SERIES TOP STRAP #3	4
20	500-3-4783	S SERIES TOP STRAP #4	4
21	500-3-4784	S SERIES TOP STRAP #5	4
22	500-3-4785	S SERIES TOP RUBBER	4
23	500-3-4899	SWING HITCH CYLINDER SPACER	2
24	500-3-5305	PIN- HITCH CYLINDER S-SERIES RIGID	1
25	500-3-5333	SHROUD PLASTIC 12R22 RIGID	4
26	500-3-5429	REAR FLAP STRAP 12R	4
27	505-3-0868	FLAP SHIELD 3-1/2"	5
28	505-3-1089	FLAP SHIELD 12"	18
29	505-3-1097	FLAP SHIELD 6"	4
30	900-01111	3/8NC X 1-1/4 HEX BOLT GR 5	56
31	900-01137	BOLT HH 3/8 NC X 5 GR5 ZP	8
32	900-01409	3/4-10 X 2-3/4 HEX BOLT ZP	26
33	900-01429	HEX BOLT - 3/4NC X 6-1/2 GR5 ZP	16
34	900-01648	CARRIAGE BOLT 1/4-20 X 1 ZP	196
35	900-01695	CARRIAGE BOLT 3/8 NC X 1 ZP	44
36	900-01752	CARRIAGE BOLT 1/2 NC X 1 3/4 GD 5 ZP	8
37	900-06500	NUT HEX 3/8 TOP LOCK	158
38	900-06504	NUT, LOCK, TOP, 1/2-13, GR C ZP	52
39	900-06510	3/4 NUT, HEX TOP LOCK	42
40	900-09066	3/4" FLAT WASHER, SAE	16
41	900-11033	FLAT WASHER 3/8 ZP	224
42	900-11035	1/2 FLAT WASHER	41
43	900-11038	3/4" FLAT WASHER, USS	24
44	900-11088	WASHER, FLAT, SAE, 5/8, ZP	11
45	900-16964	TEK SCREW, 1/4-14UNC x 1-1/2	24
46	900-23043	3/16 X 1 1/2 COTTER PIN	2
47	900-23045	PIN, COTTER, 3/16 x 2	2
48	900-42054	LOCK UP PIN	2

12R22 RIGID DEFOLIATOR
500-2-1637
(DRIVELINE DRAWING)



12R22 RIGID DEFOLIATOR
500-2-1637
(DRIVELINE BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	100-3-3331	KEY - 1/2 X 1/2 X 3	6
2	100-3-3333	KEY - 3/8 X 3/8 X 2	2
3	500-2-0537	SHIELD WITH DECAL	2
4	500-2-1526	DRIVE SHIELD WELDMENT	2
5	500-3-1060	HUB 2" TYPE "E" W/KW	3
6	500-3-1662	KEY - 1/2 X 2-1/2 SQUARE	6
7	500-3-2778	GEARBOX MOUNT PLATE	1
8	500-3-4607	BEARING PLATE 2" 630, 822, 830, 1222 (2014)	2
9	500-3-4708	CROSS SHAFT - 1222 S SERIES	4
10	500-3-4845	GEARBOX FLATBAR MOUNT #2	2
11	500-3-5090	TUBE, SHIELD 59" 12R22 2016	2
12	500-3-5091	TUBE, SHIELD 42" 12R22 2016	2
13	900-01221	BOLT HEX 1/2" X 1"	8
14	900-01225	1/2 NC X 1-1/2 HEX BOLT GR 5	20
15	900-01229	1/2-13 X 2 HEX BOLT GRD 5	12
16	900-01345	BOLT, HH, 5/8-11 X 2, GR5 ZP	32
17	900-06270	3/8" JAM NUT	16
18	900-06504	NUT, LOCK, TOP, 1/2-13, GR C ZP	32
19	900-06508	NUT HEX 5/8 UNC TOP LOCK	62
20	900-11013	WASHER, LOCK 1/2	6
21	900-11035	1/2 FLAT WASHER	33
22	900-11085	1/2" FLAT WASHER, SAE	14
23	900-11088	WASHER, FLAT, SAE, 5/8, ZP	11
24	900-16255	3/8 NC X 3/4 SOCKET HEAD SET SCREW CUP	16
25	901-01008	BEARING - NANFS 211-32 2.00	2
26	901-01142	PILLOW BLOCK BEARING 2"	2
27	901-01428	2" ECCENTRIC COLLAR BEARING, PILOTED FLANGE	2
28	903-05038	U-JOINT - 1.75 X 2 KEYED 44R	2
29	903-05048	U-JOINT - 2 X 2 KEYED 44R	2
30	903-08488	SHEAVE, 6/5V9.75 QD-E	1
31	903-18479	R600 GEARBOX W/ 1-3/4"	1

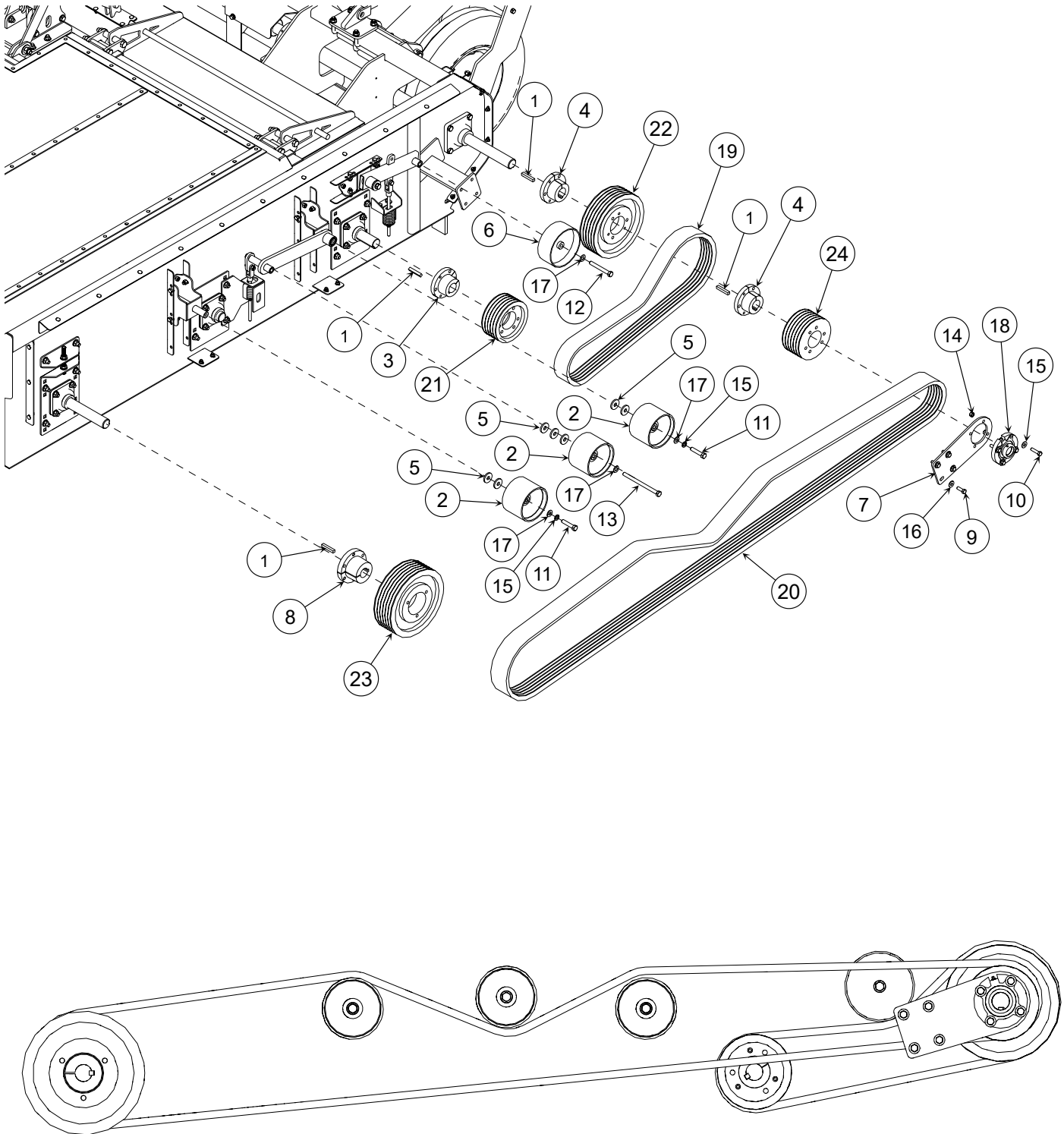
This exploded view diagram illustrates the assembly of a vehicle chassis. The main structural frame is shown at the top, with various mounting points and brackets. Below the frame, the suspension system is detailed, including the axle assembly (1), shock absorbers (2), and springs (3). The wheels (4) are shown with their respective hubs (5) and tires (6*). The diagram also includes various fasteners, bolts (7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27), and other components (28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100) used in the assembly. The diagram is a technical drawing with clear lines and labels, providing a comprehensive overview of the vehicle's mechanical structure.

PN : 500-5-0024 (2025)

12R22 RIGID DEFOLIATOR
500-2-1637
(FLAILS BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	500-2-0555	FLAIL TUBE DRIVEN 1222	2
2	500-2-0556	FLAIL TUBE DRIVE 1222	2
3	500-2-0598	BEARING ASSEMBLY, ROUND TEROG	3
4	500-2-0633	HANGER PLATE WELD	3
5-1	500-2-0850	1222 DRIVE L-KNIFE FLAIL TUBE ASSY	1
5-2	500-2-0852	1222 DRIVE CUP KNIFE FLAIL TUBE ASSY	1
5-3	500-2-1693	1222 DRIVE CUP KNIFE OVER L-KNIFE FLAIL TUBE ASSY	1
6-1	500-2-0851	1222 DRIVEN L-KNIFE FLAIL TUBE ASSY	1
6-2	500-2-0853	1222 DRIVEN CUP KNIFE FLAIL TUBE ASSY	1
6-3	500-2-1694	1222 DRIVEN CUP KNIFE OVER L-KNIFE FLAIL TUBE ASSY	1
7	500-2-1191	SPRING TENSIONER WELDMENT INVERTED	1
8	500-2-1521	SPRING TENSIONER WELDMENT LH	1
9	500-2-1754	FULL RUBBER FLAIL ASSEMBLY- 6 BOLT	12
10	500-2-1758	FULL RUBBER FLAIL ASSY 8-BOLT	12
11	500-3-0338	COUPLER	3
12	500-3-0990	PLASTIC SHIELD	6
13	500-3-4724	BEARING PLATE FRONT	2
14	500-3-4765	SIDE DRUM ADJUSTER PLATE	2
15	500-3-5093	THREADED ROD 5/8" X 6"	2
16	900-01345	BOLT, HH, 5/8-11 X 2, GR5 ZP	32
17	900-01409	3/4-10 X 2-3/4 HEX BOLT ZP	26
18	900-01784	CARRIAGE BOLT 5/8 NC X 1-1/2	28
19	900-01784	CARRIAGE BOLT 5/8 NC X 1-1/2	28
20	900-06013	NUT, HH, 5/8-11, ZP	8
21	900-06504	NUT, LOCK, TOP, 1/2-13, GR C ZP	20
22	900-06508	NUT HEX 5/8 UNC TOP LOCK	60
23	900-06510	3/4 NUT, HEX TOP LOCK	42
24	900-11085	1/2" FLAT WASHER, SAE	12
25	900-11088	WASHER, FLAT, SAE, 5/8, ZP	68
26	900-39030	RETAINING RING 600 SERIES	6
27	901-01282	BEARING - 1-15/16 4-BOLT (F4B-SXR-115-FF)	6

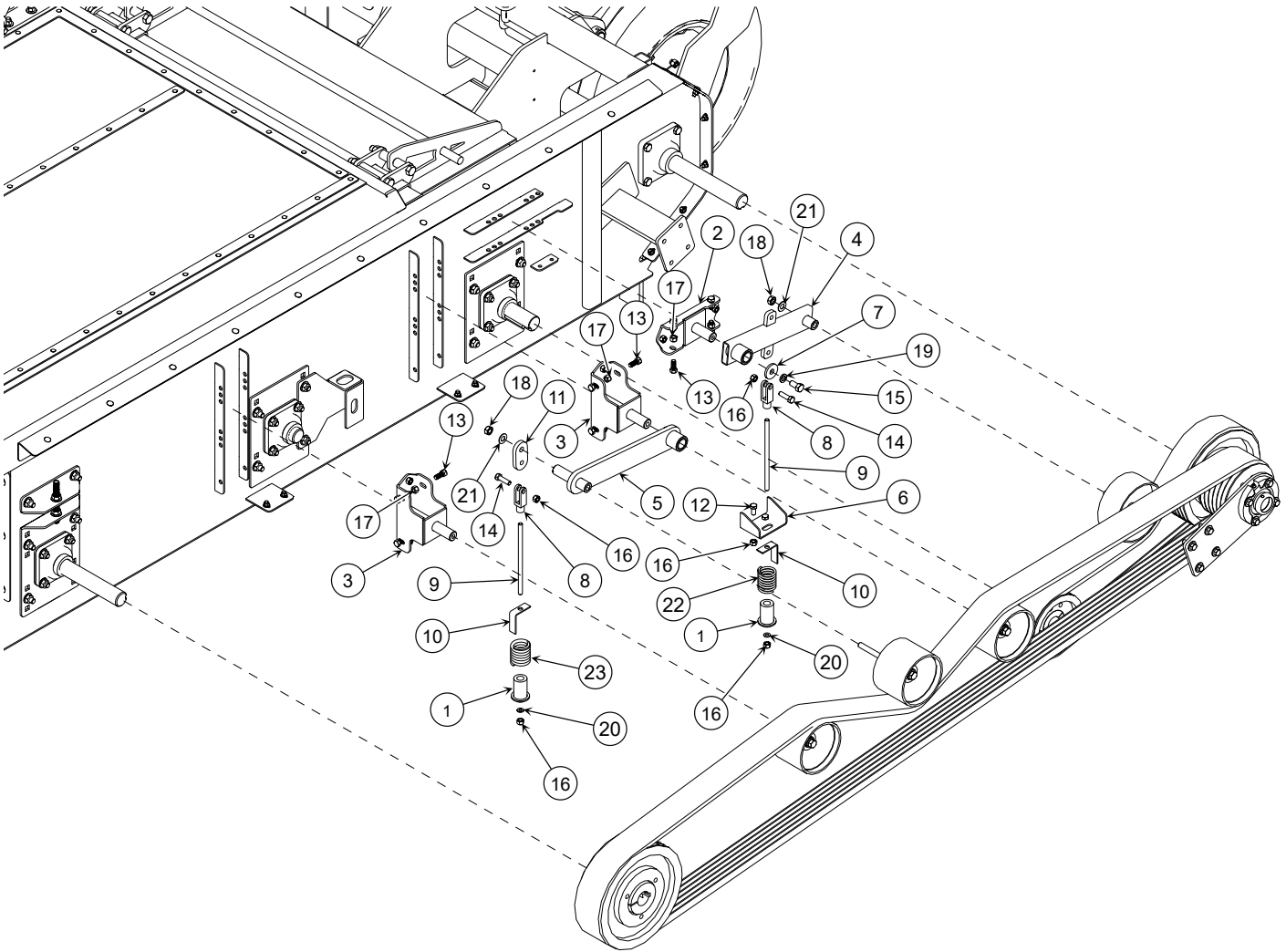
12R22 RIGID DEFOLIATOR
500-2-1637
(RH DRIVES ASSEMBLY DRAWING)



12R22 RIGID DEFOLIATOR
500-2-1637
(RH DRIVES BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	100-3-3331	KEY - 1/2 X 1/2 X 3	4
2	500-2-0777	WELD PULLEY	3
3	500-3-1059	TYPE E HUB - 1-15/16	1
4	500-3-1060	HUB 2" TYPE "E" W/KW	2
5	500-3-1246	SPECIAL WASHER	7
6	500-3-1248	8" OD FLAT PULLY	1
7	500-3-4607	BEARING PLATE 2" 630, 822, 830, 1222 (2014)	1
8	500-3-5089	HUB, 1-15/16", TYPE F, KEYWAY	1
9	900-01225	1/2 NC X 1-1/2 HEX BOLT GR 5	4
10	900-01229	1/2-13 X 2 HEX BOLT GRD 5	4
11	900-01353	5/8 NC X 3 HEX BOLT GRADE 5	2
12	900-01365	5/8" - 11 X 5" BOLT	1
13	900-01381	SCREW, CAP 5/8 X 9 UNC	1
14	900-06504	NUT, LOCK, TOP, 1/2-13, GR C ZP	8
15	900-11015	WASHER, LOCK, 5/8, ZP	2
16	900-11035	1/2 FLAT WASHER	8
17	900-11088	WASHER, FLAT, SAE, 5/8, ZP	4
18	901-01428	2" ECCENTRIC COLLAR BEARING, PILOTED FLANGE	2
19	903-01426	BELT 5/5V950	1
20	903-01456	BELT - 6/5V2500	1
21	903-08390	PULLEY -5/5V850	1
22	903-08391	PULLEY, 5/5V1 320	1
23	903-08486	SHEAVE, 6/5V14.0 QD-F	1
24	903-08489	SHEAVE, 6/5V8.5	1

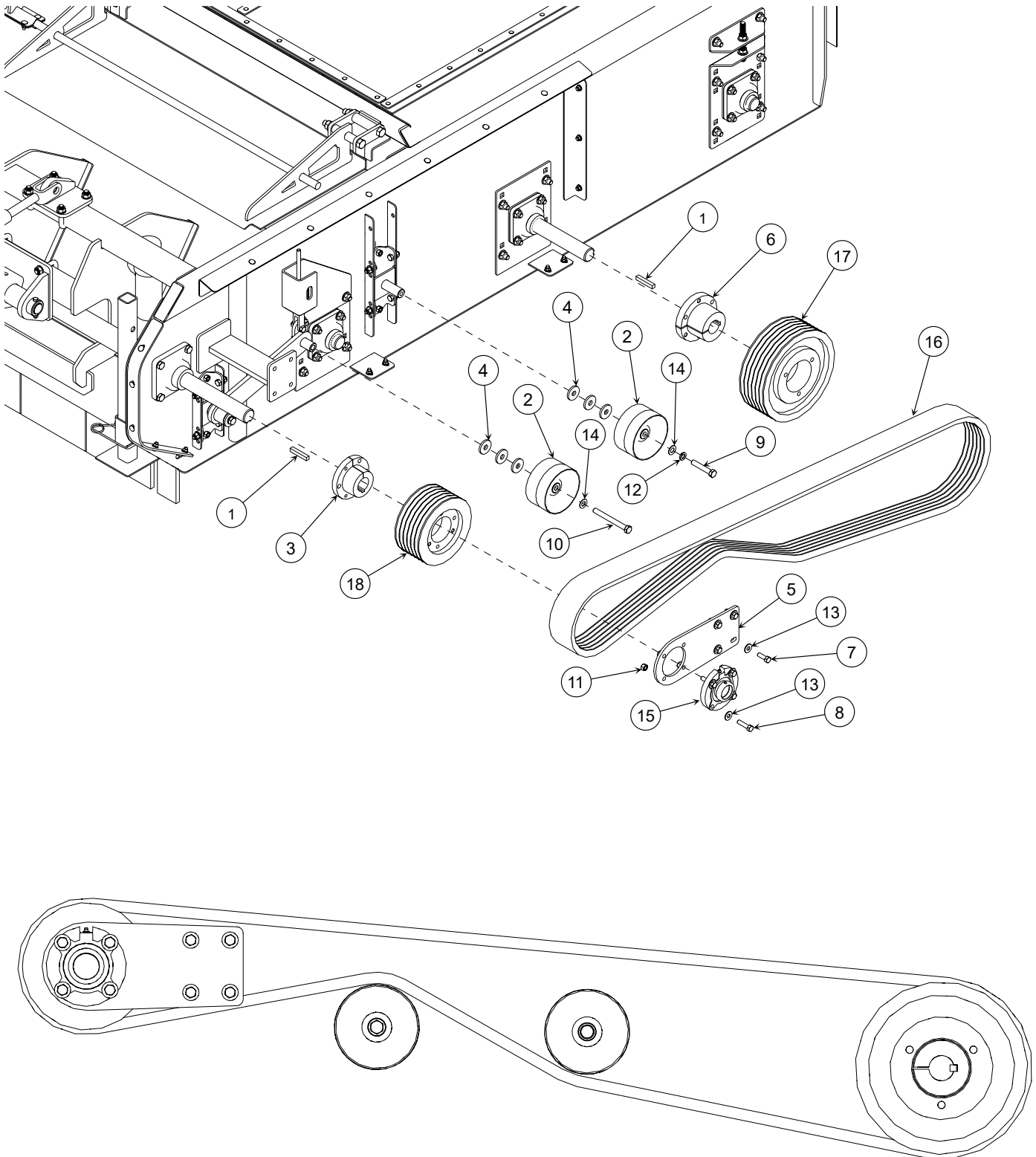
12R22 RIGID DEFOLIATOR
500-2-1637
(RH TENSIONER ASSEMBLY DRAWING)



12R22 RIGID DEFOLIATOR
500-2-1637
(RH TENSIONER BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	500-2-0580	SPRING SUPPORT WELD	2
2	500-2-1384	PIVOT BASE WELD - TENSIONER	1
3	500-2-1386	PIVOT BASE WELD - TENSIONER (TALL)	2
4	500-2-1387	PIVOT ARM ASSY	1
5	500-2-1860	RIGID PIVOT ARM RH ASM	1
6	500-3-1222	BRACKET SPRING MOUNT - SHORT	1
7	500-3-1246	SPECIAL WASHER	1
8	500-3-1247	CLEVIS	2
9	500-3-1250	THREADED ROD	2
10	500-3-1255	SIGHT GAGE	2
11	500-3-4746	SPRING TENSIONER TAB	1
12	900-01221	BOLT HEX ½" X 1"	2
13	900-01223	BOLT, HEX HEAD, 1/2" X 1-1/4", GR5, ZP	12
14	900-01227	BOLT HEX ½ X 1 3/4 GR 5 ZP	2
15	900-01339	HEX BOLT 5/8 NC X 1 1/4 GD 5 ZP	1
16	900-06009	NUT HEX 1/2 UNC	5
17	900-06504	NUT, LOCK, TOP, 1/2-13, GR C ZP	12
18	900-06508	NUT HEX 5/8 UNC TOP LOCK	2
19	900-11015	WASHER, LOCK, 5/8, ZP	1
20	900-11033	FLAT WASHER 3/8 ZP	2
21	900-11088	WASHER, FLAT, SAE, 5/8, ZP	2
22	905-14005	SPRING - 2.25 OD X .25 WIRE X 5.25 FL X 7.25 COILS	1
23	905-14018	SPRING - 2.44 OD X .38 WIRE X 6.00 FL X 10.5 COILS	1

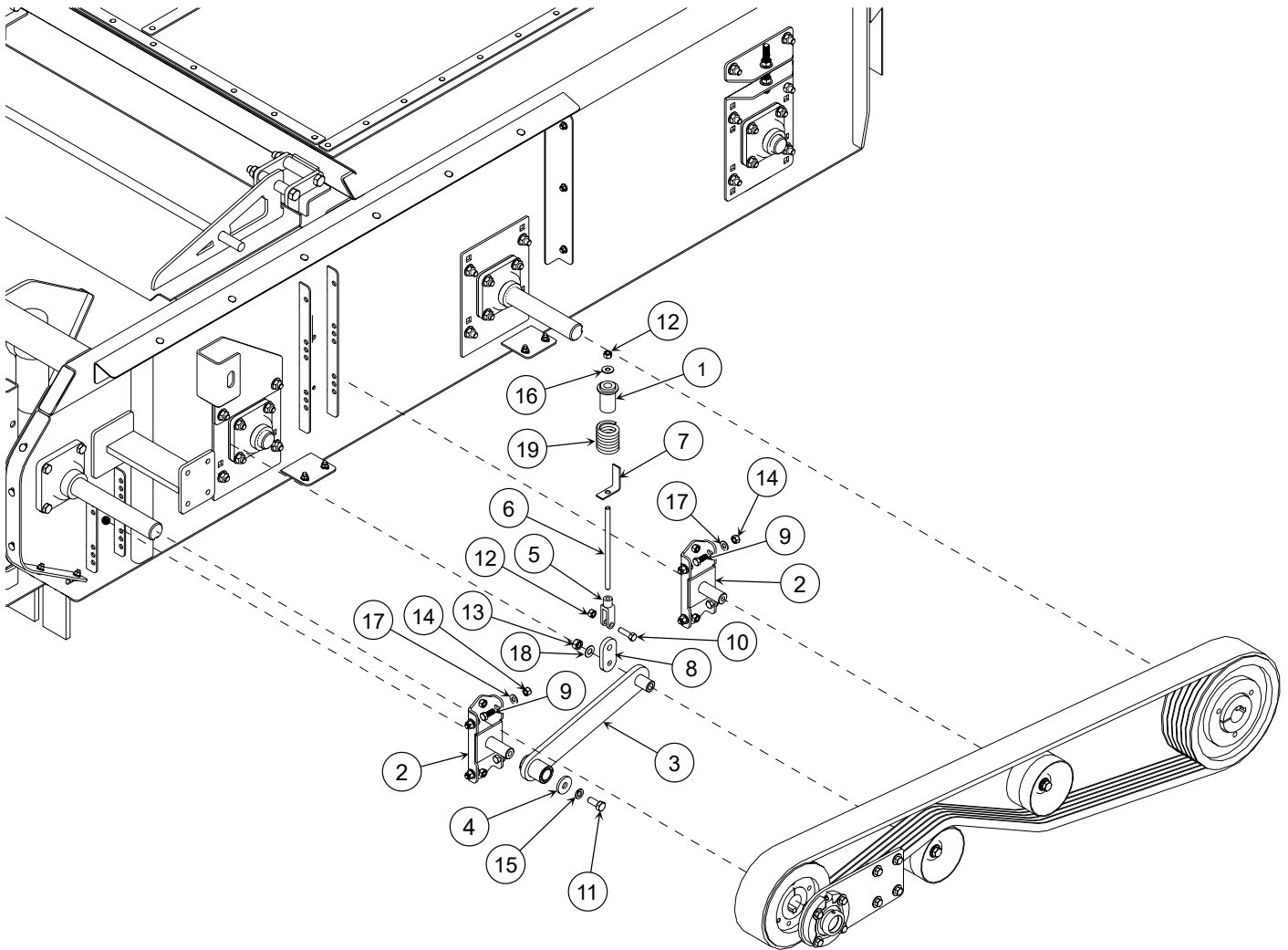
12R22 RIGID DEFOLIATOR
500-2-1637
(LH DRIVES ASSEMBLY DRAWING)



12R22 RIGID DEFOLIATOR
500-2-1637
(LH DRIVES BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	100-3-3331	KEY - 1/2 X 1/2 X 3	2
2	500-2-0777	WELD PULLEY	2
3	500-3-1060	HUB 2" TYPE "E" W/KW	1
4	500-3-1246	SPECIAL WASHER	6
5	500-3-4607	BEARING PLATE 2" 630, 822, 830, 1222 (2014)	1
6	500-3-5089	HUB, 1-15/16", TYPE F, KEYWAY	1
7	900-01225	1/2 NC X 1-1/2 HEX BOLT GR 5	4
8	900-01229	1/2-13 X 2 HEX BOLT GRD 5	4
9	900-01357	SCREW, CAP 5/8 X 3-1/2 UNC	1
10	900-01369	SCREW, CAP 5/8 X 6 UNC ZP	1
11	900-06504	NUT, LOCK, TOP, 1/2-13, GR C ZP	4
12	900-11015	WASHER, LOCK, 5/8, ZP	1
13	900-11035	1/2 FLAT WASHER	8
14	900-11088	WASHER, FLAT, SAE, 5/8, ZP	2
15	901-01428	2" ECCENTRIC COLLAR BEARING, PILOTED FLANGE	1
16	903-01457	BELT 6/5V1700	1
17	903-08487	SHEAVE, 6/5V13.2 QD-F	1
18	903-08488	SHEAVE, 6/5V9.75 QD-E	1

12R22 RIGID DEFOLIATOR
500-2-1637
(LH TENSIONER ASSEMBLY DRAWING)



12R22 RIGID DEFOLIATOR
500-2-1637
(LH TENSIONER BILL OF MATERIALS)

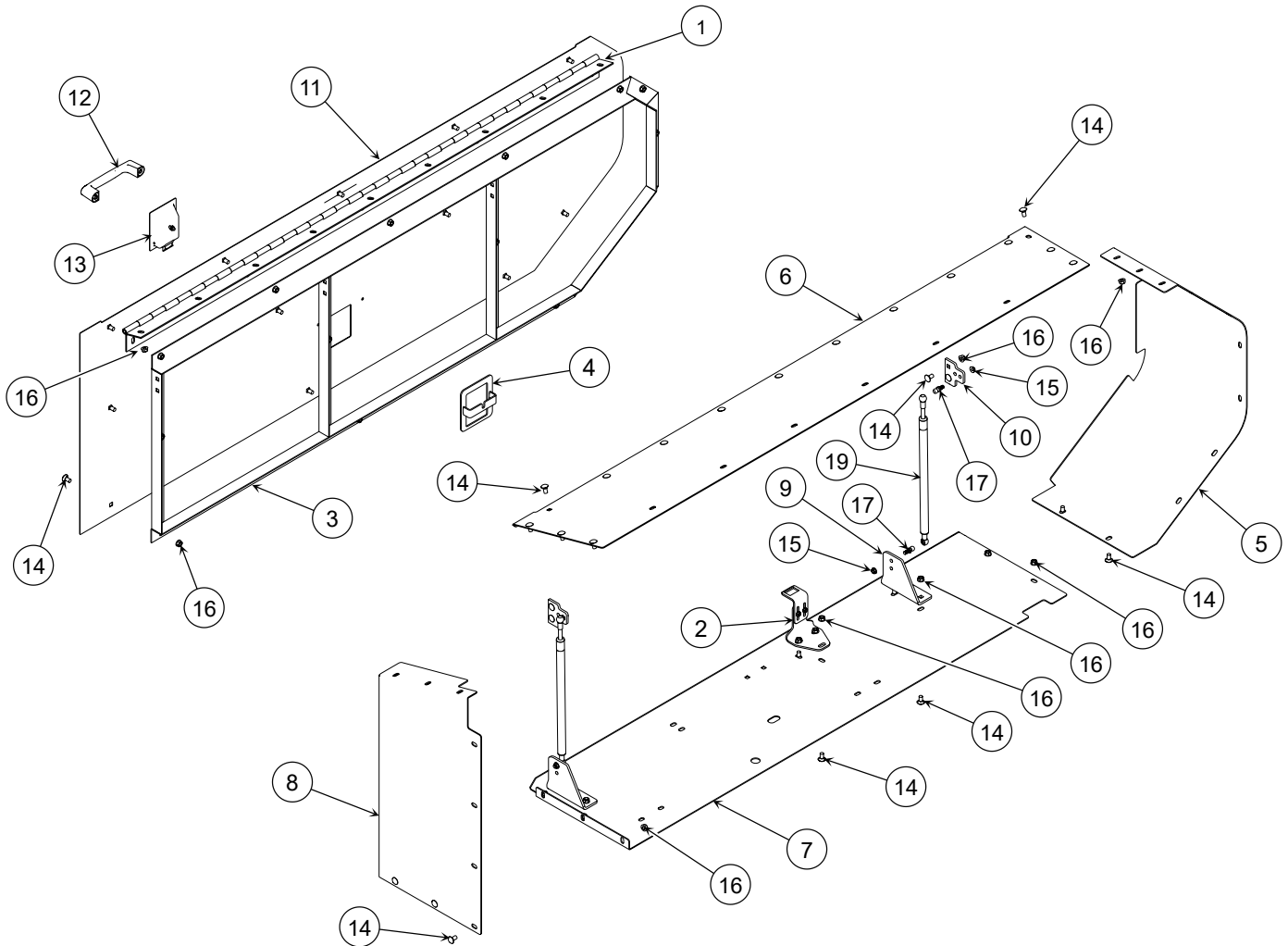
ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	500-2-0580	SPRING SUPPORT WELD	1
2	500-2-1384	PIVOT BASE WELD - TENSIONER	2
3	500-2-1861	RIGID PIVOT ARM LH ASM	1
4	500-3-1246	SPECIAL WASHER	1
5	500-3-1247	CLEVIS	1
6	500-3-1250	THREADED ROD	1
7	500-3-1255	SIGHT GAGE	1
8	500-3-4746	SPRING TENSIONER TAB	1
9	900-01223	BOLT, HEX HEAD, 1/2" X 1-1/4", GR5, ZP	8
10	900-01227	BOLT HEX ½ X 1 3/4 GR 5 ZP	1
11	900-01341	HEX BOLT, 5/8 X 1-1/2 NC GR5 ZP	1
12	900-06009	NUT HEX 1/2 UNC	2
13	900-06013	NUT, HH, 5/8-11, ZP	1
14	900-06504	NUT, LOCK, TOP, 1/2-13, GR C ZP	8
15	900-11015	WASHER, LOCK, 5/8, ZP	1
16	900-11035	1/2 FLAT WASHER	1
17	900-11085	1/2" FLAT WASHER, SAE	8
18	900-11088	WASHER, FLAT, SAE, 5/8, ZP	1
19	905-14018	SPRING - 2.44 OD X .38 WIRE X 6.00 FL X 10.5 COILS	1

This diagram shows an exploded view of a mechanical assembly. The main components are labeled with circled numbers 1 through 21. Part 1 is a long, multi-strapped assembly. Part 2 is a rectangular plate with multiple holes. Part 3 is a small bracket. Part 4 is a vertical plate with a grid of holes. Part 5 is a triangular plate. Part 6 is a long, thin vertical plate. Part 7 is a small circular component. Part 8 is a small square component. Part 9 is a small circular component. Part 10 is a small circular component. Part 11 is a small rectangular plate. Part 12 is a small rectangular plate. Part 13 is a small rectangular plate. Part 14 is a small rectangular plate. Part 15 is a small rectangular plate. Part 16 is a small rectangular plate. Part 17 is a small rectangular plate. Part 18 is a small rectangular plate. Part 19 is a small rectangular plate. Part 20 is a small rectangular plate. Part 21 is a small rectangular plate. The diagram illustrates the assembly of these parts into a larger mechanical structure, including a large circular component on the left and a complex mechanical assembly on the right.

12R22 RIGID DEFOLIATOR
500-2-1637
(CENTER HYDRAULIC AND SIGN BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	500-1-0513	CENTER HOSE KIT	1
2	500-2-1559	S SERIES HYDRAULIC BOX MOUNT	1
3	500-2-1782	FRONT HOSE MOUNT PLATE WELDMENT	1
4	500-2-1783	REAR HOSE MOUNT WELDMENT	1
5	500-3-1696	SMV SIGN	1
6	500-3-2091	SMV MOUNT	1
7	500-3-3007	CAP - CENTER HYD HOLDER (2013)	1
8	500-3-5430	SBR RUBBER GROMMET	1
9	900-01005	1/4-20 X 3/4 ZP HEX BOLT	2
10	900-01055	BOLT HEX 5/16 X 3/4	2
11	900-01109	BOLT HEX 3/8UNC X 1 GR 5	2
12	900-01127	3/8NC X 3 1/4 HEX BOLT GR5 ZP	4
13	900-01139	HEX BOLT 3/8 NC X 7 1/2 GD 5 ZP	2
14	900-02356	BOLT, HH 5/16 X 1-3/4, GR5 ZP	4
15	900-06496	1/4-20 TOP LOCK HEX NUT	2
16	900-06500	NUT HEX 3/8 TOP LOCK	8
17	900-11031	1/4 FLAT WASHER	2
18	900-11033	FLAT WASHER 3/8 ZP	10
19	900-31068	COVER PLATE	4
20	900-31069	CLAMP BODY - HOSE HOLDER	8
21	900-35000	U-BOLT 3/8 X 6 X 5 X 1.5	1

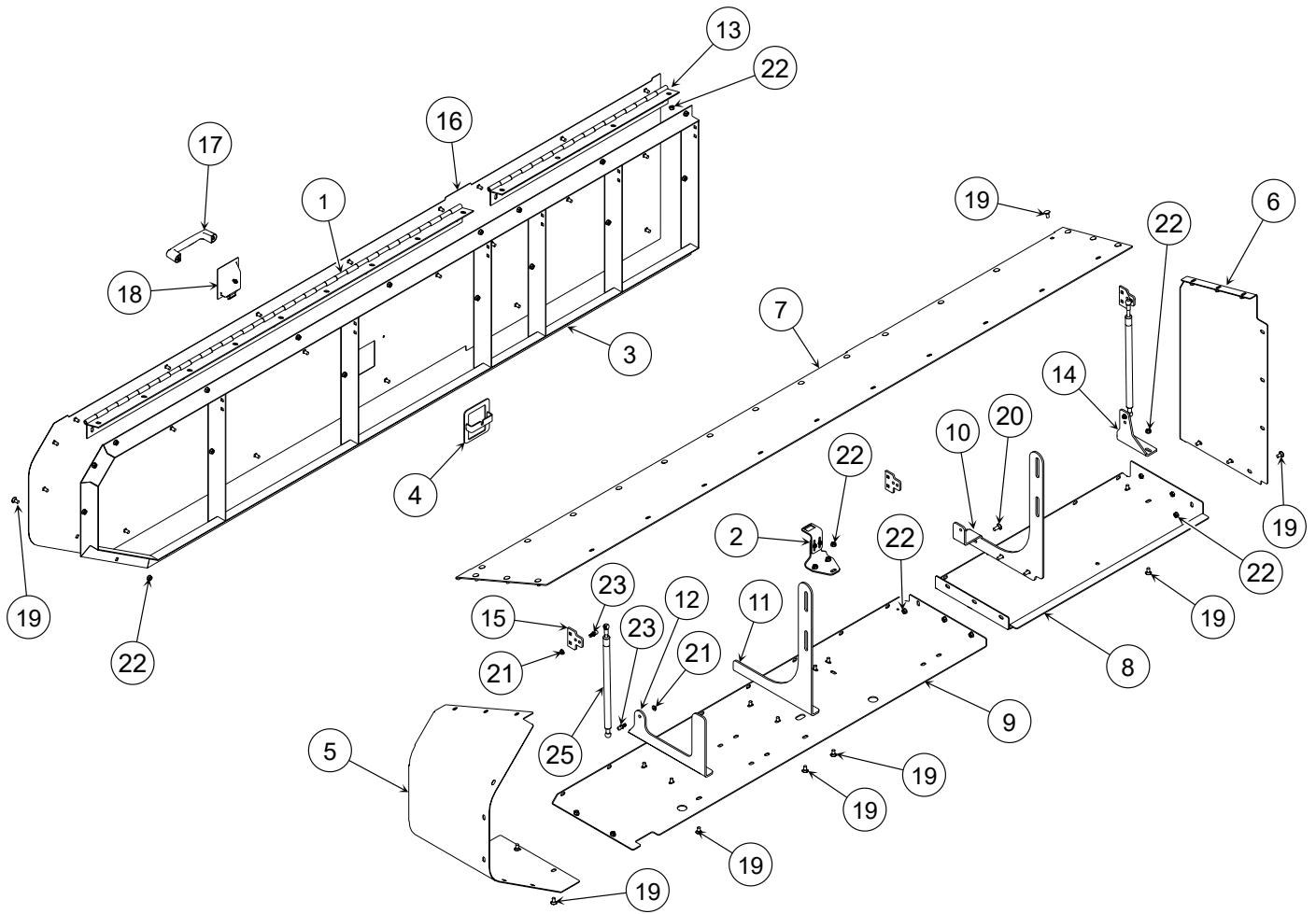
S-SERIES RIGID SIDE DOOR ASSY LH
500-2-1625
(ASSEMBLY DRAWING)



S-SERIES RIGID SIDE DOOR ASSY LH
500-2-1625
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	200-3-5103	3/8 HINGE (ALLEGIS - H885SS)	1
2	500-2-1805	DOOR LATCH ASSY	1
3	500-2-1811	SIDE DOOR FRAME WELDMENT LH	1
4	500-2-1844	LATCH HOLD WELDMENT SOUTHCO	1
5	500-3-5057	FRONT SIDE SHIELD- LH	1
6	500-3-5058	TOP SIDE SHIELD- LH	1
7	500-3-5059	BOTTOM SIDE SHIELD- LH	1
8	500-3-5060	BACK SIDE SHIELD- LH	1
9	500-3-5092	ANGLE- GAS SPRING	2
10	500-3-5278	PLATE- GAS SPRING MOUNT	2
11	500-3-5368	LH DOOR PANEL	1
12	700-3-3965	GRAB HANDLE - SOUTHCO #B8-63-3	1
13	700-3-3966	PADDLE LATCH - SOUTHCO #64-10-301-90	1
14	900-01694	CARRIAGE BOLT 3/8 NC X 3/4	45
15	900-06137	WHIZ NUT - 5/16 NC	4
16	900-06139	3/8 NC FLANGED WHIZ NUT	45
17	905-06026	BALL STUD, GAS SPRING 10" STROKE	4
18	905-06027	SAFETY CLIP, GAS SPRING 10" STROKE	4
19	905-06028	GAS SPRING, 10" STROKE, 100 LBS	2

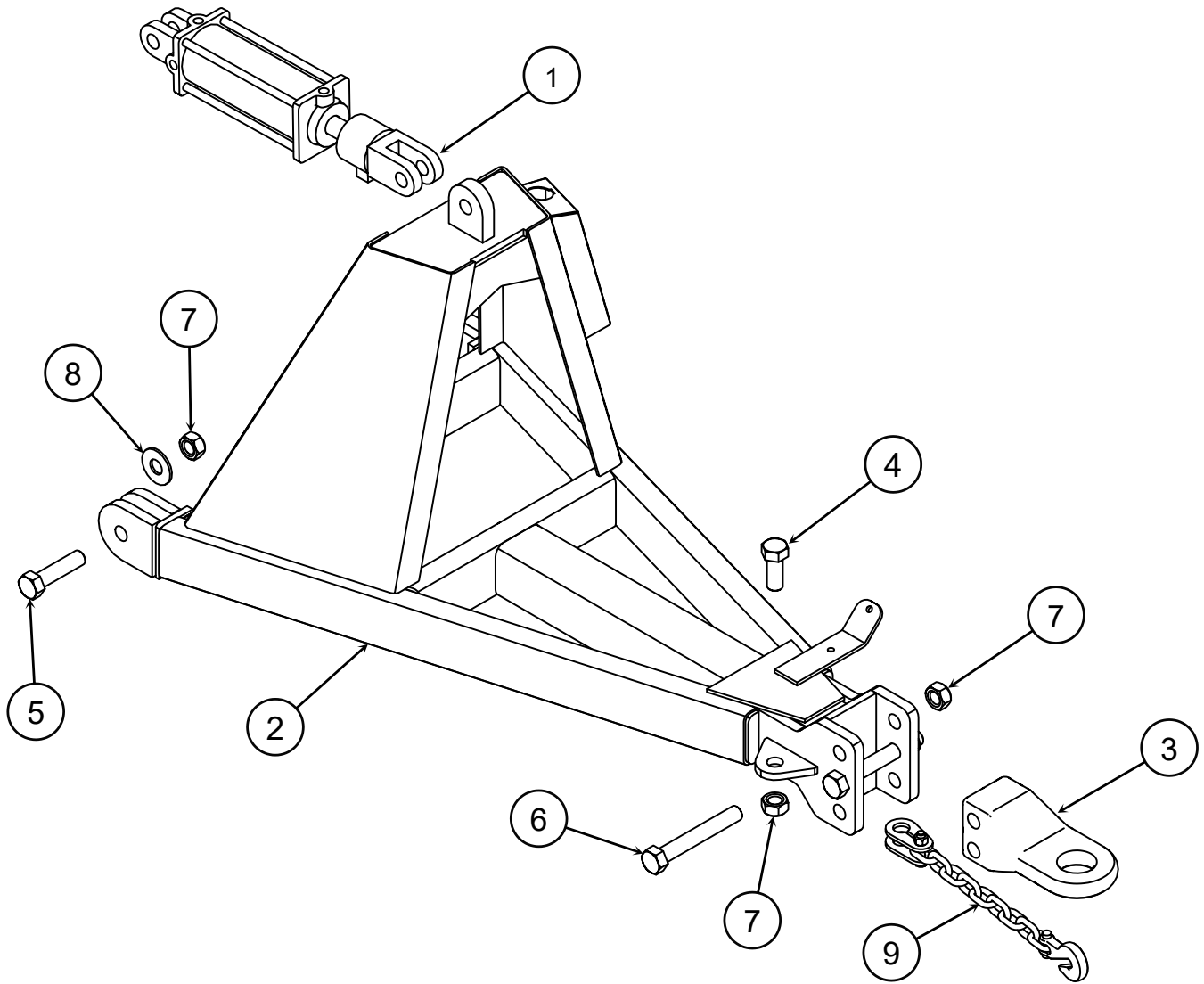
S-SERIES RIGID SIDE DOOR ASSY RH
500-2-1628
(ASSEMBLY DRAWING)



S-SERIES RIGID SIDE DOOR ASSY RH
500-2-1628
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	200-3-5103	3/8 HINGE (ALLEGIS -H885SS)	1
2	500-2-1805	DOOR LATCH ASSY	1
3	500-2-1809	SIDE DOOR FRAME WELDMENT RH (PANEL LATCH)	1
4	500-2-1844	LATCH HOLD WELDMENT- SOUTHCO	1
5	500-3-5061	FRONT SIDE SHIELD- RH	1
6	500-3-5063	BACK SIDE SHIELD- RH	1
7	500-3-5064	TOP SIDE SHIELD- RH	1
8	500-3-5080	REAR BOTTOM SIDE SHIELD RH	1
9	500-3-5081	FRONT BOTTOM SIDE SHIELD RH	1
10	500-3-5097	REAR S SERIES BELT BOX STIFFENER	1
11	500-3-5098	FRONT S SERIES BELT BOX STIFFENER	1
12	500-3-5109	FRONT S SERIES BELT BOX STIFFENER	1
13	500-3-5270	3/8" DOOR HINGE (SHORT)	1
14	500-3-5274	ANGLE- GAS SPRING	1
15	500-3-5278	PLATE- GAS SPRING MOUNT	2
16	500-3-5367	RH DOOR PANEL (PANEL LATCH)	1
17	700-3-3965	GRAB HANDLE - SOUTHCO #B8-63-3	1
18	700-3-3966	PADDLE LATCH - SOUTHCO #64-10-301-90	1
19	900-01694	CARRIAGE BOLT 3/8 NC X 3/4	57
20	900-01695	CARRIAGE BOLT 3/8 NC X 1 ZP	3
21	900-06137	WHIZ NUT - 5/16 NC	4
22	900-06139	3/8 NC FLANGED WHIZ NUT	60
23	905-06026	BALL STUD, GAS SPRING 10" STROKE	4
24	905-06027	SAFET CLIP, GAS SPRING 10; STROKE	6
25	905-06029	GAS SPRING 10" STROKE, 150 LBS	2

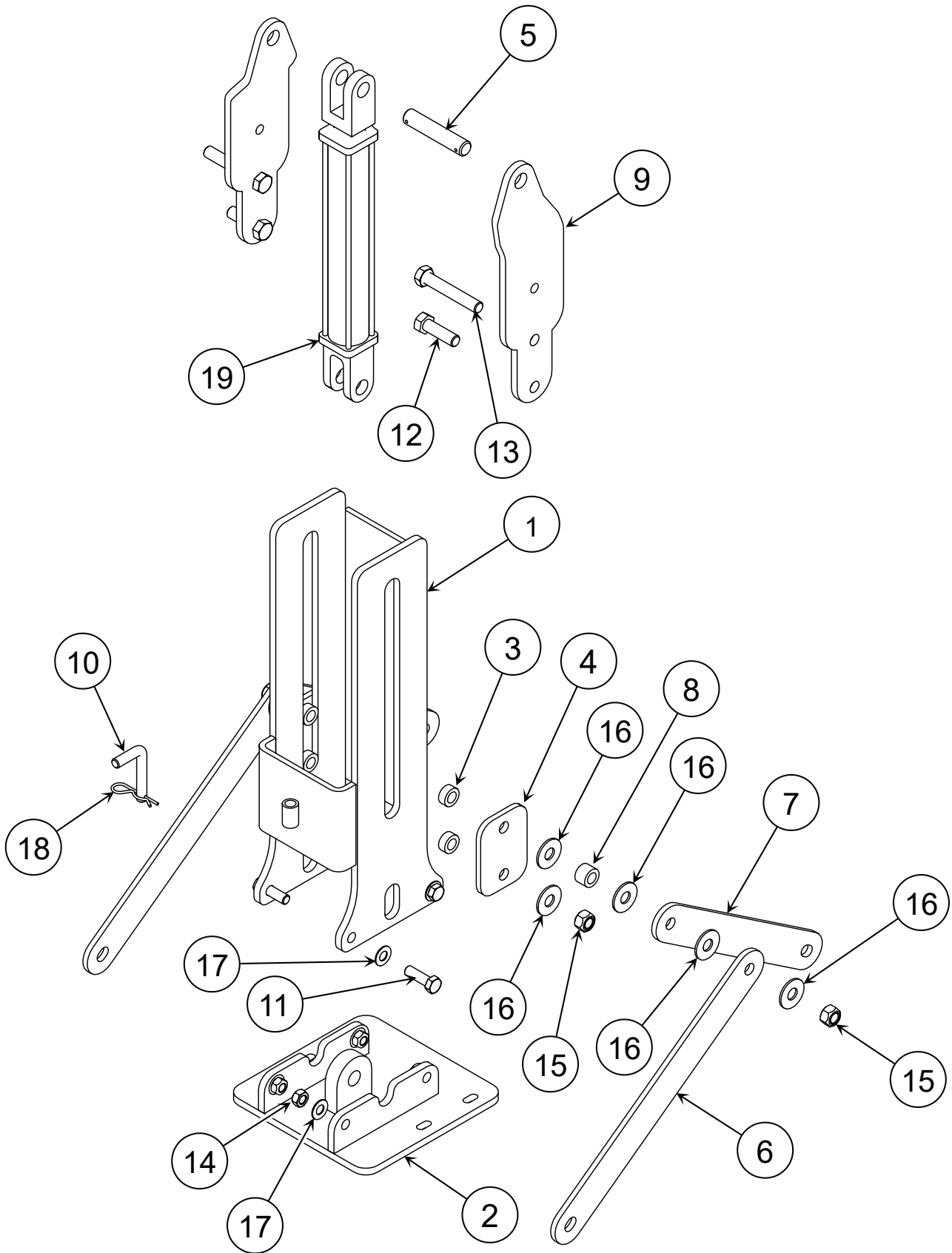
HITCH ASSY - STD KIT
500-1-0403
(ASSEMBLY DRAWING)



HITCH ASSY - STD KIT
500-1-0403
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	500-2-0789	HYDRAULIC KIT - SHORT HITCH	1
2	500-2-1952	HITCH WELD - HD	1
3	505-3-0831	HITCH TONGUE COMP CAT3	1
4	900-01515	HEX BOLT 1 NC X 2.5 GD 5 ZP	1
5	900-01527	HEX BOLT - 1NC X 4 GR5 ZP	2
6	900-02930	BOLT, HH, 1-8 x 7, GR5 ZP	2
7	900-06514	NUT, LOCK, 1" NC, TOP, ZP	5
8	900-11040	WASHER, FLAT, 1	2
9	905-07123	TOW CHAIN SAFETY 21,000 LB	1

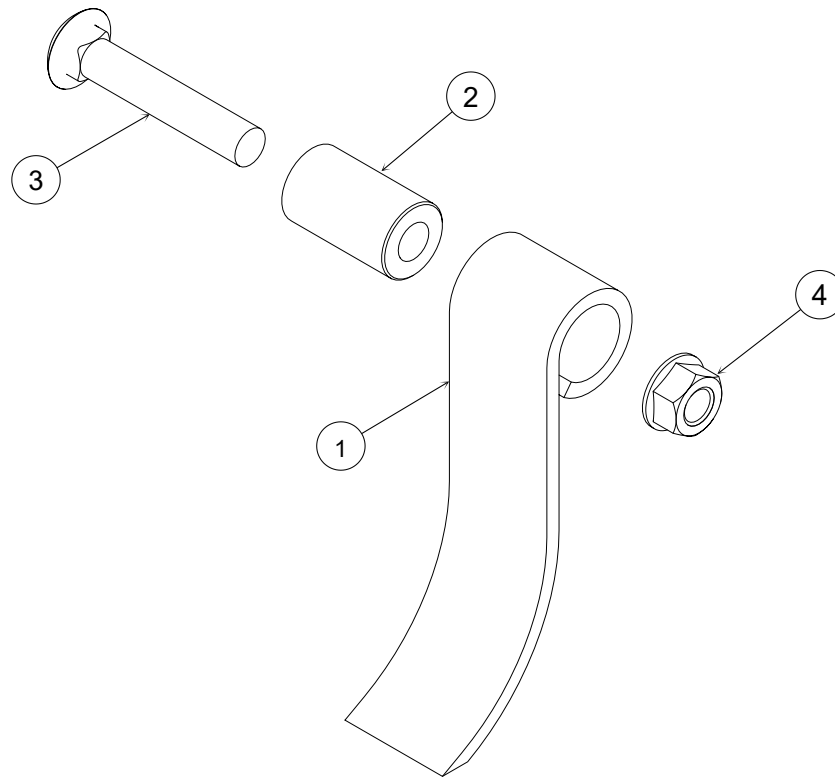
CYLINDER TOWER ASSY - 12R
500-2-1504
(ASSEMBLY DRAWING)



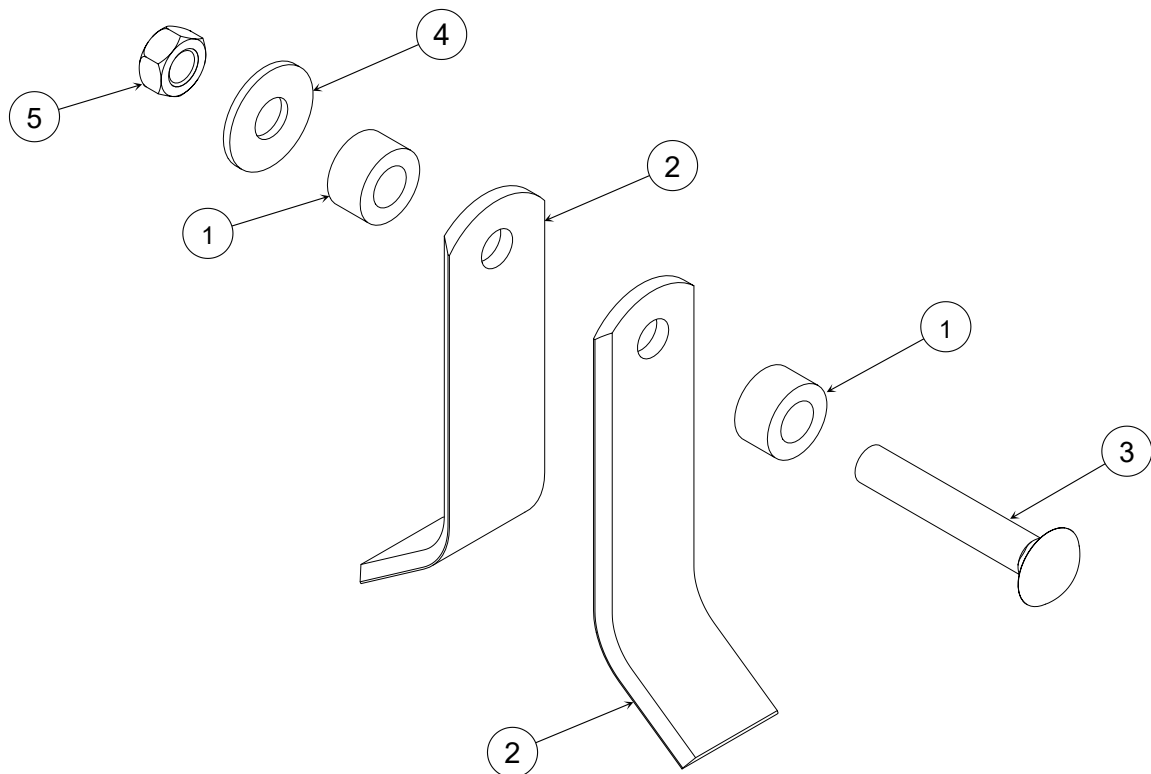
CYLINDER TOWER ASSY - 12R
500-2-1504
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	500-2-1323	CYLINDER SUPPORT ARM WELD - TOP COVER	1
2	500-2-1512	BOTTOM CYLINDER PLATE WELDMENT	1
3	500-3-2696	SPACER - SLIDE	4
4	500-3-2698	HOLD DOWN PLATE - TOP COVERS	2
5	500-3-2699	UPPER CYLINDER PIN - HYD DOORS	1
6	500-3-4668	DOOR LIFT ARMS #2	2
7	500-3-4674	DOOR LIFT ARMS #1	2
8	500-3-4703	CYLINDER ARM SPACER	2
9	500-3-4882	S SERIES CYLINDER PULL PLATE	2
10	505-3-0279	PIN PARK STAND	1
11	900-01345	BOLT, HH, 5/8-1 1 X 2, GR5 ZP	4
12	900-01407	3/4-10 X 2-1/2 HEX BOLT ZP	2
13	900-01421	3/4-10 X 4.5 HEX BOLT	2
14	900-06508	NUT HEX 5/8 UNC TOP LOCK	4
15	900-06510	3/4 NUT, HEX TOP LOCK	4
16	900-11038	3/4" FLAT WASHER, USS	10
17	900-11088	WASHER, FLAT, SAE, 5/8, ZP	8
18	900-25005	5/32 (#9) HITCH PIN	1
19	905-21453	STANDARD HYDRAULIC CYL 2 X 12	1

CUP KNIFE CLUSTER
500-2-0787
(ASSEMBLY DRAWING)



L-KNIFE CLUSTER
500-2-0963
(ASSEMBLY DRAWING)



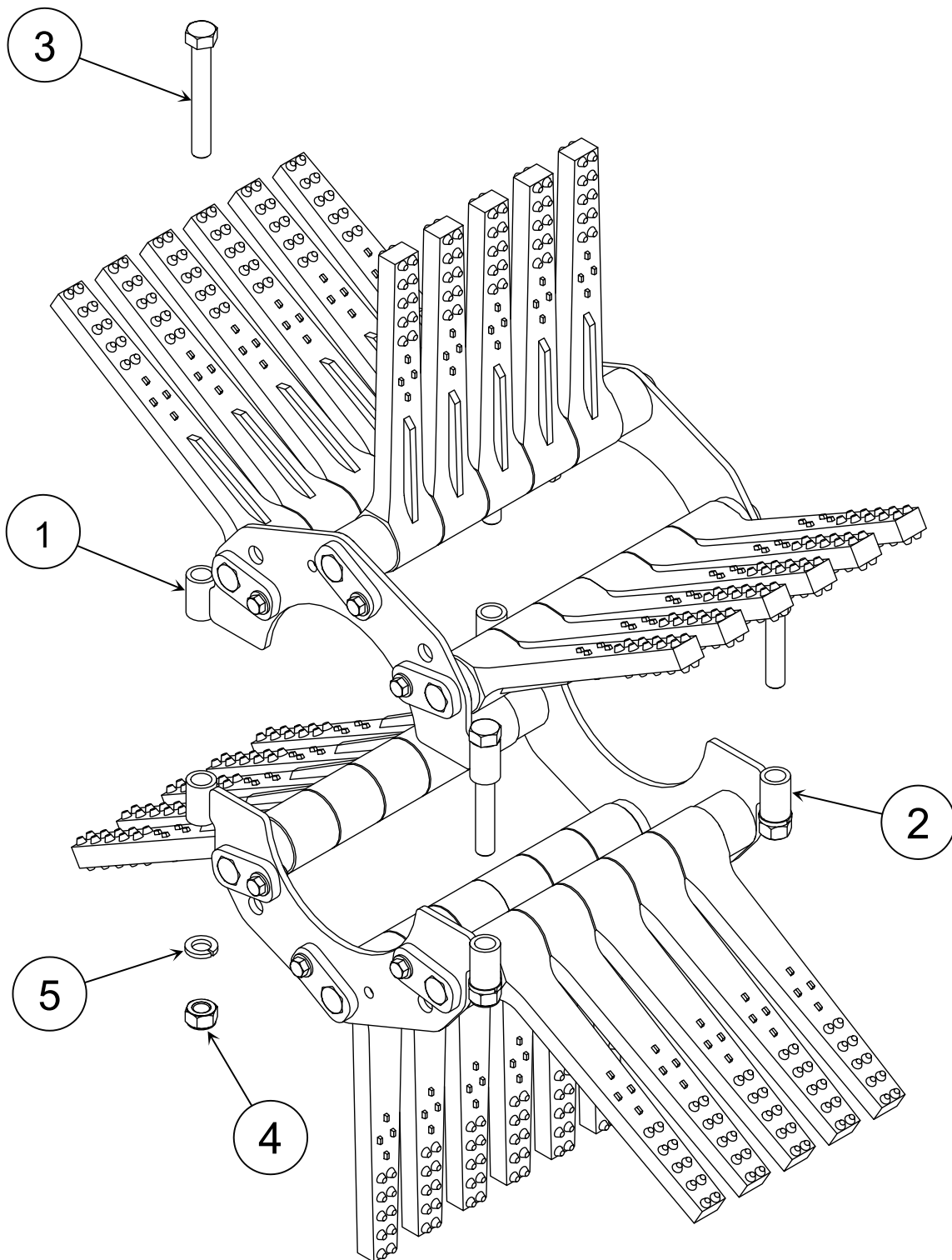
CUP KNIFE CLUSTER
500-2-0787
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	505-3-0004	CUP KNIFE - 7"	1
2	505-3-0405	BUSHING CUP KNIFE	1
3	900-01792	BOLT CARRIAGE 5/8-11 X 3.50	1
4	900-06145	5/8 WHIZ NUT	1

L-KNIFE CLUSTER
500-2-0963
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	500-3-2134	TUBE SPACER	2
2	505-3-0001	STEEL INLINE KNIFE LONG	2
3	900-03064	BOLT CARRIAGE 5/8-11 X 3.75 GD 8	1
4	900-06508	NUT HEX 5/8 UNC TOP LOCK	1
5	900-11037	WASHER, FLAT, 5/8"	1

FULL RUBBER FLAIL ASSEMBLY- 6 BOLT
500-2-1754
(ASSEMBLY DRAWING)



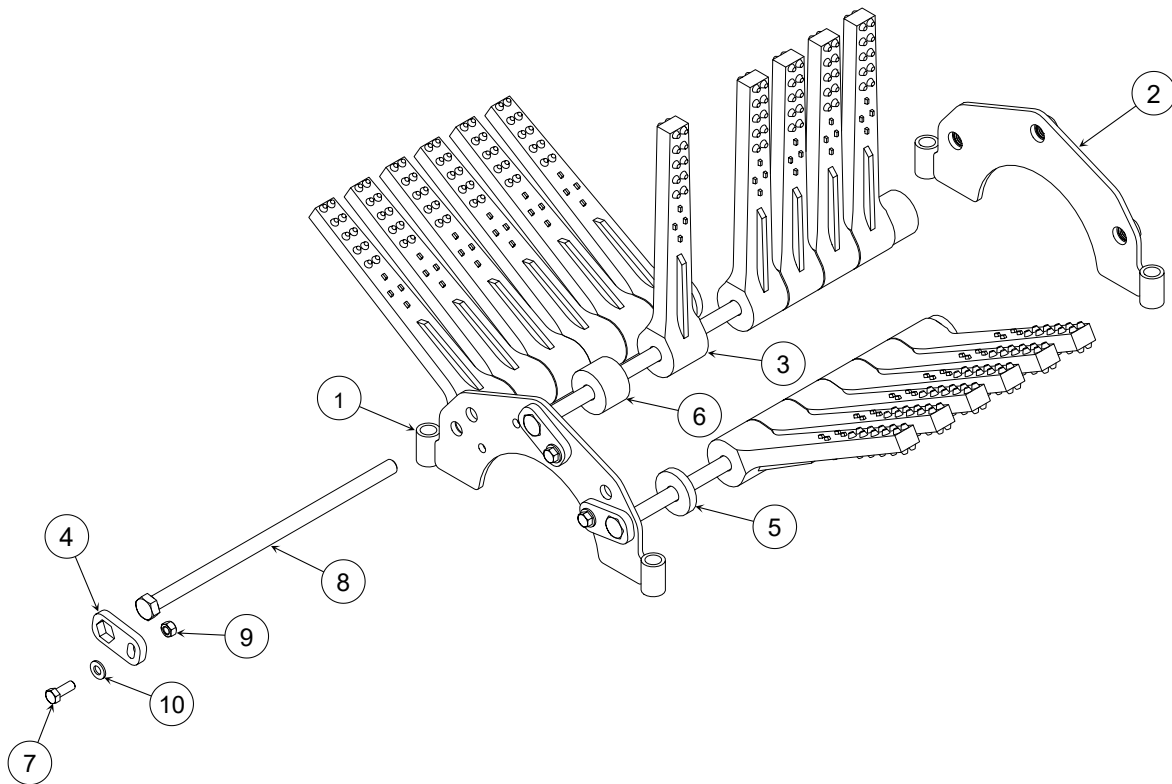
FULL RUBBER FLAIL ASSEMBLY- 6 BOLT
500-2-1754
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	500-2-1752	HALF RUBBER FLAIL ASSEMBLY 6-5-6 (6 BOLT)	1
2	500-2-1753	HALF RUBBER FLAIL ASSEMBLY 5-6-5 (6 BOLT)	1
3	900-01363	HEX BOLT 5/8 NC X 4 1/2 GD 5 ZP	4
4	900-06013	NUT, HH, 5/8-11, ZP	4
5	900-11015	WASHER, LOCK, 5/8, ZP	4

HALF RUBBER FLAIL ASSEMBLY 6-5-6 (6 BOLT)

500-2-1752

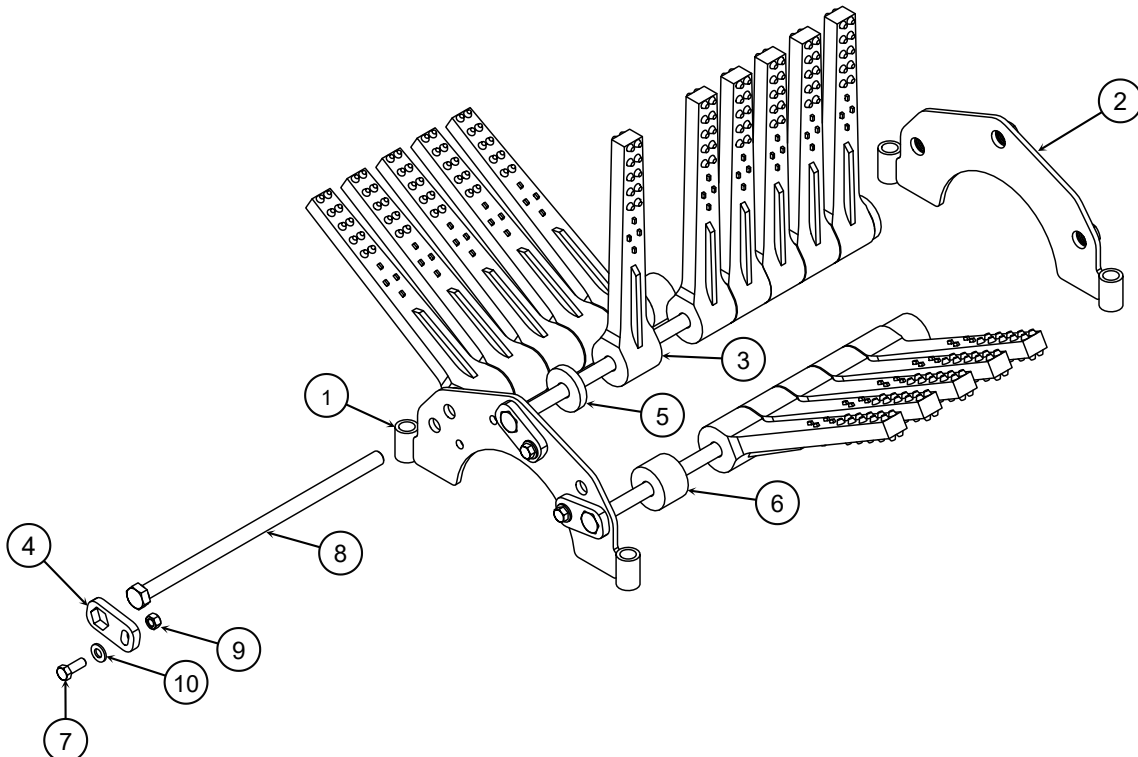
(ASSEMBLY DRAWING)



HALF RUBBER FLAIL ASSEMBLY 5-6-5 (6 BOLT)

500-2-1753

(ASSEMBLY DRAWING)



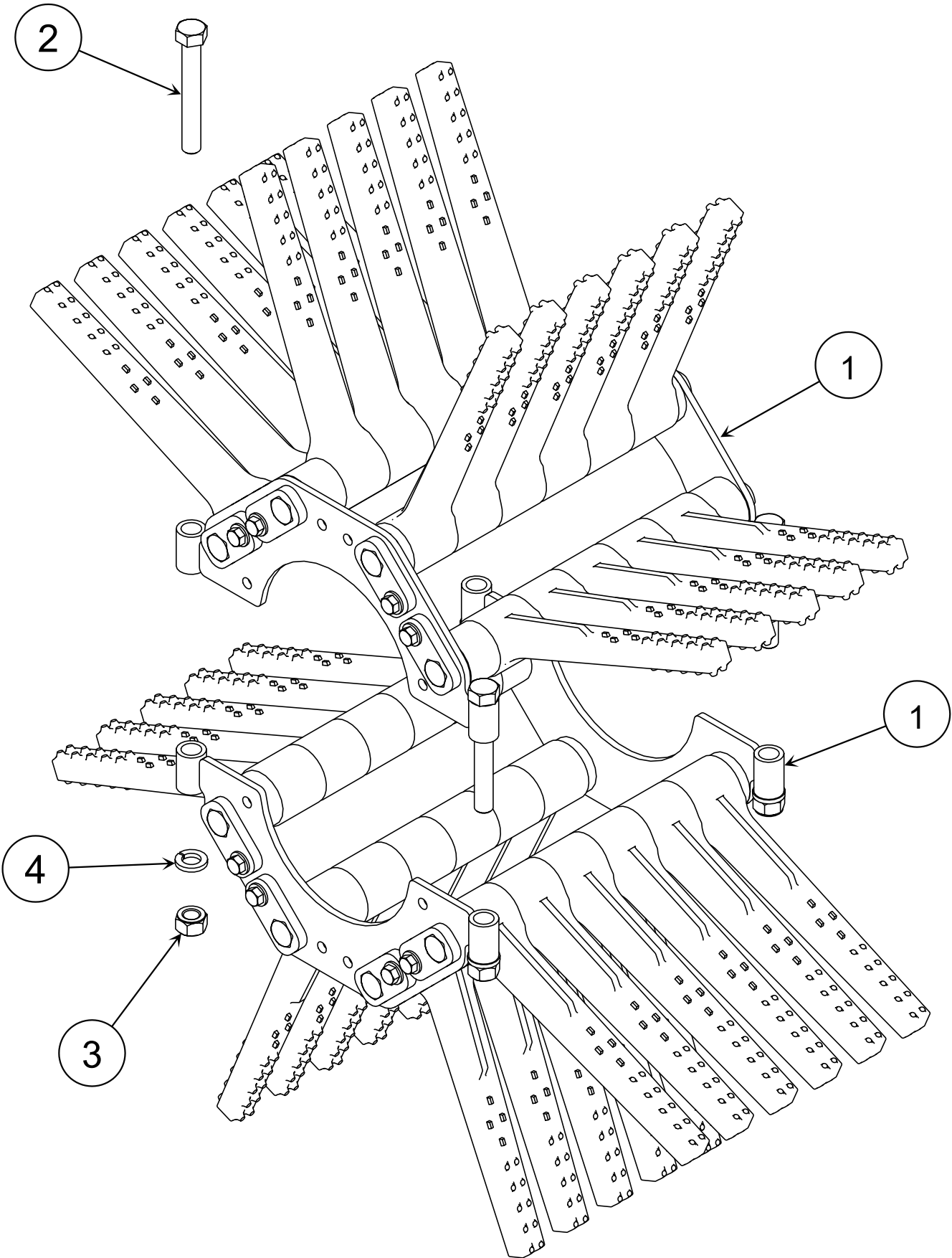
HALF RUBBER FLAIL ASSEMBLY 6-5-6 (6 BOLT)
500-2-1752
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	500-2-0067	FLAIL MTG BRACKET WELD	1
2	500-2-1755	FLAIL MTG BRACKET WELD 6 BOLT	1
3	500-3-2578	RUBBER FLAIL 12" TAPERED 62B BF12T NOFFSINGER	17
4	500-3-5249	PLATE-FLAIL MOUNT HEX HEAD STOP	3
5	500-3-5252	SPACER 3/8" X 2" DIA- RUBBER FLAIL	4
6	500-3-5261	SPACER 1.375" X 2" DIA- RUBBER FLAIL	2
7	900-01109	BOLT HEX 3/8UNC X 1 GR 5	3
8	900-01394	HEX BOLT- 5/8 X 14 UNC ZP	3
9	900-06500	NUT HEX 3/8 TOP LOCK	3
10	900-11033	FLAT WASHER 3/8 ZP	3

HALF RUBBER FLAIL ASSEMBLY 5-6-5 (6 BOLT)
500-2-1753
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	500-2-0067	FLAIL MTG BRACKET WELD	1
2	500-2-1755	FLAIL MTG BRACKET WELD 6 BOLT	1
3	500-3-2578	RUBBER FLAIL 12" TAPERED 62B BF12T NOFFSINGER	16
4	500-3-5249	PLATE-FLAIL MOUNT HEX HEAD STOP	3
5	500-3-5252	SPACER 3/8" X 2" DIA- RUBBER FLAIL	2
6	500-3-5261	SPACER 1.375" X 2" DIA- RUBBER FLAIL	4
7	900-01111	3/8NC X 1-1/4 HEX BOLT GR 5	3
8	900-01394	HEX BOLT- 5/8 X 14 UNC ZP	3
9	900-06500	NUT HEX 3/8 TOP LOCK	3
10	900-11033	FLAT WASHER 3/8 ZP	3

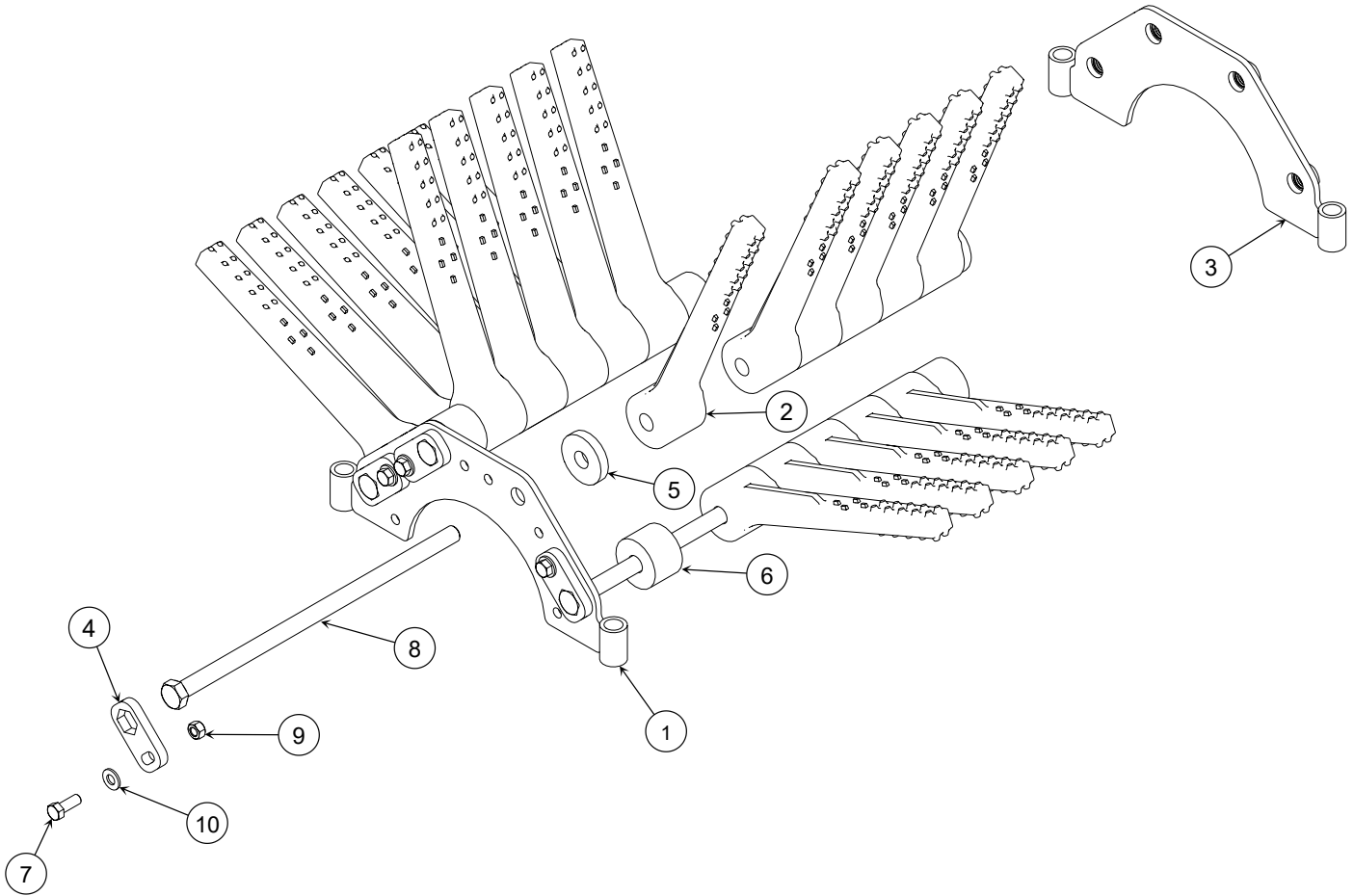
FULL RUBBER FLAIL ASSY 8-BOLT
500-2-1758
(ASSEMBLY DRAWING)



FULL RUBBER FLAIL ASSY 8-BOLT
500-2-1758
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	500-2-1756	HALF RUBBER FLAIL ASSY 6-5-6-5 (8-BOLT)	2
2	900-01363	HEX BOLT 5/8 NC X 4 1/2 GD 5 ZP	4
3	900-06013	NUT, HH, 5/8-11, ZP	4
4	900-11015	WASHER, LOCK, 5/8, ZP	4

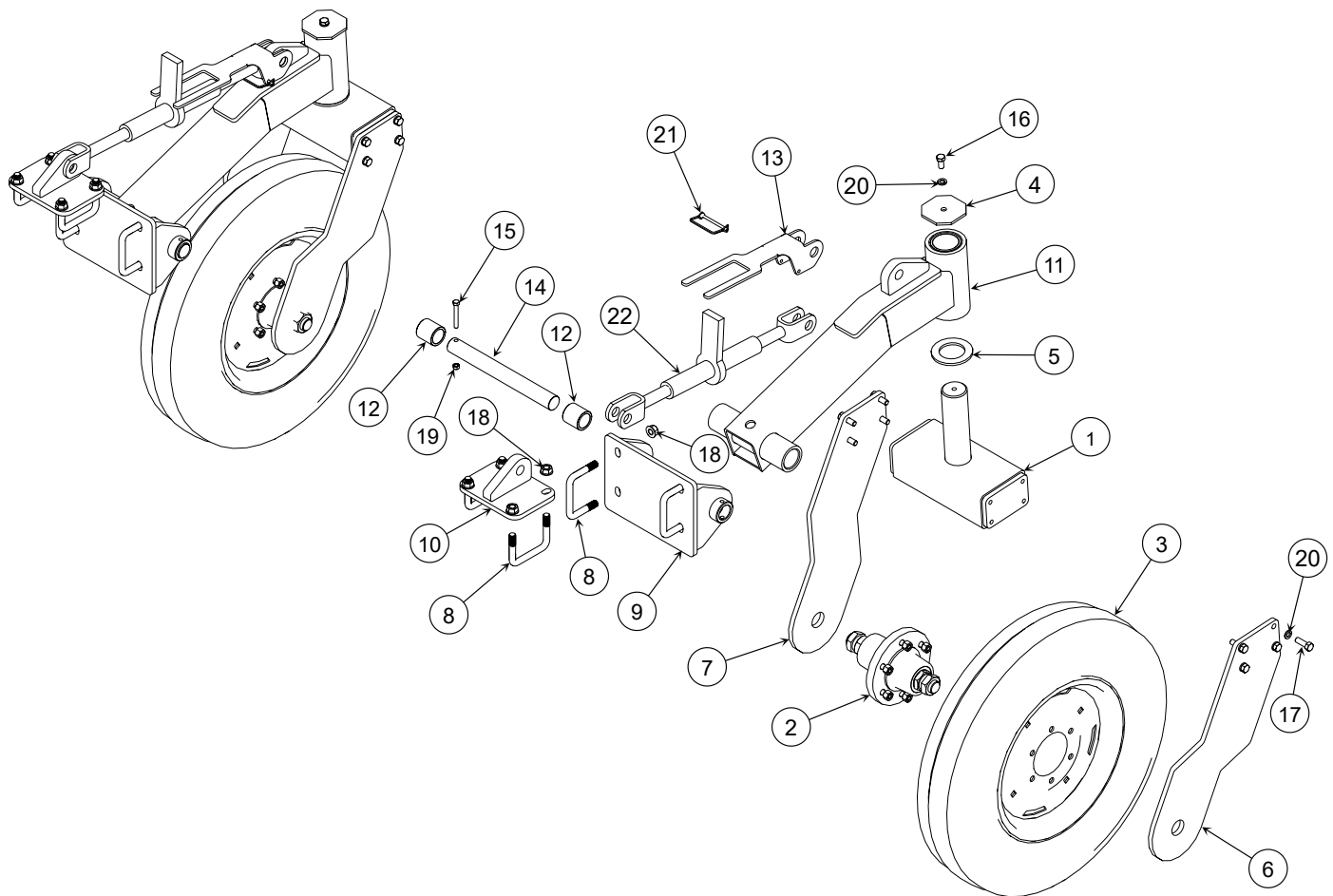
HALF RUBBER FLAIL ASSY 6-5-6-5 (8-BOLT)
500-2-1756
(ASSEMBLY DRAWING)



HALF RUBBER FLAIL ASSY 6-5-6-5 (8-BOLT)
500-2-1756
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	500-2-1475	FLAIL BRACKET - 8 PIN	1
2	500-2-1757	FLAIL MTG BRACKET WELD 8-BOLT	1
3	500-3-2578	RUBBER FLAIL 12" TAPERED 62B BF12T NOFFSINGER	22
4	500-3-5249	PLATE-FLAIL MOUNT HEX HEAD STOP	4
5	500-3-5252	SPACER 3/8" X 2" DIA- RUBBER FLAIL	4
6	500-3-5261	SPACER 1.375" X 2" DIA- RUBBER FLAIL	4
7	900-01109	BOLT HEX 3/8UNC X 1 GR 5	4
8	900-01394	HEX BOLT- 5/8 X 14 UNC ZP	4
9	900-06079	3/8-16 CENTER LOCK NUT, GRADE 2, ZP	4
10	900-11033	FLAT WASHER 3/8 ZP	4

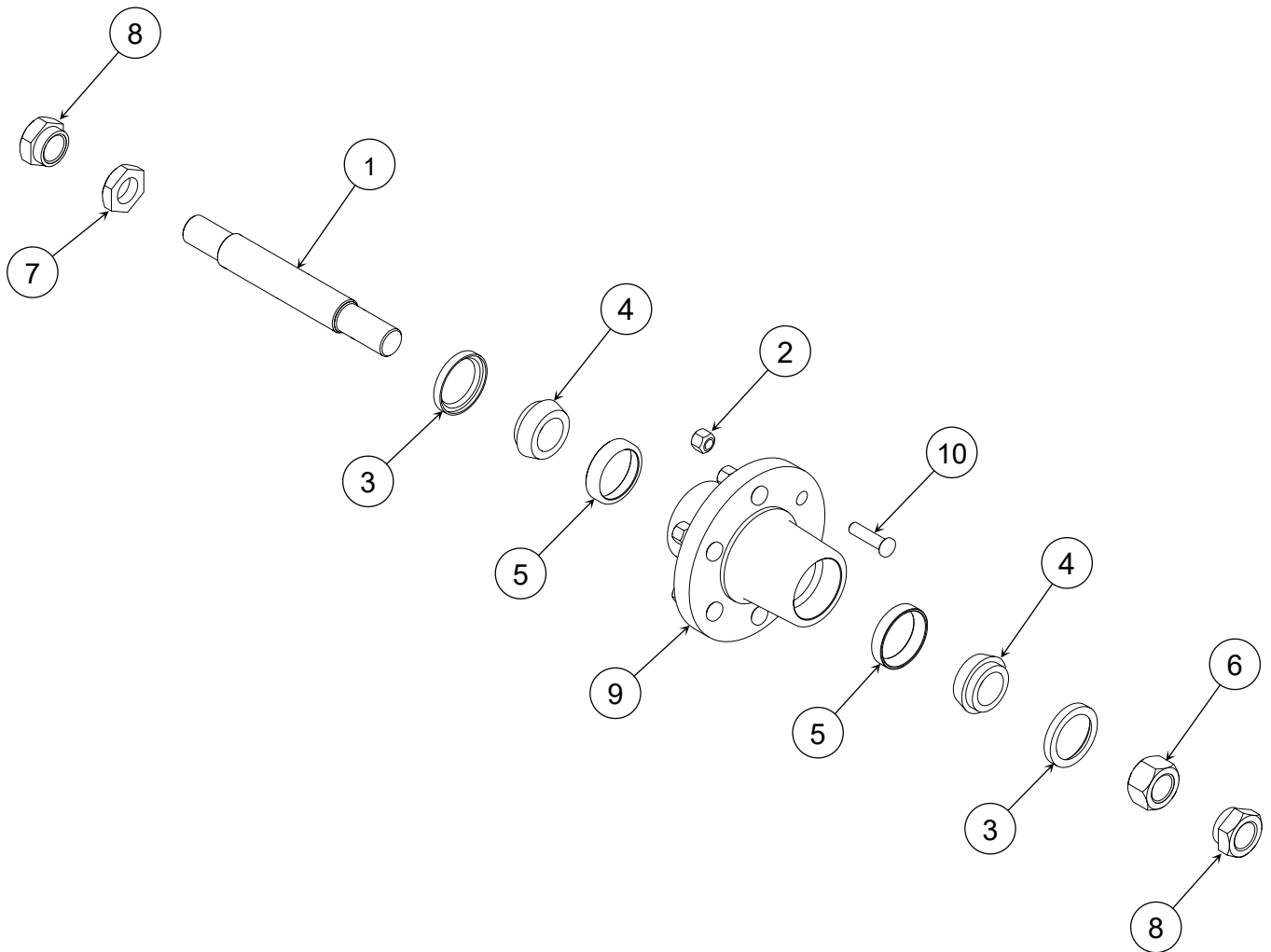
(ASSEMBLY DRAWING)



FRONT STABILIZER WHEEL ADJUSTABLE (PAIR)
500-1-0380
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	200-2-0689	CASTOR PIVOT SHAFT WELD	2
2	200-2-0928	HUB & SPINDLE ASSEMBLY	2
3	200-2-2747	6.00 - 16SL TIRE AND WHEEL ASSY	2
4	200-3-1219	PLATE, CASTER	2
5	200-3-1233	THRUST BEARING	2
6	200-3-2621	PLATE, SIDE (LH)	2
7	200-3-2622	PLATE, SIDE (RH)	2
8	200-3-4641	U-BOLT 4 x 3.25 x 5/8 W/ 1.25 THREAD	8
9	500-2-1310	FRONT STABILIZER MOUNT WELD	2
10	500-2-1311	UPPER CYLINDER MOUNT - STABILIZER	2
11	500-2-1328	WELD, STAB WHL ARM	2
12	500-3-1151	BUSHING, REAMED	4
13	500-3-2202	RACHET JACK SUPPORT BRACKET	2
14	700-3-2600	PIN, PIVOT - STABILIZER	2
15	900-01123	BOLT, HH 3/8 NC X 2-3/4	1
16	900-01221	BOLT HEX 1/2" X 1"	1
17	900-01225	1/2 NC X 1-1/2 HEX BOLT GR 5	16
18	900-06145	5/8 WHIZ NUT	16
19	900-06500	NUT HEX 3/8 TOP LOCK	1
20	900-11013	WASHER, LOCK 1/2	18
21	900-42065	SNAPPER PIN .25 X 3.00 USABLE LENGTH	2
22	905-23014	RATCHET JACK HEAVY DUTY	2

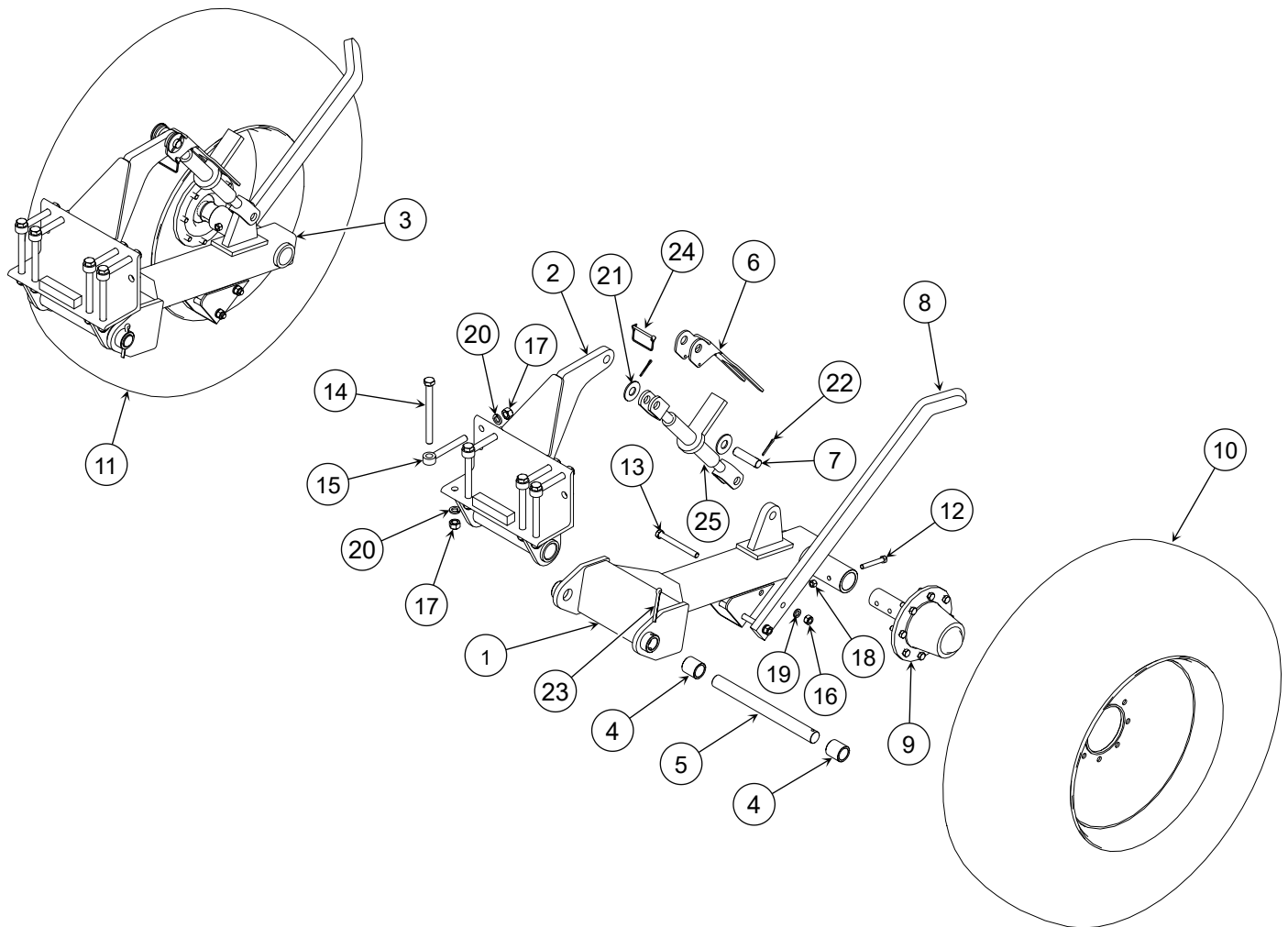
STABALIZER WHEEL HUB & SPINDLE ASSEMBLY
200-2-0928
(ASSEMBLY DRAWING)



STABALIZER WHEEL HUB & SPINDLE ASSEMBLY
200-2-0928
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	200-3-1240	SPINDLE FORK	1
2	200-3-1847	NUT, SHOULDER, CASTOR	2
3	200-3-2726	NUT, SHORT 1-1/4-12	1
4	900-06024	1 1/4-12 HEX NUT ZP	1
5	901-01148	CUP, BEARING	2
6	901-01149	BEARING CONE	2
7	901-09127	SEAL	2
8	905-09011	1/2-20 WHEEL NUT	6
9	905-09082	HUB, PAINTED 6-BOLT	1
10	905-09117	WHEEL BOLT, 1/2" NF X 1-1-7/8"	6

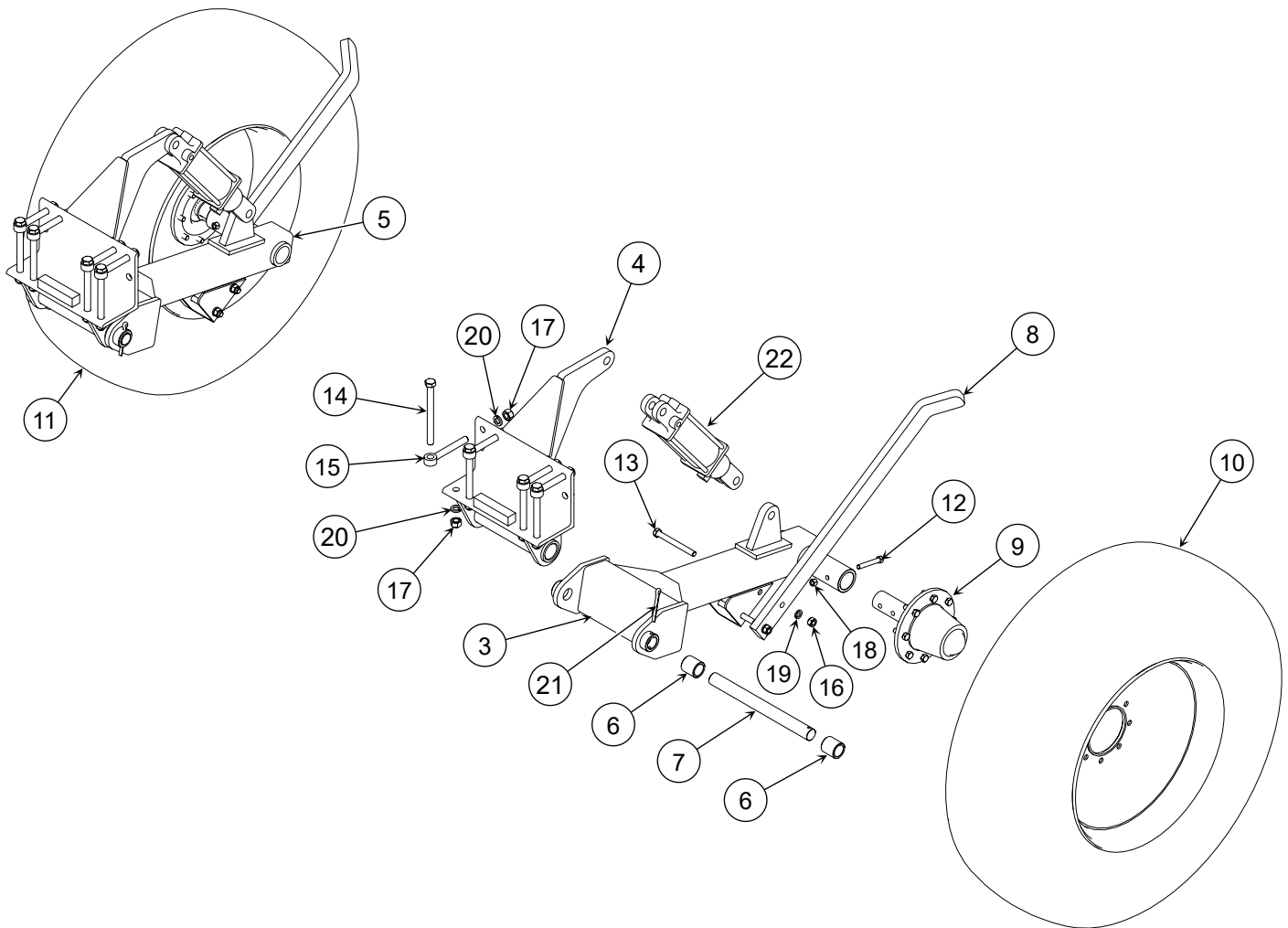
REAR STRUT PAIR USED WITH REAR STEAR (RATCHET)
500-1-0207
(ASSEMBLY DRAWING)



REAR STRUT PAIR USED WITH REAR STEAR (RATCHET)
500-1-0207
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	500-2-0993	REAR STRUT WELD - SINGLE RH	1
2	500-2-1046	WELD, REAR STRUT, MOUNTING ANGLE	2
3	500-2-1065	REAR STRUT WELD - SINGLE LH	1
4	500-3-1151	BUSHING, REAMED	4
5	500-3-1328	PIN, PIVOT	2
6	500-3-2202	RATCHET JACK SUPPORT BRACKET	2
7	500-3-2203	PIN, RATCHET JACK	4
8	500-3-2259	WHEEL SCRAPER - 12.4 X 24 TIRE	2
9	700-2-0165	SPINDLE HUB ASSEMBLY	2
10	700-2-0167	TIRE AND RIM ASSY LH	1
11	700-2-0168	TIRE AND RIM ASSY RH	1
12	900-01241	BOLT, HH, 1/2-13 x 3-1/2, GR5 ZP	2
13	900-01369	SCREW, CAP 5/8 X 6 UNC ZP	4
14	900-01437	BOLT, HH, 3/4-10 X 8-1/2, GR5 ZP	8
15	900-03463	BOLT, EYE, 3/4" NC X 6"	8
16	900-06013	NUT, HH, 5/8-11, ZP	4
17	900-06015	NUT, HH, 3/4-10, ZP	16
18	900-06504	NUT, LOCK, TOP, 1/2-13, GR C ZP	2
19	900-11015	WASHER, LOCK, 5/8, ZP	4
20	900-11017	WASHER, LOCK, 3/4, ZP	16
21	900-11040	WASHER, FLAT, 1	8
22	900-23045	PIN, COTTER, 3/16 x 2	8
23	900-23084	PIN, COTTER, 3/8 X 3-1/2	2
24	900-42065	SNAPPER PIN .25 X 3.00 USABLE LENGTH	2
25	905-23014	RATCHET JACK HEAVY DUTY	2

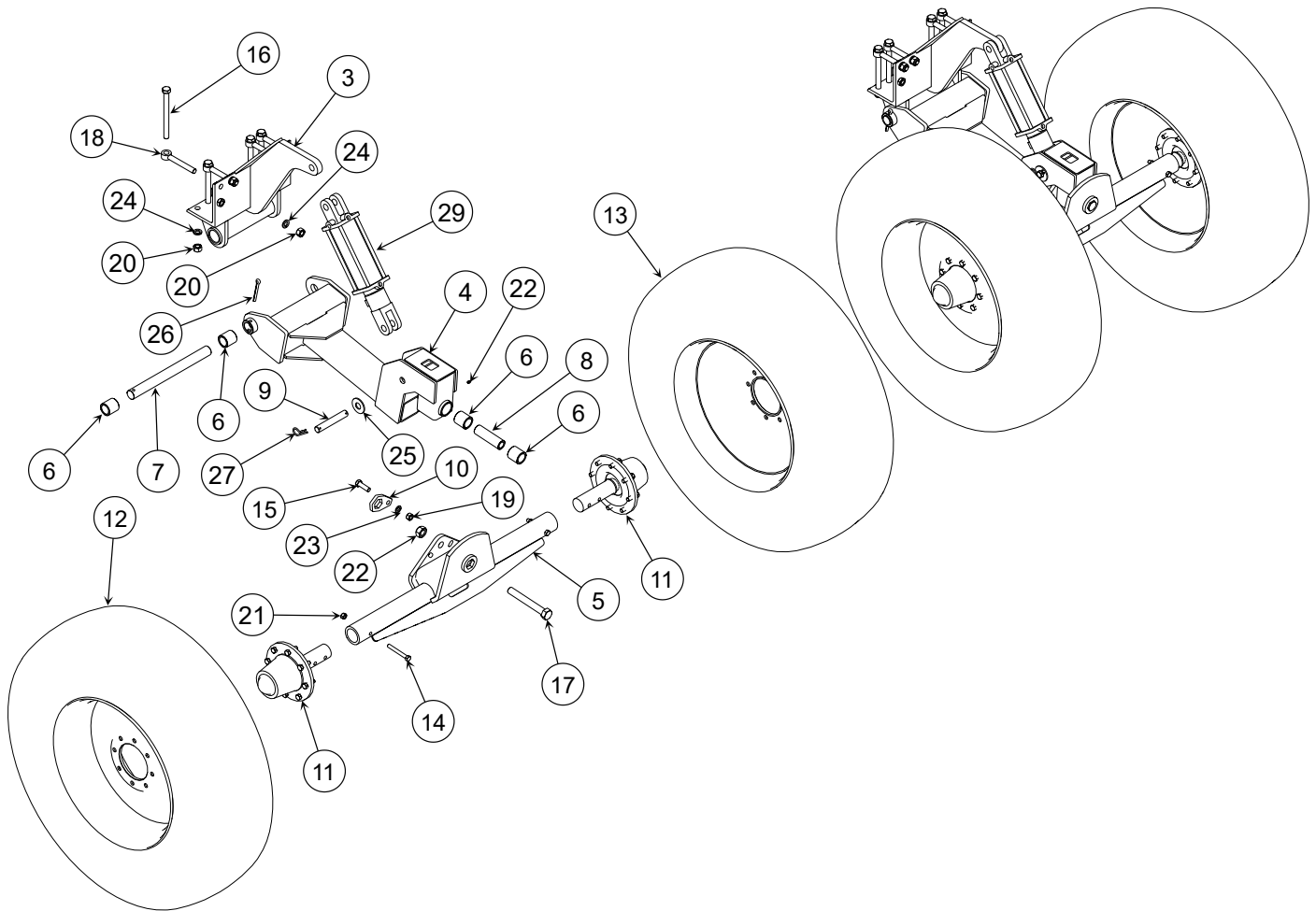
REAR STRUT PAIR USED WITH REAR STEAR (HYDRAULIC)
500-1-0329
(ASSEMBLY DRAWING)



REAR STRUT PAIR USED WITH REAR STEAR (HYDRAULIC)
500-1-0329
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	500-1-0362	HOSE KIT - RIGID STRUTS (SINGLE OUTSIDE WHEELS)	1
2	500-1-0363	KIT - CYLINDER TRANSPORT LOCK (2 PAIRS)	1
3	500-2-0993	REAR STRUT WELD - SINGLE RH	1
4	500-2-1046	WELD, REAR STRUT, MOUNTING ANGLE	2
5	500-2-1065	REAR STRUT WELD - SINGLE LH	1
6	500-3-1151	BUSHING, REAMED	4
7	500-3-1328	PIN, PIVOT	2
8	500-3-2259	WHEEL SCRAPER - 12.4 X 24 TIRE	2
9	700-2-0165	SPINDLE HUB ASSEMBLY	2
10	700-2-0167	TIRE AND RIM ASSY LH	1
11	700-2-0168	TIRE AND RIM ASSY RH	1
12	900-01241	BOLT, HH, 1/2-13 x 3-1/2, GR5 ZP	2
13	900-01369	SCREW, CAP 5/8 X 6 UNC ZP	4
14	900-01437	BOLT, HH, 3/4-10 X 8-1/2, GR5 ZP	8
15	900-03463	BOLT, EYE, 3/4" NC X 6"	8
16	900-06013	NUT, HH, 5/8-11, ZP	4
17	900-06015	NUT, HH, 3/4-10, ZP	16
18	900-06504	NUT, LOCK, TOP, 1/2-13, GR C ZP	2
19	900-11015	WASHER, LOCK, 5/8, ZP	4
20	900-11017	WASHER, LOCK, 3/4, ZP	16
21	900-23084	PIN, COTTER, 3/8 X 3-1/2	2
22	905-21400	HYD CYL - 3.5 X 8	2

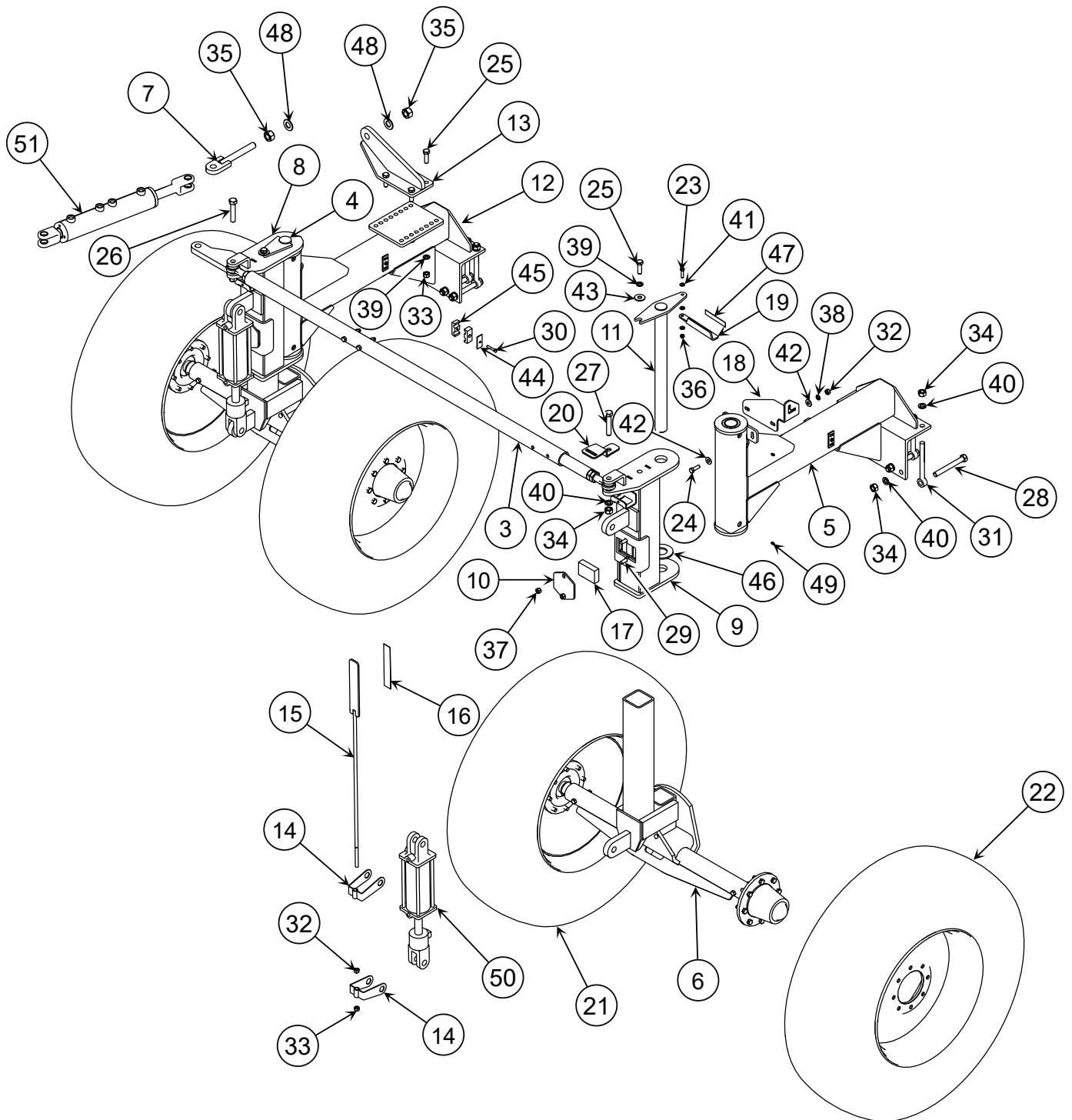
LARGE TIRES - 44" RIGID PIVOT STRUTS AT 88" SPACING
500-1-0328
(ASSEMBLY DRAWING)



LARGE TIRES - 44" RIGID PIVOT STRUTS AT 88" SPACING
500-1-0328
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	500-1-0363	KIT - CYLINDER TRANSPORT LOCK (2 PAIRS)	1
2	500-1-0459	HOSE KIT - RIGID STRUTS 88" - 110" STRUT SPACING	1
3	500-2-1046	WELD, REAR STRUT, MOUNTING ANGLE	1
4	500-2-1071	REAR STRUT WELD - PIVOT	1
5	500-2-1151	SPINDLE HOLDER - 44" WHEEL SPACING (REAR STEER PIVOT)	1
6	500-3-1151	BUSHING, REAMED	4
7	500-3-1328	PIN, PIVOT	1
8	500-3-2236	BUSHING - WHEEL STRUT (PIVOT)	1
9	500-3-2270	PIN - CYLINDER	1
10	500-3-5297	BOLT HOLD- REAR STEER	1
11	700-2-0165	SPINDLE HUB ASSEMBLY	2
12	700-2-0167	TIRE AND RIM ASSY	1
13	700-2-0168	TIRE AND RIM ASSY RH	1
14	900-01245	1/2 X 4 HEX BOLT GR5 ZP	2
15	900-01345	BOLT, HH, 5/8-11 X 2, GR5 ZP	1
16	900-01437	BOLT, HH, 3/4-10 X 8-1/2, GR5 ZP	4
17	900-03061	BOLT HEX 1X7-1/2 NF GR8 ZP	1
18	900-03463	BOLT, EYE, 3/4" NC X 6"	4
19	900-06013	NUT, HH, 5/8-11, ZP	1
20	900-06015	NUT, HH, 3/4-10, ZP	8
21	900-06504	NUT, LOCK, TOP, 1/2-13, GR C ZP	2
22	900-06515	NUT, LOCK, 1" NF, TOP, ZP	1
23	900-11015	WASHER, LOCK, 5/8, ZP	1
24	900-11017	WASHER, LOCK, 3/4, ZP	8
25	900-11040	WASHER, FLAT, 1	2
26	900-23084	PIN, COTTER, 3/8 X 3-1/2	1
27	900-25007	3/16 (#6) HITCH PIN	2
28	905-15024	ZERK 1/4-28 UNF STRAIGHT	2
29	905-21400	HYD CYL - 3.5 X 8	2

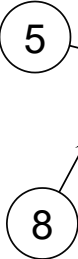
LARGE TIRES - 44" STEERABLE PIVOT STRUTS AT 88" SPACING
500-1-0398
(ASSEMBLY DRAWING)



LARGE TIRES - 44" STEERABLE PIVOT STRUTS AT 88" SPACING
500-1-0398
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	500-1-0454	HOSE KIT - REAR STEER - 80" - 110" STRUT SPACING	1
2	500-1-0463	KIT - CYLINDER TRANSPORT LOCK (2 PAIRS) W/O MOUNT TAB	1
3	500-2-1205	ADJUSTMENT TUBE ASSY - REAR STEER	1
4	500-2-1358	PIN WELD	1
5	500-2-1360	STRUT UPPER WELD -(REAR STEER) WO/EAR	1
6	500-2-1362	LOWER STRUT ASSEMBLY, REAR STEER 44"	2
7	500-2-1446	ADJUSTABLE REAR STEER EYE BOLT	1
8	500-2-1459	STRUT LOWER PIVOT - REAR STEER (2013)	1
9	500-2-1460	STRUT LOWER PIVOT - REAR STEER WO/EAR (2013)	1
10	500-2-1461	PRESSURE PAD WELD	2
11	500-2-1469	INDICATOR PIN WELD	1
12	500-2-1470	STRUT UPPER WELD - REAR STEER (DRIVE)	1
13	500-2-1471	RIGID REAR STEER ADJUSTMENT WELD	1
14	500-2-1472	HEIGHT GAUGE BRACKET WELDMENT	2
15	500-2-1473	HEIGHT GAUGE INDICATOR WELDMENT	1
16	500-3-1011	DECAL, HYD STRUT DEPTH GAUGE	1
17	500-3-2519	WEAR PLATE - UHMW	2
18	500-3-3028	SIGHT GAUGE BRACKET	1
19	500-3-3029	SIGHT GAUGE INDICATOR	1
20	500-3-3034	HEIGHT GAUGE INDICATOR	1
21	700-2-0167	TIRE AND RIM ASSY	2
22	700-2-0168	TIRE AND RIM ASSY RH	2
23	900-01113	3/8NC X 1-½ HEX BOLT GR 5	1
24	900-01225	1/2 NC X 1-1/2 HEX BOLT GR 5	2
25	900-01345	BOLT, HH, 5/8-11 X 2, GR5 ZP	6
26	900-01417	HEX BOLT-3/4NC X 3.75 GR5 ZP	1
27	900-01419	3/4-10 X 4 HEX BOLT	1
28	900-01429	HEX BOLT - 3/4NC X 6-1/2 GR5 ZP	8
29	900-01751	BOLT, CRG, 1/2-13 X 1-1/2, GR5 ZP	4
30	900-02356	BOLT, HH 5/16 X 1-3/4, GR5 ZP	2
31	900-03462	EYE BOLT 3/4 X 8	8
32	900-06009	NUT HEX 1/2 UNC	4
33	900-06013	NUT, HH, 5/8-11, ZP	4
34	900-06015	NUT, HH, 3/4-10, ZP	18
35	900-06019	1-8 HEX NUT	2
36	900-06500	NUT HEX 3/8 TOP LOCK	1
37	900-06504	NUT, LOCK, TOP, 1/2-13, GR C ZP	4
38	900-11013	WASHER, LOCK 1/2	2
39	900-11015	WASHER, LOCK, 5/8, ZP	6
40	900-11017	WASHER, LOCK, 3/4, ZP	18
41	900-11033	FLAT WASHER 3/8 ZP	3
42	900-11035	1/2 FLAT WASHER	4
43	900-11037	WASHER, FLAT, 5/8"	2
44	900-31068	COVER PLATE	2
45	900-31069	CLAMP BODY - HOSE HOLDER	4
46	901-01145	THRUST BEARING	2
47	902-15116	DECAL, STEERING INDICATOR	1
48	905-09068	WASHER, 1 SAE	2
49	905-15024	ZERK 1/4-28 UNF STRAIGHT	4
50	905-21400	HYD CYL - 3.5 X 8	2
51	905-21452	DOUBLE CYLINDER - 1.50 X 2.5 X 4 STROKE PER SIDE	1

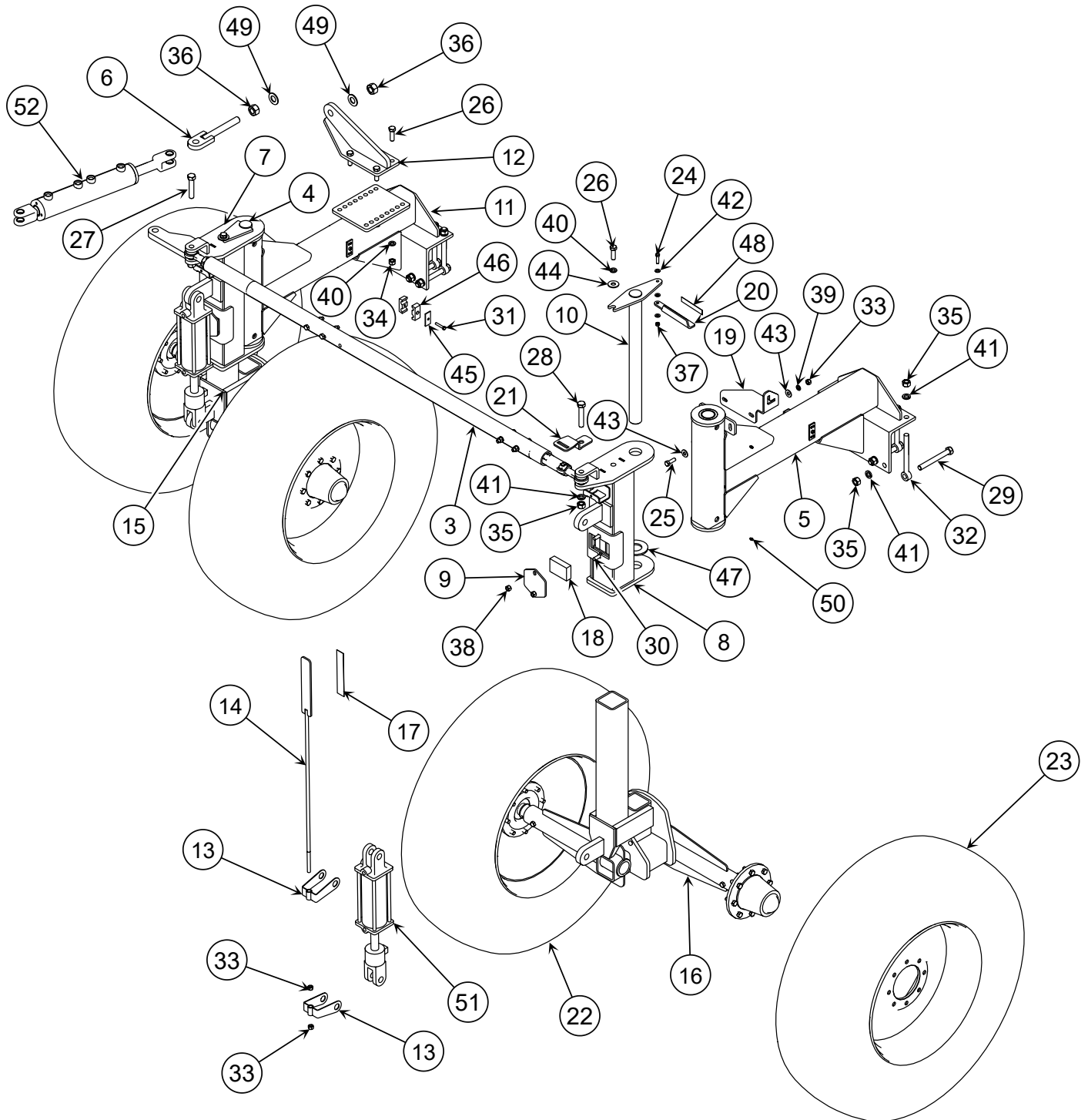
(ASSEMBLY DRAWING)



LOWER STRUT ASSEMBLY, REAR STEER 44"
500-2-1362
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	500-2-1151	SPINDLE HOLDER - 44" WHEEL SPACING (REAR STEER PIVOT)	1
2	500-2-1361	LOWER STRUT - WELD	1
3	500-3-1151	BUSHING, REAMED	2
4	500-3-2236	BUSHING - WHEEL STRUT (PIVOT)	1
5	500-3-5297	BOLT HOLD- REAR STEER	1
6	700-2-0165	SPINDLE HUB ASSEMBLY	2
7	900-01241	BOLT, HH, 1/2-13 x 3-1/2, GR5 ZP	2
8	900-01345	BOLT, HH, 5/8-11 X 2, GR5 ZP	1
9	900-03061	BOLT HEX 1X7-1/2 NF GR8 ZP	1
10	900-06009	NUT HEX 1/2 UNC	2
11	900-06013	NUT, HH, 5/8-11, ZP	1
12	900-06515	NUT, LOCK, 1" NF, TOP, ZP	1
13	900-11013	WASHER, LOCK 1/2	2
14	900-11015	WASHER, LOCK, 5/8, ZP	1
15	905-15024	ZERK 1/4-28 UNF STRAIGHT	1

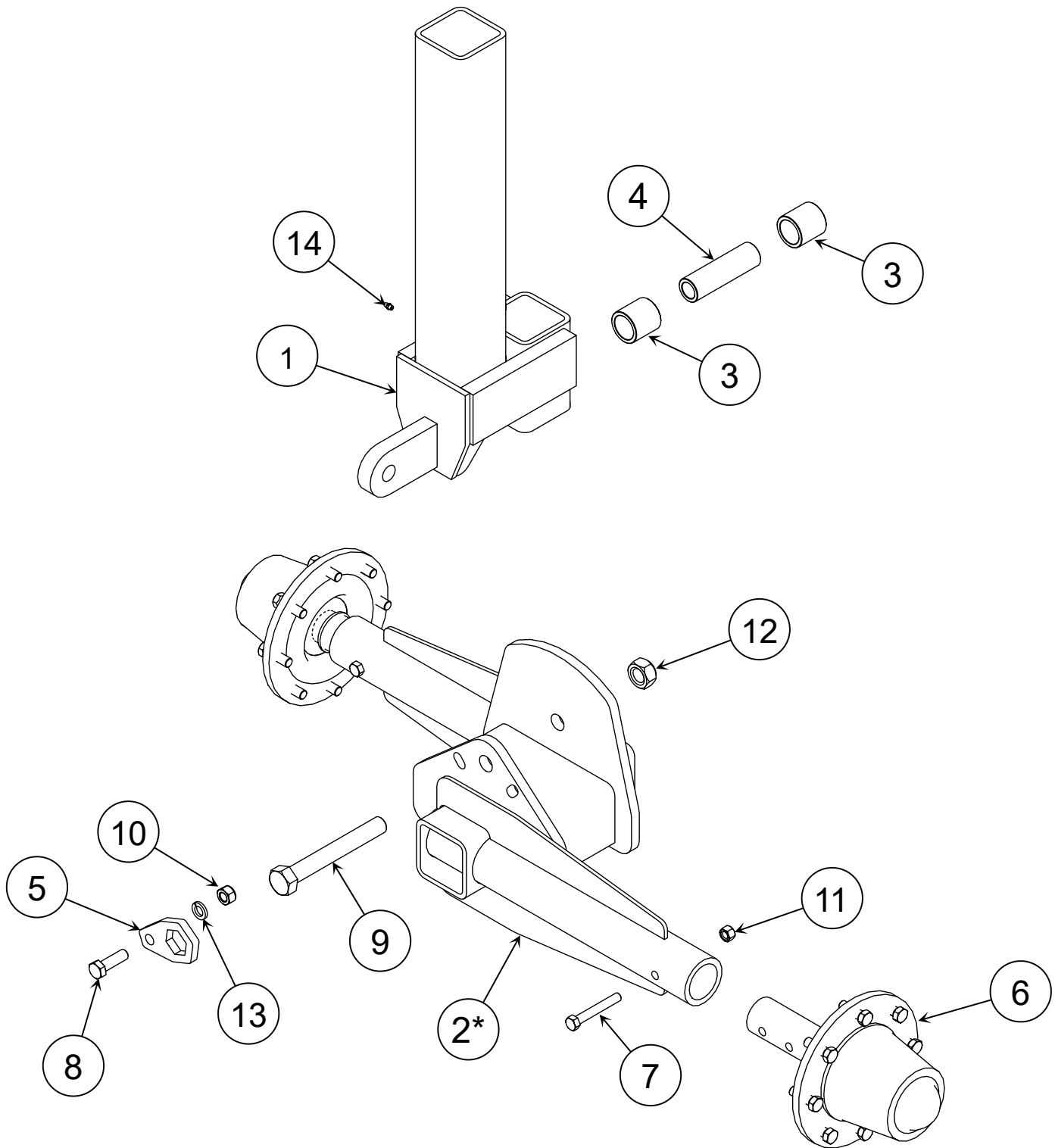
LARGE TIRES 40/44" OFFSET STEERABLE PIVOT STRUTS **500-1-0527** **(ASSEMBLY DRAWING)**



LARGE TIRES 40/44" OFFSET STEERABLE PIVOT STRUTS
500-1-0527
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	500-1-0454	HOSE KIT - REAR STEER - 80" - 110" STRUT SPACING	1
2	500-1-0463	KIT - CYLINDER TRANSPORT LOCK (2 PAIRS) W/O MOUNT TAB	1
3	500-2-1205	ADJUSTMENT TUBE ASSY - REAR STEER	1
4	500-2-1358	PIN WELD	1
5	500-2-1360	STRUT UPPER WELD -(REAR STEER) WO/EAR	1
6	500-2-1446	ADJUSTABLE REAR STEER EYE BOLT	1
7	500-2-1459	STRUT LOWER PIVOT - REAR STEER (2013)	1
8	500-2-1460	STRUT LOWER PIVOT - REAR STEER WO/EAR (2013)	1
9	500-2-1461	PRESSURE PAD WELD	2
10	500-2-1469	INDICATOR PIN WELD	1
11	500-2-1470	STRUT UPPER WELD - REAR STEER (DRIVE)	1
12	500-2-1471	RIGID REAR STEER ADJUSTMENT WELD	1
13	500-2-1472	HEIGHT GAUGE BRACKET WELDMENT	2
14	500-2-1473	HEIGHT GAUGE INDICATOR WELDMENT	1
15	500-2-1878	OFFSET TANDEM 40/44" PIVOT RR STR STRUT ASSY LH	1
16	500-2-1880	OFFSET TANDEM 40/44" PIVOT RR STR STRUT ASSY RH	1
17	500-3-1011	DECAL, HYD STRUT DEPTH GAUGE	1
18	500-3-2519	WEAR PLATE - UHMW	2
19	500-3-3028	SIGHT GAUGE BRACKET	1
20	500-3-3029	SIGHT GAUGE INDICATOR	1
21	500-3-3034	HEIGHT GAUGE INDICATOR	1
22	700-2-0167	TIRE AND RIM ASSY	2
23	700-2-0168	TIRE AND RIM ASSY RH	2
24	900-01113	3/8NC X 1-½ HEX BOLT GR 5	1
25	900-01225	1/2 NC X 1-1/2 HEX BOLT GR 5	2
26	900-01345	BOLT, HH, 5/8-11 X 2, GR5 ZP	6
27	900-01417	HEX BOLT-3/4NC X 3.75 GR5 ZP	1
28	900-01419	3/4-10 X 4 HEX BOLT	1
29	900-01429	HEX BOLT - 3/4NC X 6-1/2 GR5 ZP	8
30	900-01751	BOLT, CRG, 1/2-13 X 1-1/2, GR5 ZP	4
31	900-02356	BOLT, HH 5/16 X 1-3/4, GR5 ZP	2
32	900-03462	EYE BOLT 3/4 X 8	8
33	900-06009	NUT HEX 1/2 UNC	4
34	900-06013	NUT, HH, 5/8-11, ZP	4
35	900-06015	NUT, HH, 3/4-10, ZP	18
36	900-06019	1-8 HEX NUT	2
37	900-06500	NUT HEX 3/8 TOP LOCK	1
38	900-06504	NUT, LOCK, TOP, 1/2-13, GR C ZP	4
39	900-11013	WASHER, LOCK 1/2	2
40	900-11015	WASHER, LOCK, 5/8, ZP	6
41	900-11017	WASHER, LOCK, 3/4, ZP	18
42	900-11033	FLAT WASHER 3/8 ZP	3
43	900-11035	1/2 FLAT WASHER	4
44	900-11037	WASHER, FLAT, 5/8"	2
45	900-31068	COVER PLATE	2
46	900-31069	CLAMP BODY - HOSE HOLDER	4
47	901-01145	THRUST BEARING	2
48	902-15116	DECAL, STEERING INDICATOR	1
49	905-09068	WASHER, 1 SAE	2
50	905-15024	ZERK 1/4-28 UNF STRAIGHT	4
51	905-21400	HYD CYL - 3.5 X 8	2
52	905-21452	DOUBLE CYLINDER - 1.50 X 2.5 X 4 STROKE PER SIDE	1

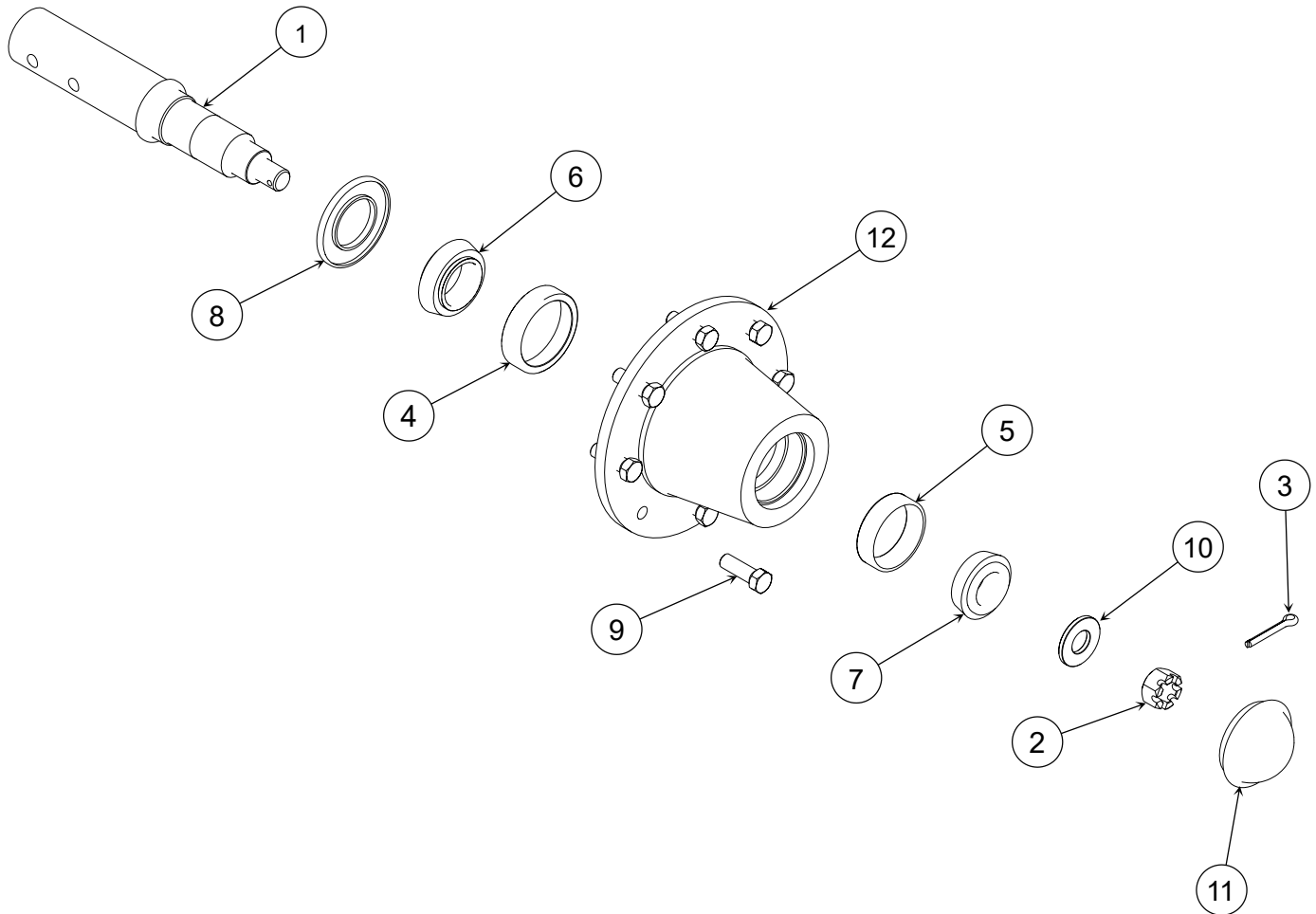
OFFSET TANDEM 40/44" PIVOT RR STR STRUT ASSY LH/RH
500-2-1878 LH / 500-2-1880 RH
(ASSEMBLY DRAWING)



OFFSET TANDEM 40/44" PIVOT RR STR STRUT ASSY LH/RH
500-2-1878 LH / 500-2-1880 RH
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	500-2-1361	LOWER STRUT - WELD	1
2-1	500-2-1879	OFFSET TANDEM 40" SPINDLE HOLDER LH-STEERABLE	1
2-2	500-2-1881	OFFSET TANDEM 40" SPINDLE HOLDER RH-STEERABLE	1
3	500-3-1151	BUSHING, REAMED	2
4	500-3-2236	BUSHING - WHEEL STRUT (PIVOT)	1
5	500-3-5297	BOLT HOLD- REAR STEER	1
6	700-2-0165	SPINDLE HUB ASSEMBLY	2
7	900-01241	BOLT, HH, 1/2-13 x 3-1/2, GR5 ZP	2
8	900-01345	BOLT, HH, 5/8-11 X 2, GR5 ZP	1
9	900-03061	BOLT HEX 1X7-1/2 NF GR8 ZP	1
10	900-06013	NUT, HH, 5/8-11, ZP	1
11	900-06504	NUT, LOCK, TOP, 1/2-13, GR C ZP	2
12	900-06515	NUT, LOCK, 1" NF, TOP, ZP	1
13	900-11015	WASHER, LOCK, 5/8, ZP	1
14	905-15024	ZERK 1/4-28 UNF STRAIGHT	1

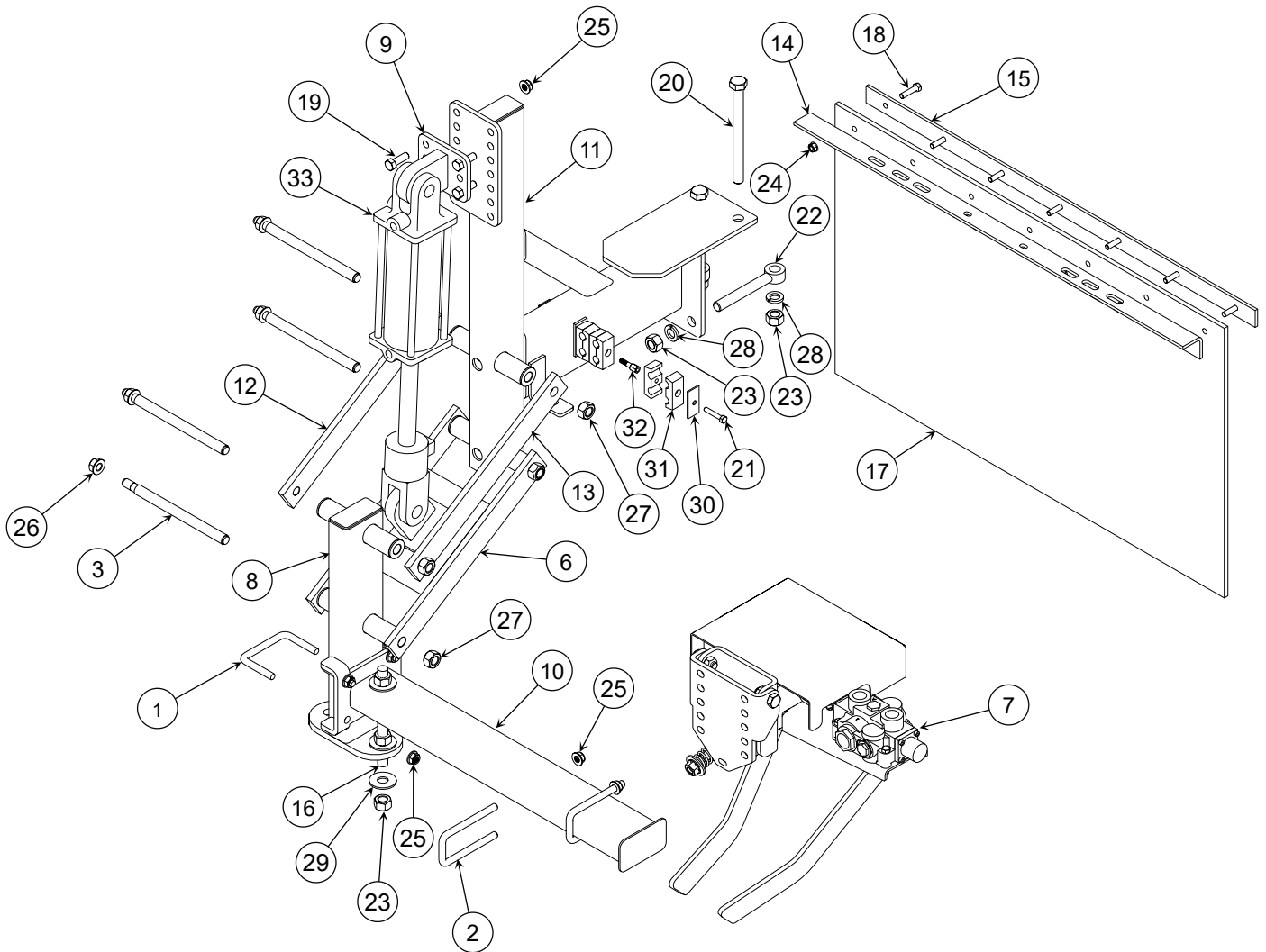
LARGE WHEEL SPINDLE HUB, 8-BOLT
700-2-0165
(ASSEMBLY DRAWING)



LARGE WHEEL SPINDLE HUB, 8-BOLT
700-2-0165
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	700-3-0143	SPINDLE REAR STRUT	1
2	900-06060	SLOTTED HEX NUT 7/8 -14 NF	1
3	900-23045	PIN, COTTER, 3/16 x 2	1
4	901-01152	BEARING CUP (TIMKEN #25520)	1
5	901-01324	BEARING CUP (TIMKEN #25821)	1
6	901-01325	BEARING CONE (TIMKEN #25590)	1
7	901-01326	BEARING CONE (TIMKEN #25877)	1
8	901-09215	GREASE SEAL	1
9	905-09039	WHEEL BOLT 9/16-18 X 1-11/16	8
10	905-09067	WASHER, 7/8" SAE	1
11	905-09135	HUB CAP	1
12	905-09182	HUB "ONLY", 8 BOLT (#778400-8)	1

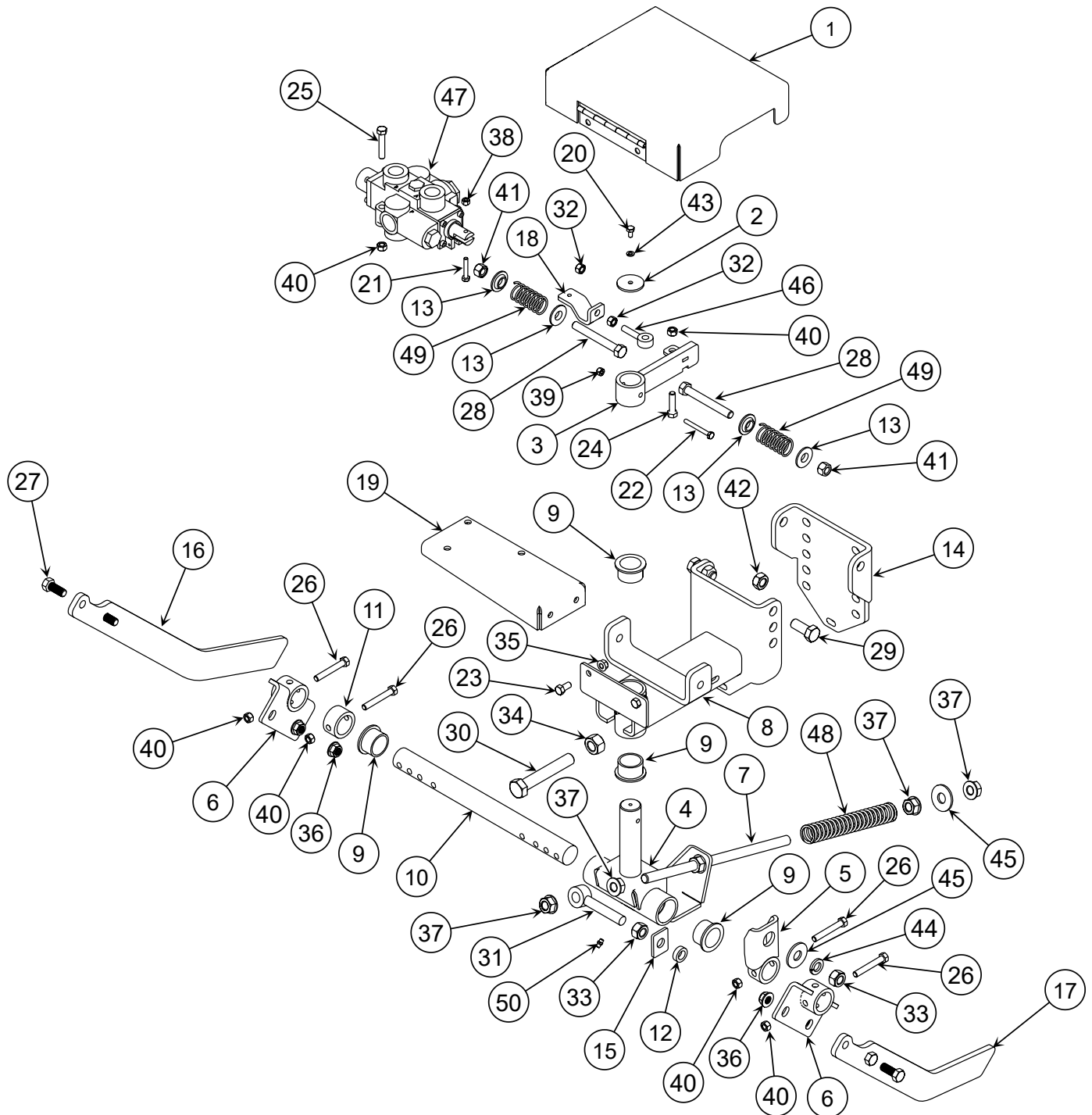
ROW FINDER KIT - POWER BEYOND RIGID TOOLBAR MOUNT **500-1-0368** **(ASSEMBLY DRAWING)**



ROW FINDER KIT - POWER BEYOND RIGID TOOLBAR MOUNT
500-1-0368
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	200-3-1445	U-BOLT 4 x 3 x 1/2	2
2	200-3-1447	U-BOLT 1/2NC X 2 X 5.25	2
3	200-3-2631	PLATED PIN	4
4	500-1-0373	HOSE KIT - ROW FINDER (POWER BEYOND) RIGID	1
5	500-1-0407	HOSE KIT - ROW FINDER LIFT (POWER BEYOND - TOOLBAR) RIGID	1
6	500-2-1081	H WELD ROW FINDER	1
7	500-2-1248	ROWFINDER ASSY - POWER BEYOND VALVE	1
8	500-2-1255	LOWER TUBE WELDMENT- ROW FINDER	1
9	500-2-1474	CYLINDER EAR WELD - ADJUSTABLE	1
10	500-2-1767	HORIZONTAL ADJ TUBE - RIGID ROW FINDER	1
11	500-2-1768	MOUNT WELD - RIGID ROWFINDER	1
12	500-3-0991	PIVOT ARM, 5/8" HOLES	1
13	500-3-0992	PIVOT ARM, 3/4" HOLES	1
14	500-3-5245	ANGLE- MUD FLAP	1
15	500-3-5246	BACKER- MUD FLAP	1
16	500-3-5248	THREADED ROD- ROWFINDER MOUNT	1
17	700-3-1220	RUBBER FLAP - BOOM	1
18	900-01113	3/8NC X 1-1/2 HEX BOLT GR 5	7
19	900-01225	1/2 NC X 1-1/2 HEX BOLT GR 5	4
20	900-01437	BOLT, HH, 3/4-10 X 8-1/2, GR5 ZP	2
21	900-02356	BOLT, HH 5/16 X 1-3/4, GR5 ZP	2
22	900-03463	BOLT, EYE, 3/4" NC X 6"	2
23	900-06015	NUT, HH, 3/4-10, ZP	8
24	900-06139	3/8 NC FLANGED WHIZ NUT	7
25	900-06143	1/2 NC SPIRALOCK NUT ZP GR5	12
26	900-06145	5/8 WHIZ NUT	4
27	900-06510	3/4 NUT, HEX TOP LOCK	4
28	900-11017	WASHER, LOCK, 3/4, ZP	4
29	900-11038	3/4" FLAT WASHER	4
30	900-31068	COVER PLATE	2
31	900-31069	CLAMP BODY - HOSE HOLDER	8
32	900-31071	BOLT, STACKING 5/16 UNC	2
33	905-21400	HYD CYL - 3.5 X 8	1

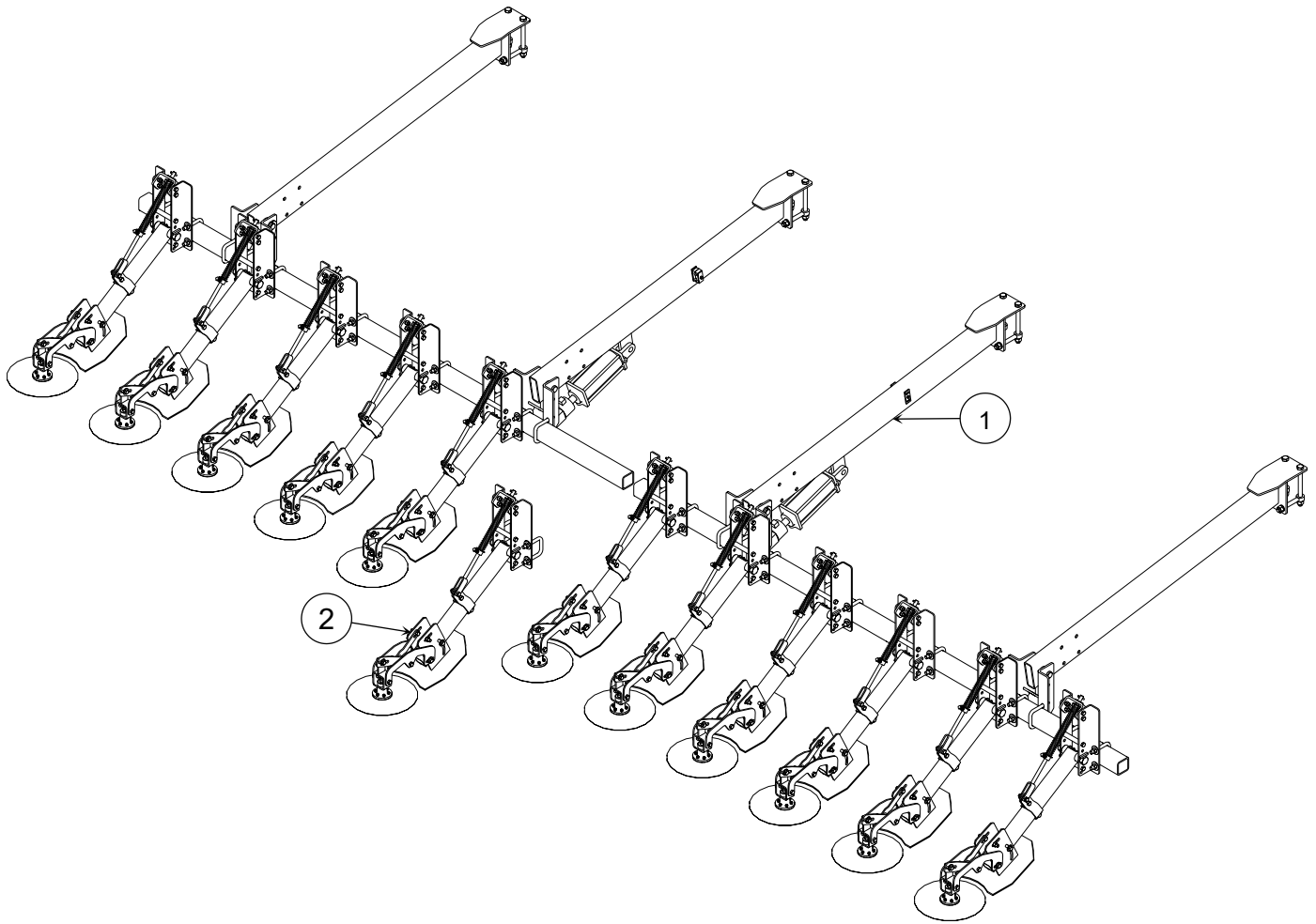
ROWFINDER ASSY - POWER BEYOND VALVE **500-2-1248** **(ASSEMBLY DRAWING)**



ROWFINDER ASSY - POWER BEYOND VALVE
500-2-1248
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	500-2-1250	TOP COVER - ROW FINDER (POWER BEYOND VALVE)	1
2	500-3-2705	PLATE - DROP PLATE	1
3	700-2-0850	STEERING PADDLE WELD	1
4	700-2-0851	PIVOT WELD	1
5	700-2-0853	SPRING TENSIONER WELD	1
6	700-2-0854	FINGER MOUNT WELD	2
7	700-2-0856	THREADED ROD - ROW FINDER	1
8	700-2-1043	PIVOT MOUNT WELD	1
9	700-3-0383	OUTER BUSHING - FF-1618-1	4
10	700-3-2170	SHAFT HORIZONTAL PIVOT	1
11	700-3-2182	TUBE-DOWN PRESSURE BAR (FAINTED)	1
12	700-3-2183	BUSHING - DOWN PRESSURE SPRING	1
13	700-3-2185	COMPRESSION SPRING RETAINER	4
14	700-3-2186	INNER PIVOT BRACKET - ROW FINDER	1
15	700-3-2187	INSIDE WASHER - EYEBOLT	1
16	700-3-2188	FINGER - LH	1
17	700-3-2189	FINGER - RH	1
18	700-3-2343	ADJUSTMENT PLATE - ROWFINDER	1
19	700-3-2345	VALVE MOUNT PLATE (POWER BEYOND VALVE)	1
20	900-01001	.25 UNC X 1/2 BOLT	1
21	900-01013	HEX BOLT 1/4 NC X 1 1/2 GD5 ZP	1
22	900-01067	5/16-18 X 2-1/4 GR8 HEX BOLT ZP	1
23	900-01105	3/8-16 X .75" HEX BOLT	2
24	900-01113	3/8NC X 1-1/2 HEX BOLT GR 5	1
25	900-01117	3/8 NC X 2 HEX BOLT GR 5	6
26	900-01121	3/8NC X 2-1/2 HEX BOLT GR 5	4
27	900-01223	BOLT, HEX HEAD, 1/2" X 1 -1 /4", GR5, ZP	4
28	900-01245	1/2 X 4 HEX BOLT GR5 ZP	2
29	900-01341	HEX BOLT 5/8 NC X 1-1/2 NC GR5 ZP	2
30	900-03076	3/4-10 X 4.5 FULL THREAD HEX BOLT	1
31	900-03465	EYE BOLT 5/8 X 3	1
32	900-06006	NUT, HEX HEAD 3/8 NF, ZP	2
33	900-06013	NUT, HH, 5/8-11, ZP	2
34	900-06015	NUT, HH, 3/4-10, ZP	1
35	900-06139	3/8 NC FLANGED WHIZ NUT	2
36	900-06143	1/2 NC SPIRALOCK NUT ZP GR5	4
37	900-06145	5/8 WHIZ NUT	4
38	900-06496	1/4-20 TOP LOCK HEX NUT	1
39	900-06498	5/16 TOP LOCK NUT	1
40	900-06500	NUT HEX 3/8 TOP LOCK	11
41	900-06504	NUT, LOCK, TOP, 1/2-13, GR C ZF	2
42	900-06508	NUT HEX 5/8 UNC TOP LOCK	2
43	900-11009	1/4 SPRING LOCK WASHER ZP	1
44	900-11015	WASHER, LOCK, 5/8, ZP	1
45	900-11037	WASHER, FLAT, 5/8"	2
46	903-05044	EYEBOLT - ROD END	1
47	905-03262	ROW FINDER VALVE	1
48	905-14007	SPRING - 1.245 OD X .148 WIRE X .4029 P X 7.75 LONG	1
49	905-14022	SPRING - 1.25 OD X .105 WIRE X 4.00 LONG X 12.5 COILS	2
50	905-15024	ZERK 1/4-28 UNF STRAIGHT	2

12R22 CIRCLE KNIFE SCALPERS
500-1-0235
(ASSEMBLY DRAWING)



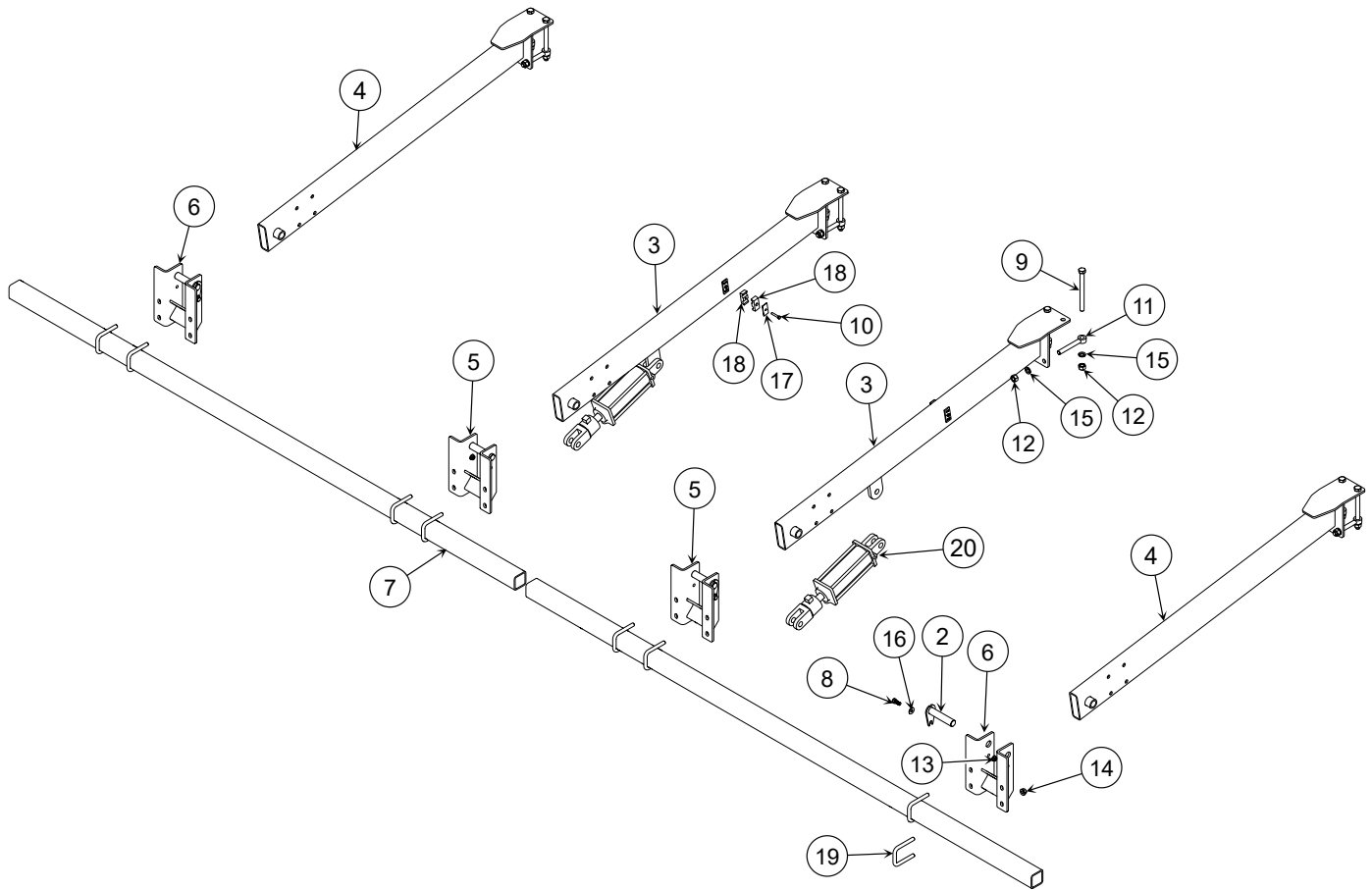
12R22 CIRCLE KNIFE SCALPERS
500-1-0235
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	500-1-0152	SCALPER TOOLBAR ASSY W/STRAIGHT ARM-(12R22) W/ 22",40",44" STRUTS	1
2	500-2-1316	CIRCULAR SCALPER ASSEMBLY W/STRAIGHT ARM	12

SCALPER TOOLBAR ASSY W/STRAIGHT ARM-(12R22)

500-1-0152

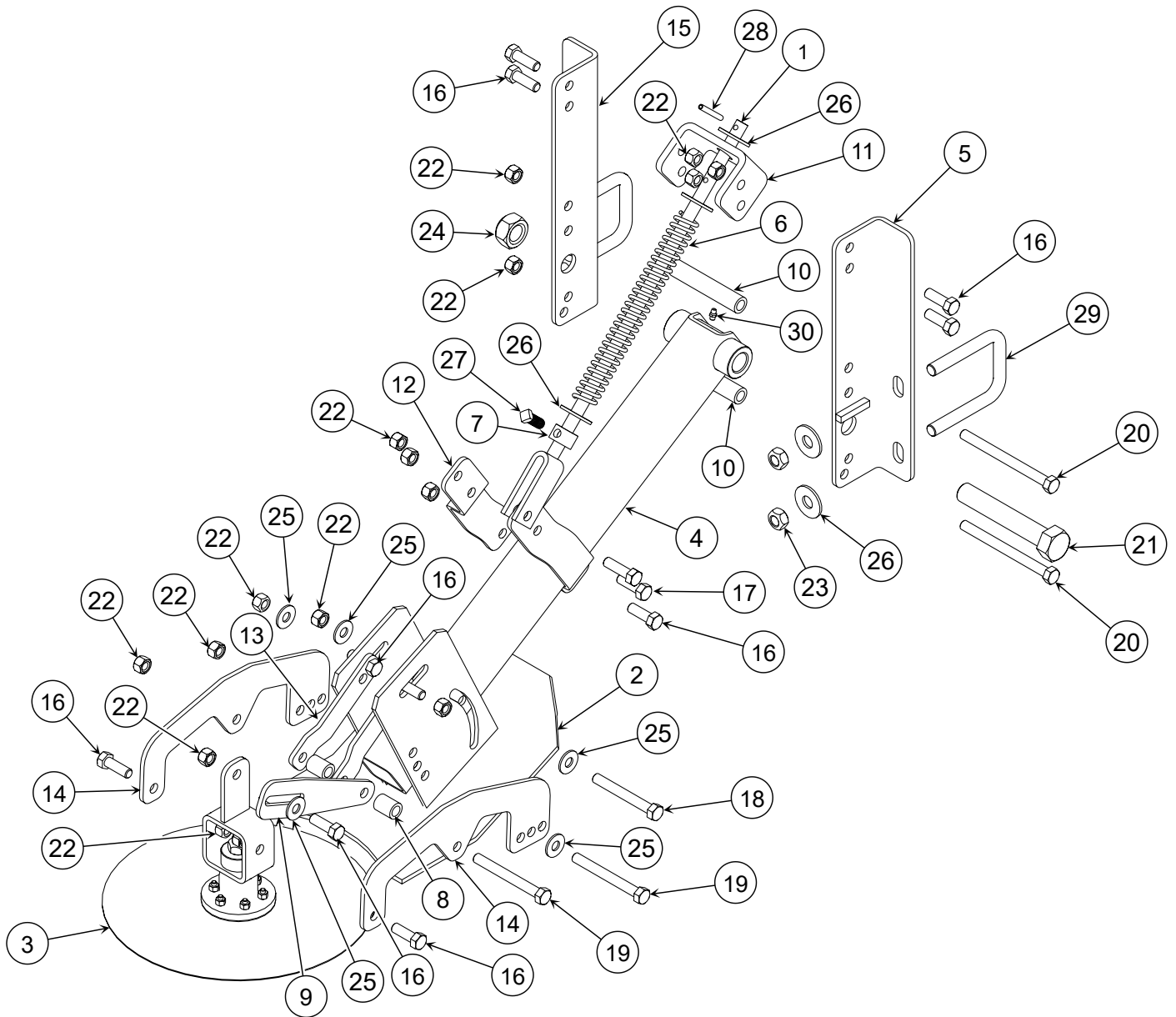
(ASSEMBLY DRAWING)



SCALPER TOOLBAR ASSY W/STRAIGHT ARM-(12R22)
500-1-0152
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	500-1-0427	HOSE KIT - RIGID SCALPERS 1222	1
2	500-2-0684	1-1/4" PIN WELDMENT	4
3	500-2-1436	INNER SET BACK WELD - WING (LONG)	2
4	500-2-1437	OUTER SET BACK WELD - WING (LONG)	2
5	500-2-1439	SCALPER MOUNT INNER (EXTENDED)	2
6	500-2-1440	SCALPER MOUNT OUTER (EXTENDED)	2
7	500-3-1579	TUBE, SCALPER	2
8	900-01223	BOLT, HEX HEAD, 1/2" X 1-1/4", GR5, ZP	4
9	900-01437	BOLT, HH, 3/4-10 X 8-1/2, GR5 ZP	8
10	900-02356	BOLT, HH 5/16 X 1-3/4, GR5 ZP	2
11	900-03463	BOLT, EYE, 3/4" NC X 6"	8
12	900-06015	NUT, HH, 3/4-10, ZP	16
13	900-06143	1/2 NC SPIRALOCK NUT ZP GR5	4
14	900-06145	5/8 WHIZ NUT	16
15	900-11017	WASHER, LOCK, 3/4, ZP	16
16	900-11035	1/2 FLAT WASHER	4
17	900-31068	COVER PLATE	2
18	900-31069	CLAMP BODY - HOSE HOLDER	4
19	900-35026	U-BOLT 5/8NC x 3 INSIDE x 4-1/2 LONG x 1-1/2 THDS	8
20	905-21400	HYD CYL - 3.5 X 8	2

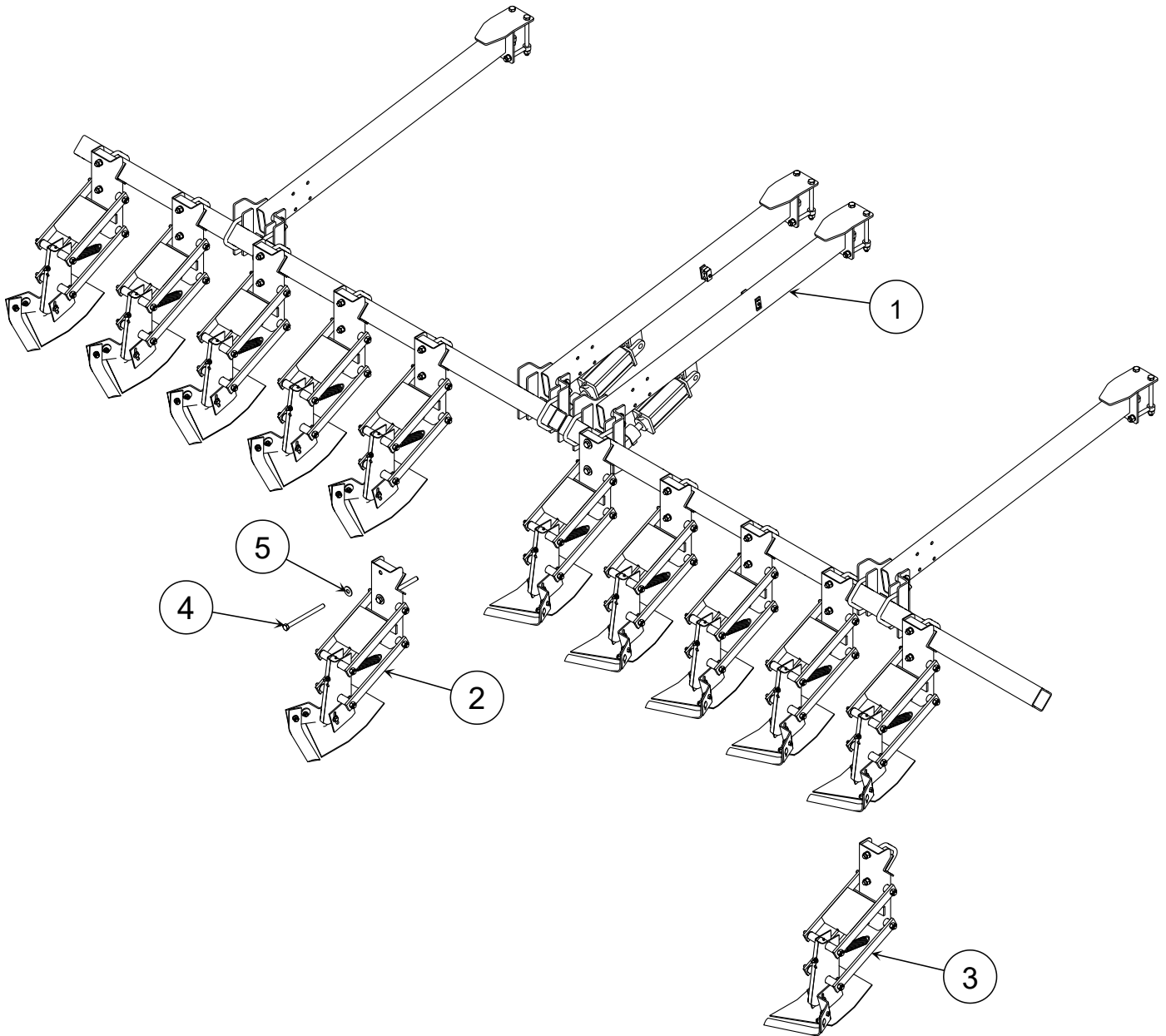
CIRCULAR SCALPER ASSEMBLY W/STRAIGHT ARM
500-2-1316
(ASSEMBLY DRAWING)



CIRCULAR SCALPER ASSEMBLY W/STRAIGHT ARM
500-2-1316
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	500-2-0072	LIFT ROD WELD	1
2	500-2-1068	SCALPER SHOE WELD	1
3	500-2-1137	HUB & DISC ASSY - CIRCULAR SCALPER (LONG SHAFT)	1
4	500-2-1318	PIVOT TUBE WELDMENT - ROTARY SCALPER	1
5	500-2-1438	MOUNT WELD - RH SCALPER (EXTENDED)	1
6	500-3-0157	SPRING - LIFT ROD	1
7	500-3-0172	COLLAR - RETAINING SPRING	1
8	500-3-1556	REAR SPACER TUBE	2
9	500-3-1557	STRAP, TOP REAR, ADJ.	1
10	500-3-1561	TUBE, FRONT SPREADER	2
11	500-3-1756	PLATE, SPRING	1
12	500-3-1757	EAR - CLAMP	2
13	500-3-2265	ADJUSTMENT ARM - SCALPER SHOE	2
14	500-3-2507	LINK BAR - SHOE	2
15	500-3-2948	PLATE, FORMED, LH (EXTENDED)	1
16	900-01225	1/2 NC X 1-1/2 HEX BOLT GR 5	11
17	900-01227	BOLT HEX 1/2 X 1 3/4 GR 5 ZP	1
18	900-01245	1/2 X 4 HEX BOLT GR5 ZP	1
19	900-01247	1/2 X 4-1/2 HEX BOLT GR5 ZP	2
20	900-01253	HEX BOLT 1/2NC X 6 GD5 ZP	2
21	900-01535	HEX BOLT - 1NC X 6 GR5 ZP	1
22	900-06504	NUT, LOCK, TOP, 1/2-13, GR C ZP	17
23	900-06508	NUT HEX 5/8 UNC TOP LOCK	4
24	900-06514	NUT, LOCK, 1" NC, TOP, ZP	1
25	900-11035	1/2 FLAT WASHER	5
26	900-11037	WASHER, FLAT, 5/8"	7
27	900-16060	SET SCREW, SQUARE HEAD, CUP 1/2-13 X 3/4	1
28	900-29433	1/4 X 2 ROLL PIN	1
29	900-35026	U-BOLT 5/8NC x 3 INSIDE x 4-1/2 LONG x 1-1/2 THDS	2
30	905-15024	ZERK 1/4-28 UNF STRAIGHT	1

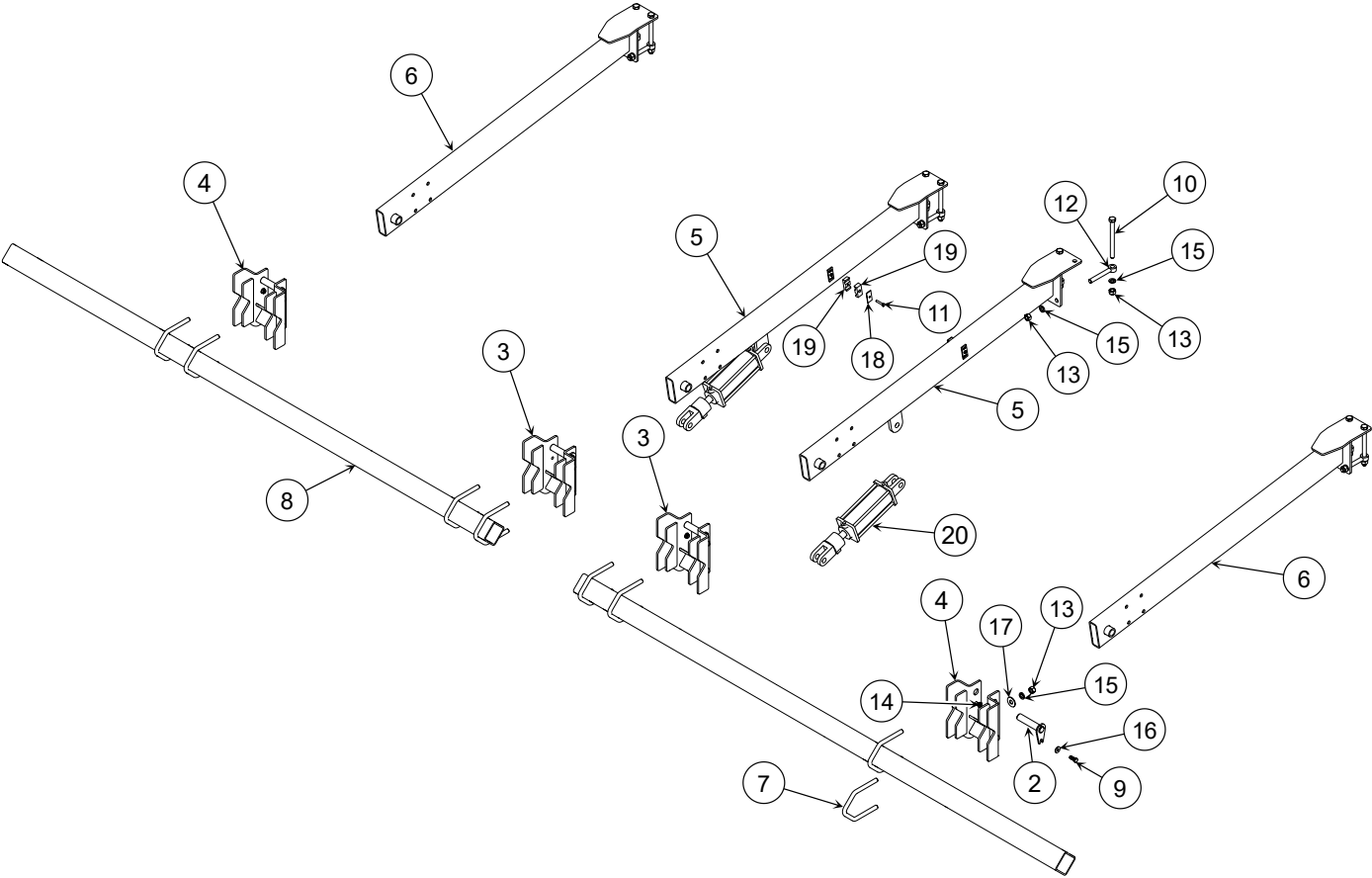
12R22 KNIFE SCALPER ASSEMBLY
500-1-0249
(ASSEMBLY DRAWING)



12R22 KNIFE SCALPER ASSEMBLY
500-1-0249
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	500-1-0156	SCALPER TOOLBAR W/PARALLEL LINK- (1222)	1
2	500-2-0999	KNIFE SCALPER ASSEMBLY LH W/PARALLEL LINK	6
3	500-2-1000	KNIFE SCALPER ASSEMBLY RH W/ PARALLEL LINK	6
4	900-01443	HEX BOLT - 3/4-10 NC X 10 GR5	4
5	900-11038	3/4" FLAT WASHER, USS	4

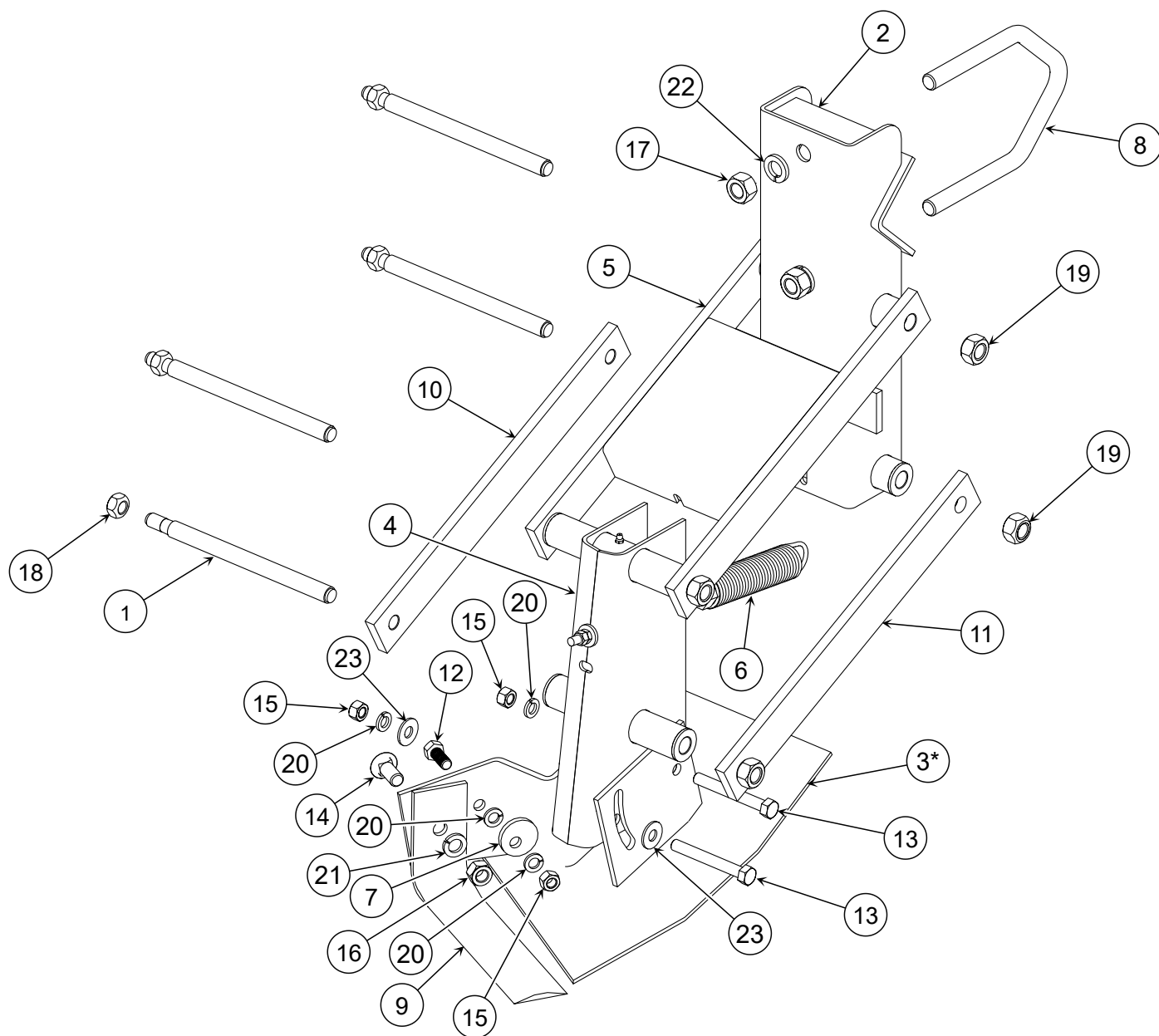
SCALPER TOOLBAR W/PARALLEL LI
500-1-0156
(ASSEMBLY DRAWING)



SCALPER TOOLBAR W/PARALLEL LI
500-1-0156
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	500-1-0427	HOSE KIT - RIGID SCALPERS 1222	1
2	500-2-0684	1-1/4" PIN WELDMENT	4
3	500-2-0941	SCALPER MOUNT INNER	2
4	500-2-0942	SCALPER MOUNT OUTER	2
5	500-2-1436	INNER SET BACK WELD - WING (LONG)	2
6	500-2-1437	OUTER SET BACK WELD - WING (LONG)	2
7	500-3-0635	3/4-10 X 4 A BOLT	8
8	500-3-3019	TUBE SCALPER-12R22-RIGID	2
9	900-01223	BOLT, HEX HEAD, 1/2" X 1-1/4", GR5, ZP	4
10	900-01437	BOLT, HH, 3/4-10 X 8-1/2, GR5 ZP	8
11	900-02356	BOLT, HH 5/16 X 1-3/4, GR5 ZP	2
12	900-03463	BOLT, EYE, 3/4" NC X 6"	8
13	900-06015	NUT, HH, 3/4-10, ZP	32
14	900-06143	1/2 NC SPIRALOCK NUT ZP GR5	4
15	900-11017	WASHER, LOCK, 3/4, ZP	32
16	900-11035	1/2 FLAT WASHER	4
17	900-11038	3/4" FLAT WASHER	16
18	900-31068	COVER PLATE	2
19	900-31069	CLAMP BODY - HOSE HOLDER	4
20	905-21400	HYD CYL - 3.5 X 8	2

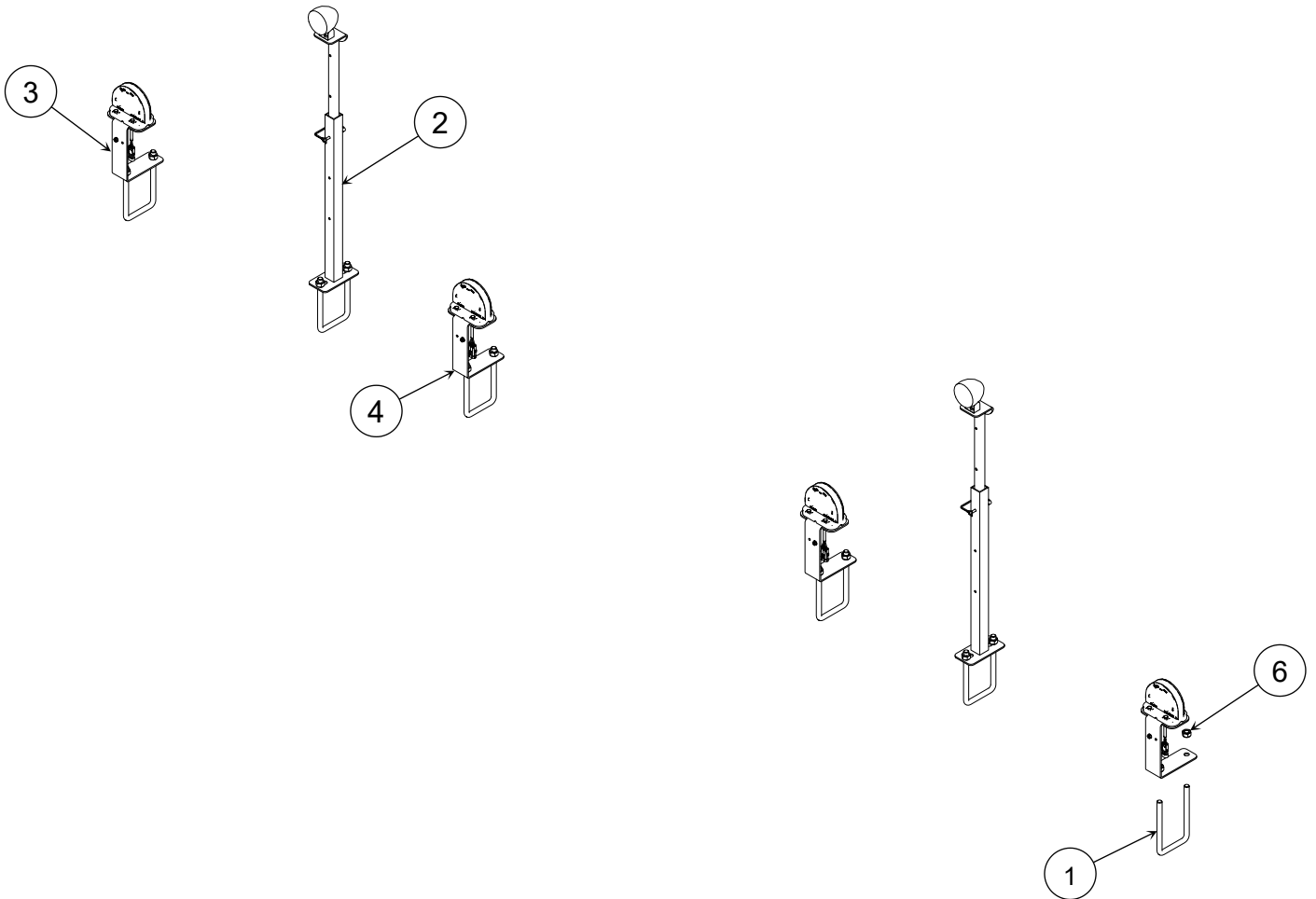
KNIFE SCALPER ASSEMBLY LH/RH W/PARALLEL LINK **500-2-0999 LH / 500-2-1000 RH** **(ASSEMBLY DRAWING)**



KNIFE SCALPER ASSEMBLY LH/RH W/PARALLEL LINK
500-2-0999 LH - 500-2-1000 RH
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	200-3-2631	PLATED PIN	4
2	500-2-0330	MOUNT WELD	1
3-1	500-2-0335	SHOE WELD, SCALPER (LH)	1
3-2	500-2-0336	SHOE WELD, SCALPER (RH)	1
4	500-2-0338	UPRIGHT WELDMENT	1
5	500-2-0518	H WELD KNIFE SCALPER	1
6	500-2-1719	SPRING ASSY- KNIFE SCALPER	1
7	500-3-0201	SPACER ECCENTRIC	1
8	500-3-0635	3/4-10 X 4 A BOLT	1
9	500-3-0910	KNIFE, SCALPER	1
10	500-3-0991	PIVOT ARM, 5/8" HOLES	1
11	500-3-0992	PIVOT ARM, 3/4" HOLES	1
12	900-01223	BOLT, HEX HEAD, 1/2" X 1-1/4", GR5, ZP	1
13	900-01245	1/2 X 4 HEX BOLT GR5 ZP	2
14	900-01784	CARRIAGE BOLT 5/8 NC X 1-1/2	1
15	900-06009	NUT HEX 1/2 UNC	3
16	900-06013	NUT, HH, 5/8-11, ZP	1
17	900-06015	NUT, HH, 3/4-10, ZP	2
18	900-06508	NUT HEX 5/8 UNC TOP LOCK	4
19	900-06510	3/4 NUT, HEX TOP LOCK	4
20	900-11013	WASHER, LOCK 1/2	4
21	900-11015	WASHER, LOCK, 5/8, ZP	1
22	900-11017	WASHER, LOCK, 3/4, ZP	2
23	900-11035	1/2 FLAT WASHER	2

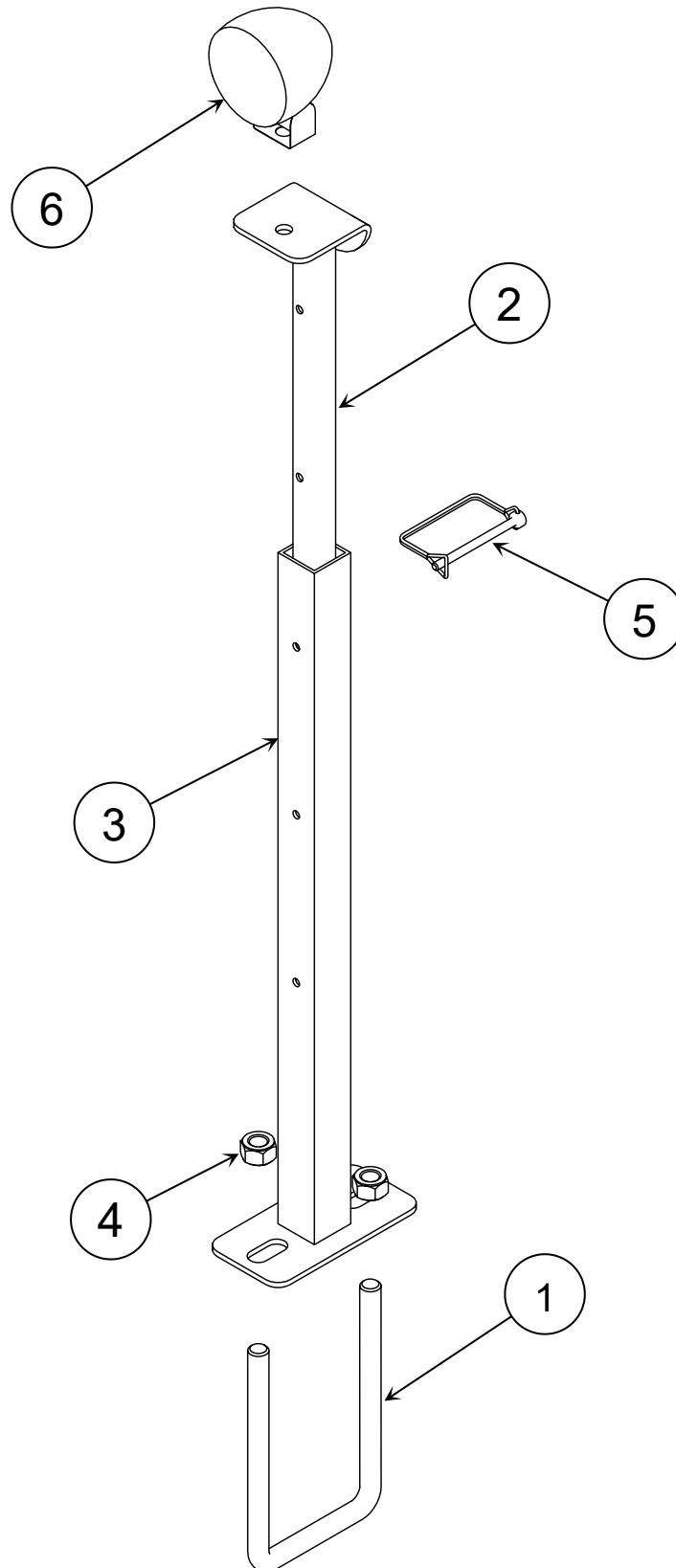
LIGHT KIT 8R/12R
500-1-0525
(ASSEMBLY DRAWING)



LIGHT KIT 8R/12R
500-1-0525
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	200-3-0017	U-BOLT 5/8 X 4 X 7.5 X 1.5	6
2	500-2-1542	S SERIES FIELD LIGHT ASSEMBLY	2
3	500-2-1770	LIGHT MOUNT ASSY-GROTE HALF MOON AMBER	2
4	500-2-1777	LIGHT MOUNT ASSY-GROTE HALF MOON RED	2
5	500-3-2201	8R30/9R22/12R22 RIGID WIRE HARNESS	1
6	900-06013	NUT, HH, 5/8-11, ZP	12

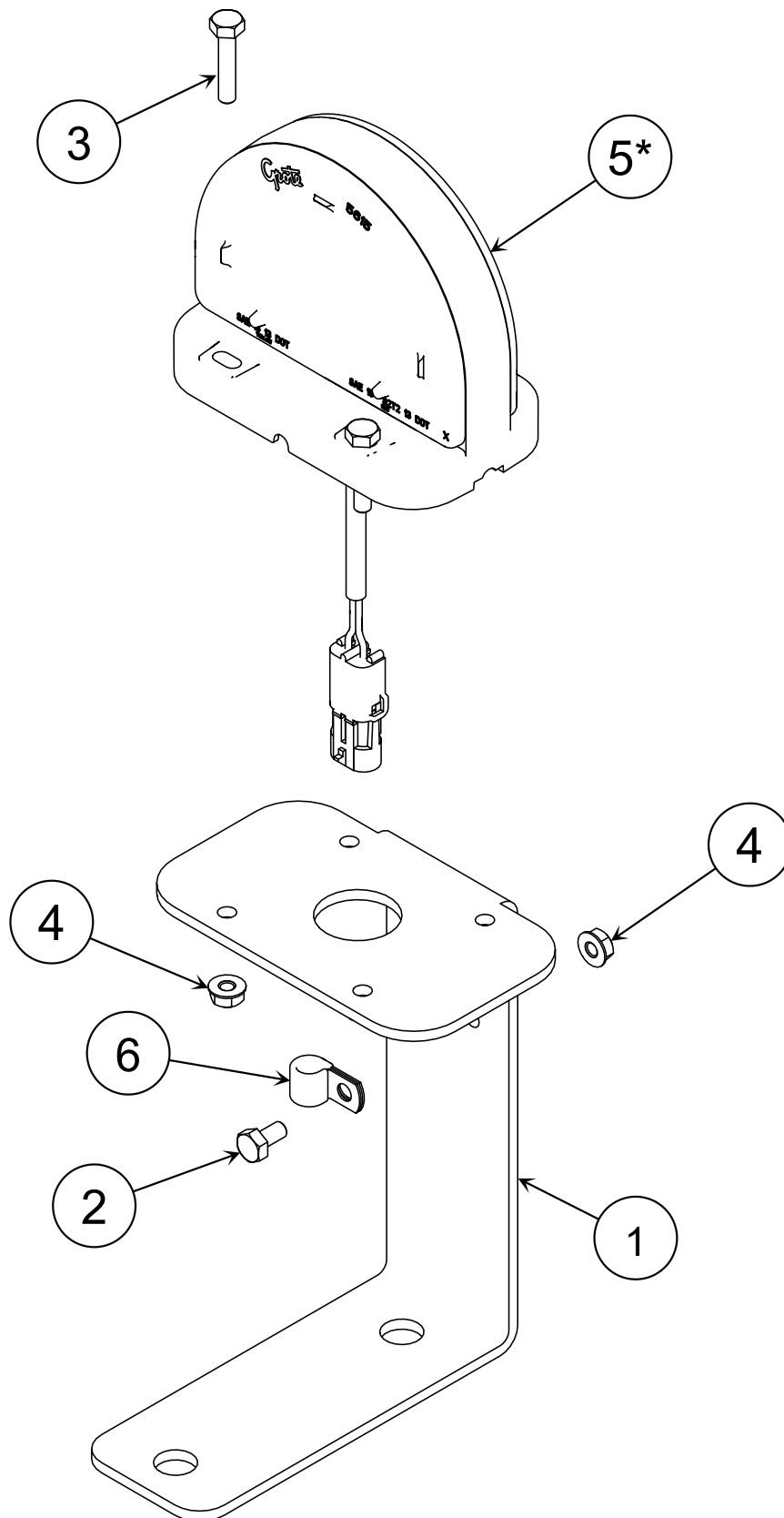
S-SERIES FIELD LIGHT
500-2-1542
(ASSEMBLY DRAWING)



**S-SERIES FIELD LIGHT
500-2-1542
(BILL OF MATERIALS)**

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	200-3-0017	U-BOLT 5/8 X 4 X 7.5 X 1.5	1
2	500-2-1540	S SERIES FIELD LIGHT TOP WELDMENT	1
3	500-2-1541	S SERIES FIELD LIGHT BASE WELDMENT	1
4	900-06013	NUT, HH, 5/8-11, ZP	2
5	900-42065	SNAPPER PIN .25 X 3.00 USABLE LENGTH	1
6	904-01346	TRILLIANT WORK LIGHT	1

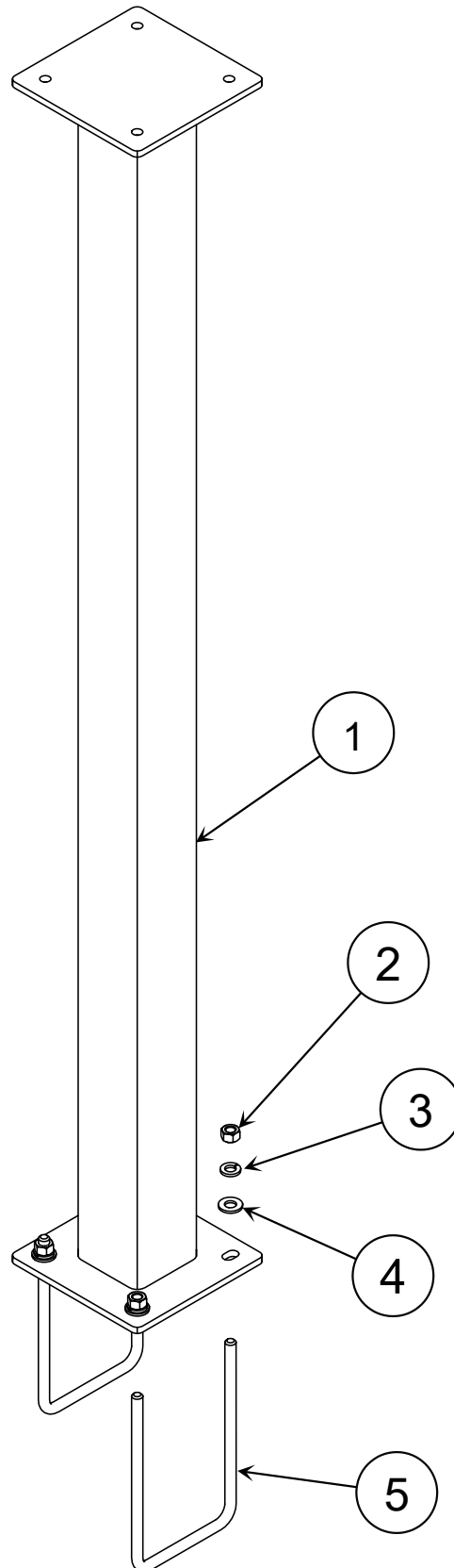
LIGHT MOUNT ASSY-GROTE HALF MOON AMBER/RED
500-2-1770 AMBER / 500-2-1777 RED
(ASSEMBLY DRAWING)



LIGHT MOUNT ASSY-GROTE HALF MOON AMBER/RED
500-2-1770 AMBER/ 500-2-1777 RED
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	500-3-5282	LIGHT MOUNT- GROTE HALF MOON	1
2	900-01001	BOLT, 1/4" NC X 0.5"	1
3	900-01011	BOLT, HH 1/4 X 1-1/4 G5 ZP	4
4	900-06135	WHIZ NUT - 1/4 - 20	5
5-1	904-01363	GROTE, HALF MOON LIGHT- AMBER	1
5-2	904-01364	GROTE, HALF MOON LIGHT- RED	1
6	904-01365	VIBRATION DAMPING LOOP CLAMP 3/8"	1

GLOBE TOWER ASSEMBLY
200-2-2818
(ASSEMBLY DRAWING)



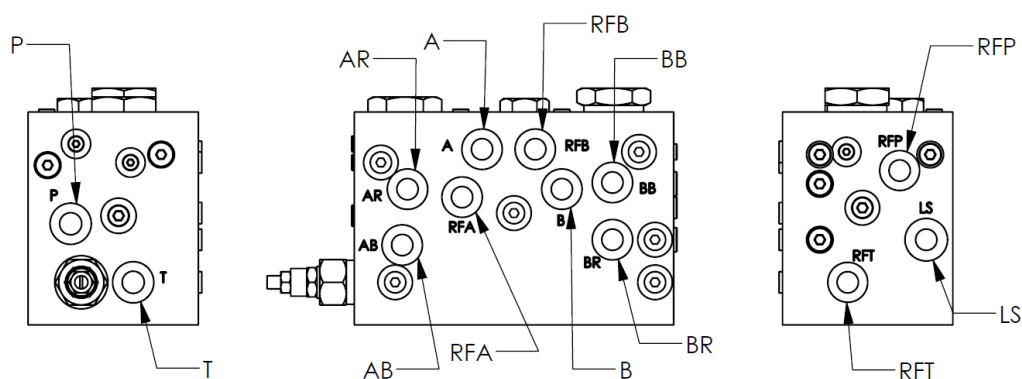
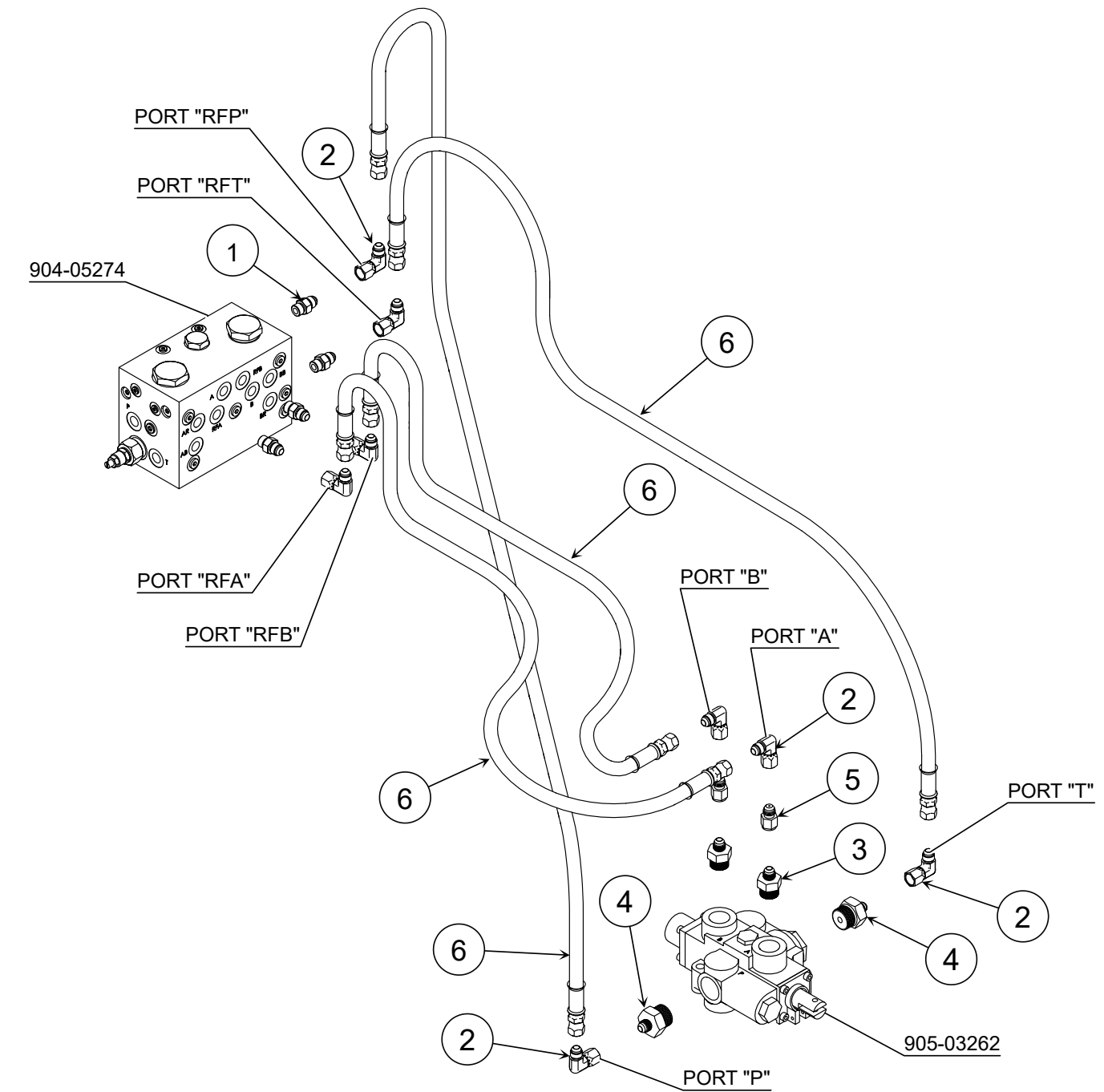
GLOBE TOWER ASSEMBLY
200-2-2818
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	200-2-2817	GLOBE TOWER WELDMENT	1
2	900-06005	NUT HEX 3/8	4
3	900-11011	WASHER LOCK 3/8"	4
4	900-11033	FLAT WASHER 3/8 ZP	4
5	900-35001	3/8-16 X 4 X 7 U-BOLT	2

HOSE KIT - ROW FINDER (POWER BEYOND) RIGID

500-1-0373

(ASSEMBLY DRAWING)



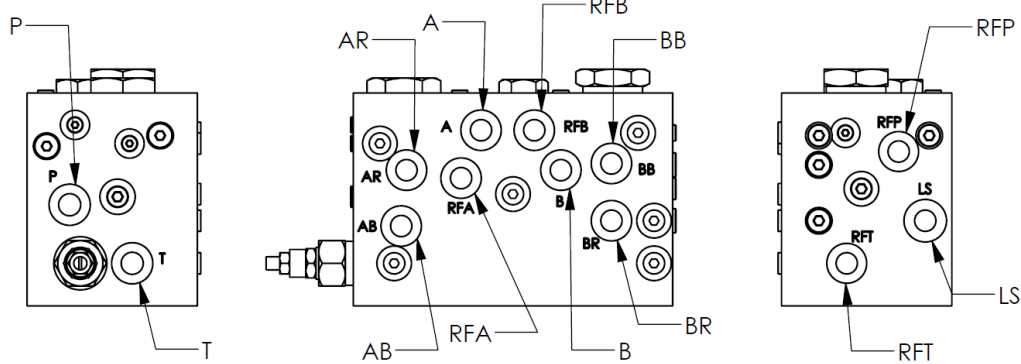
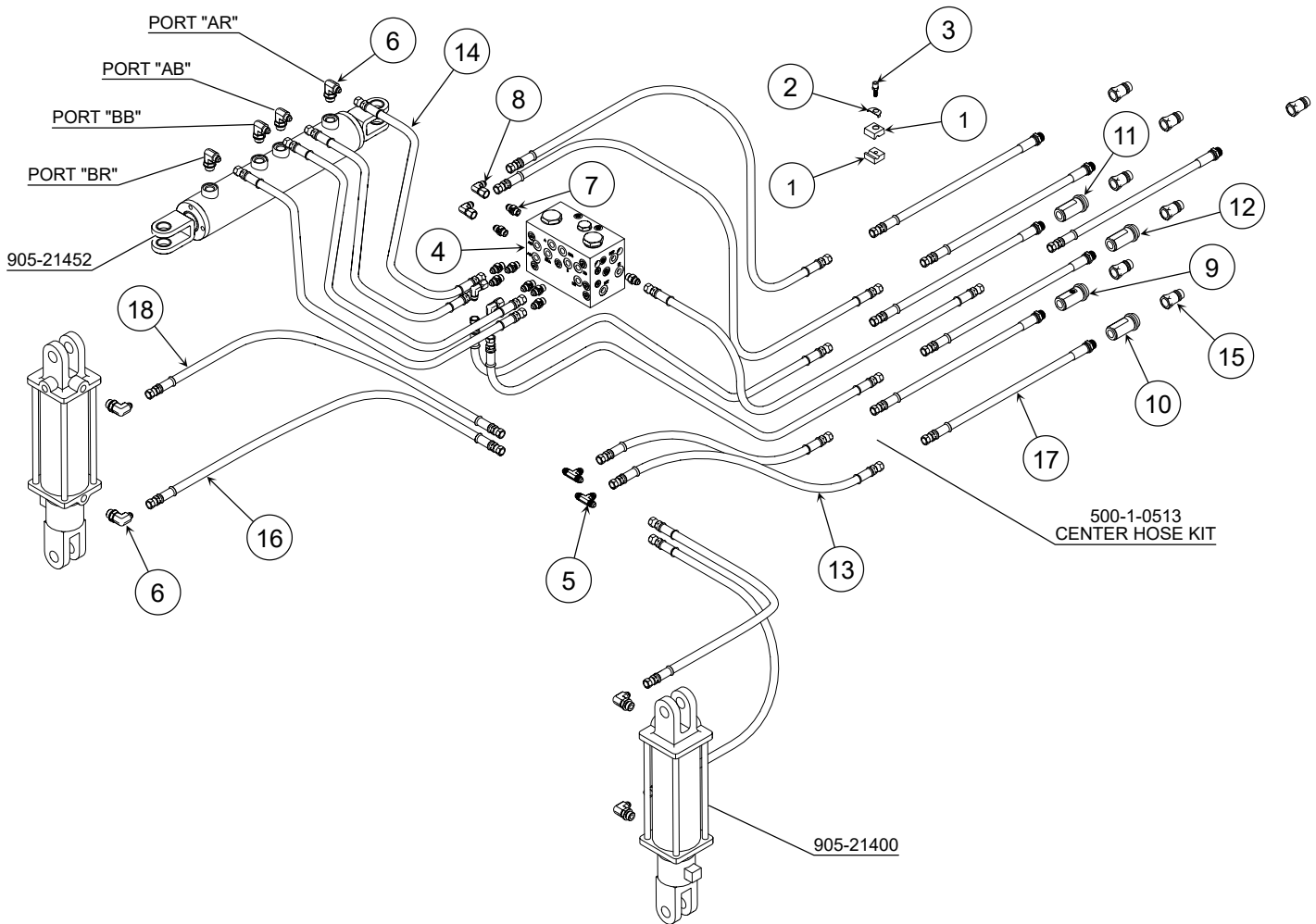
HOSE KIT - ROW FINDER (POWER BEYOND) RIGID
500-1-0373
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	905-03120	ADAPTER, STRAIGHT, 6MJ X 6MB	4
2	905-03163	ADAPTER, ELBOW 90°, 6FJX x 6MJ	8
3	905-03198	ADAPTER, 10MORB-6MJIC	2
4	905-03210	ADAPTER, 6MJIC x 12MORB	2
5	905-03220	RESTRICTOR , 6FJ x 6MJ, 1/16 HOLE	2
6	905-19155	HOSE, 3/8 x 120", 6FJX x 6FJX	4
**	904-05274	DEFOLIATOR VALVE ASSY 2018 1.1 OIL AIR # 218000401	1
**	905-03262	ROW FINDER VALVE RD516EA1A4F1	1
		**NOT INCLUDED IN HOSE KIT	

HOSE KIT - STEERABLE STRUTS 88"-110" SPACING

500-1-0454

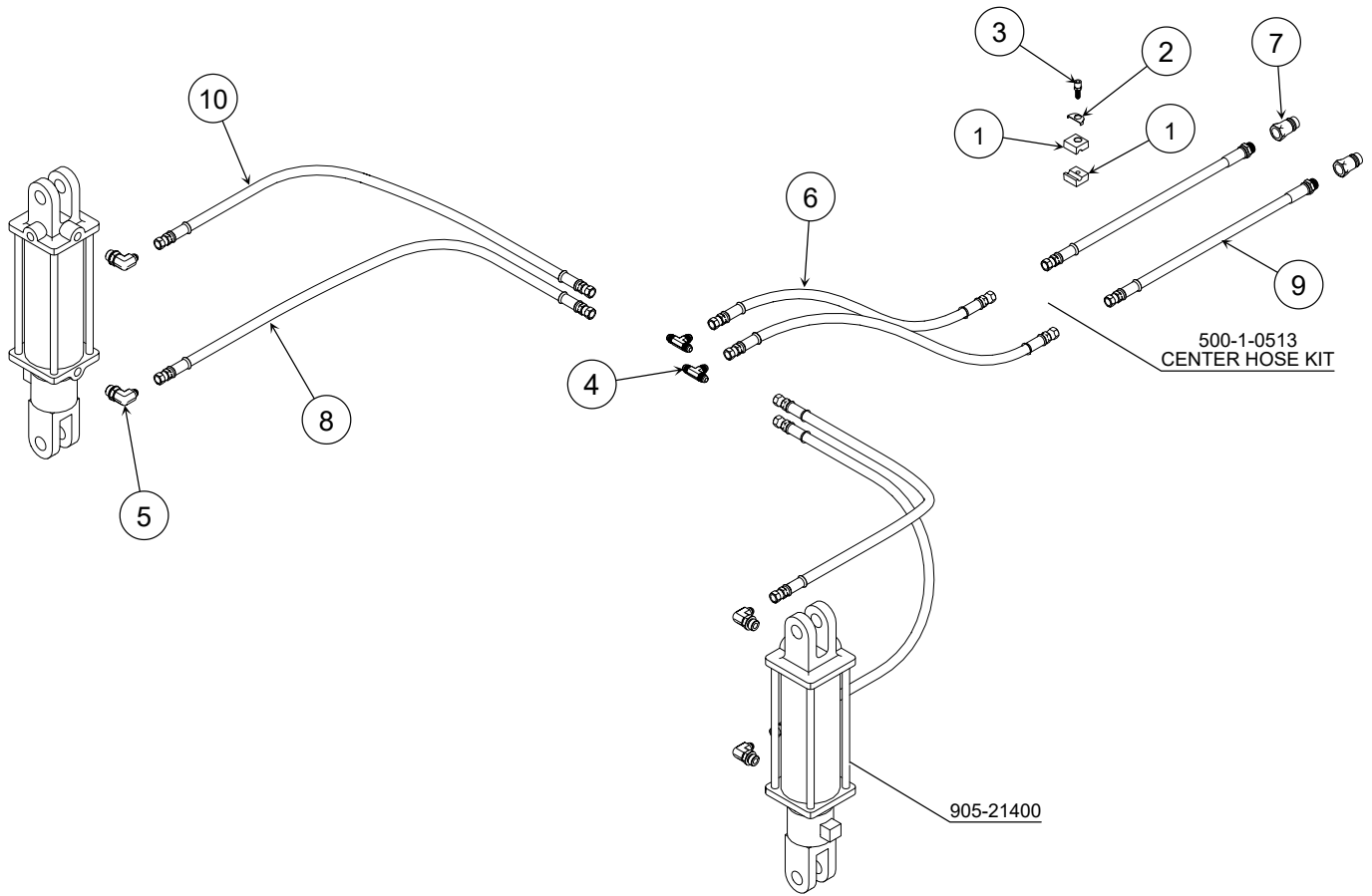
(ASSEMBLY DRAWING)



HOSE KIT - STEERABLE STRUTS 88"-110" SPACING
500-1-0454
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	900-31087	SINGLE BORE CLAMP BLOCK	24
2	900-31090	SINGLE BORE SAFETY LOCK PLATE	12
3	900-31091	SINGLE BORE CLAMP STACKING BOLT	12
4	904-05274	DEFOLIATOR VALVE ASSY 2018 1.1	1
5	905-03112	ADAPTER, TEE, 6MJ	2
6	905-03114	ADAPTER, ELBOW 90°, 6MJ x 8MB	8
7	905-03120	ADAPTER, STRAIGHT, 6MJ X 6MB	9
8	905-03163	ADAPTER, ELBOW 90°, 6FJX x 6MJ	4
9	905-03326	ALUM GRIP HOSE HANDLE +GREEN	1
10	905-03327	ALUM GRIP HOSE HANDLE -GREEN	1
11	905-03330	ALUM GRIP HOSE HANDLE +GOLD	1
12	905-03331	ALUM GRIP HOSE HANDLE -GOLD	1
13	905-19124	HOSE, 3/8 x 25", 6FJX x 6FJX	7
14	905-19125	HOSE, 3/8 x 62", 6FJX x 6FJX	4
15	905-19126	QUICK, COUPLER, TIP, 8FB	7
16	905-19152	HOSE, 3/8 X 84.0, 6FJX x 6FJX	2
17	905-19154	HOSE, 3/8 X 115.0, 8MB x 6FJX	7
18	905-19255	HOSE, 3/8 X 76", 6FJX x 6FJX	2
**	905-21400	CYLINDER, 3 1/2" X 8" WITH DEPTH STOP	2
**	905-21452	DOUBLE CYLINDER - 1.50 X 2.5 X 4 STROKE PER SIDE	1
		**NOT INCLUDED IN HOSE KIT	

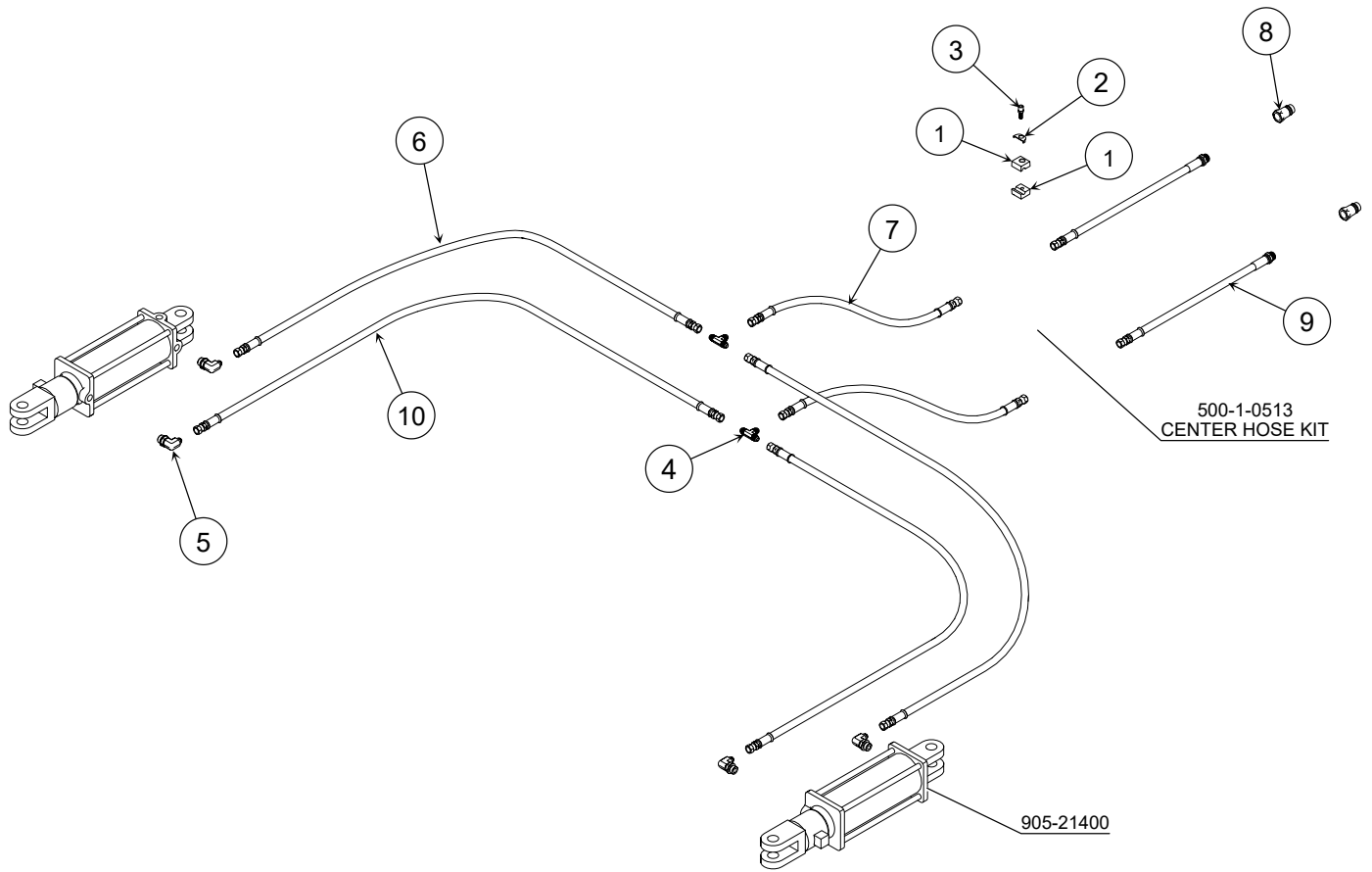
HOSE KIT - RIGID STRUTS 88"-110" SPACING
500-1-0459
(ASSEMBLY DRAWING)



HOSE KIT - RIGID STRUTS 88"-110" SPACING
500-1-0459
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	900-31087	SINGLE BORE CLAMP BLOCK	12
2	900-31090	SINGLE BORE SAFETY LOCK PLATE	6
3	900-31091	SINGLE BORE CLAMP STACKING BOLT	6
4	905-03112	ADAPTER, TEE, 6MJ	2
5	905-03114	ADAPTER, ELBOW 90°, 6MJ x 8MB	4
6	905-19124	HOSE, 3/8 x 25", 6FJX x 6FJX	2
7	905-19126	QUICK, COUPLER, TIP, 8FB	2
8	905-19152	HOSE, 3/8 X 84.0, 6FJX x 6FJX	2
9	905-19154	HOSE, 3/8 X 115.0, 8MB x 6FJX	2
10	905-19255	HOSE, 3/8 X 76", 6FJX x 6FJX	2
**	905-21400	CYLINDER, 3 1/2" X 8" WITH DEPTH STOP	2
		**NOT INCLUDED IN HOSE KIT	

HOSE KIT - RIGID SCALPERS 1222
500-1-0460
(ASSEMBLY DRAWING)



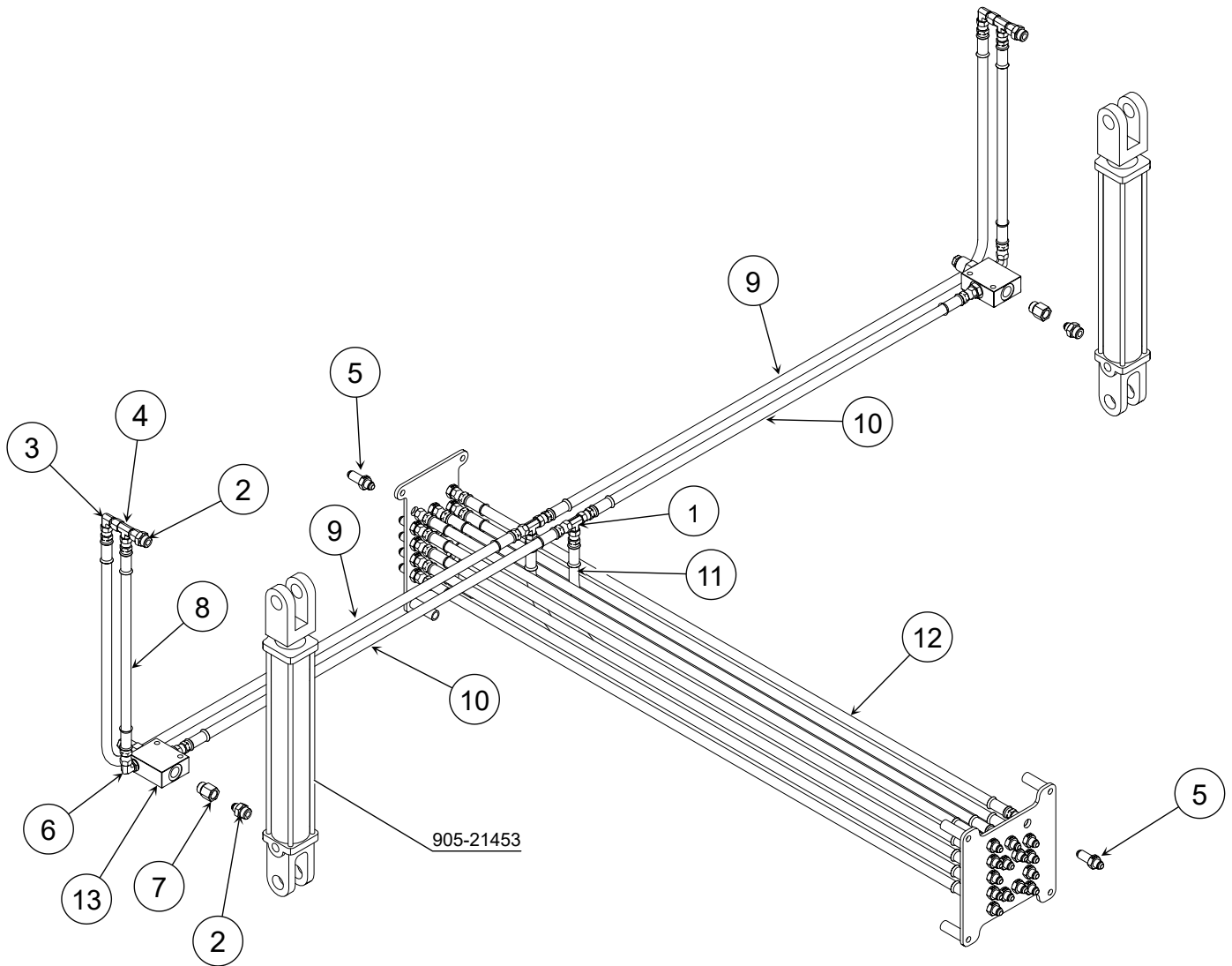
HOSE KIT - RIGID SCALPERS 1222
500-1-0460
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	900-31087	SINGLE BORE CLAMP BLOCK	12
2	900-31090	SINGLE BORE SAFETY LOCK PLATE	6
3	900-31091	SINGLE BORE CLAMP STACKING BOLT	6
4	905-03112	ADAPTER, TEE, 6MJ	2
5	905-03114	ADAPTER, ELBOW 90°, 6MJ x 8MB	4
6	905-19117	HOSE, 3/8 X 57.0, 6FJX x 6FJX	2
7	905-19124	HOSE, 3/8 x 25", 6FJX x 6FJX	1
8	905-19126	QUICK, COUPLER, TIP, 8FB	2
9	905-19154	HOSE, 3/8 X 115.0, 8MB x 6FJX	2
10	905-19170	HOSE, 3/8 X 64.0, 6FJX x 6FJX	2
**	905-21400	CYLINDER, 3 1/2" X 8" WITH DEPTH STOP	2
		**NOT INCLUDED IN HOSE KIT	

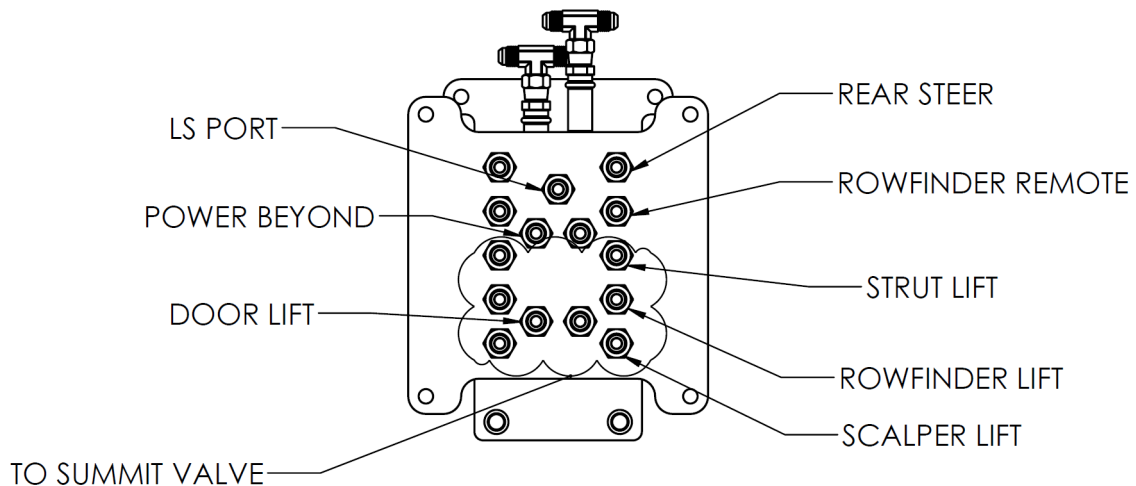
CENTER HOSE KIT- RIGID

500-1-0513

(ASSEMBLY DRAWING)



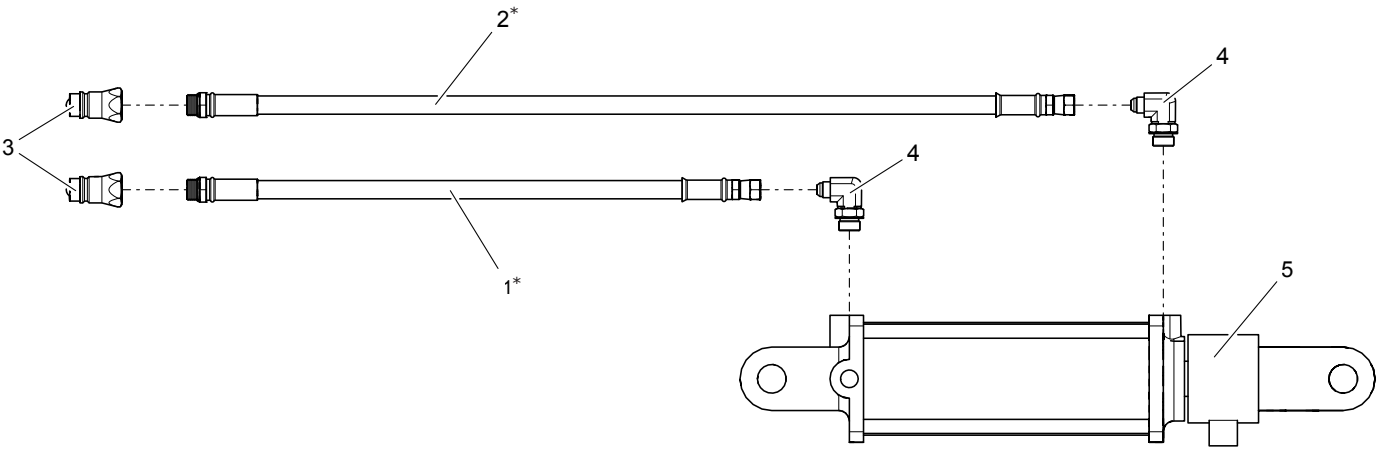
CAP ALL ENDS NOT BEING USED



CENTER HOSE KIT- RIGID
500-1-0513
(BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	905-03112	ADAPTER, TEE, 6MJ	2
2	905-03115	ADAPTOR - 8MORB X 6MJ	6
3	905-03163	ADAPTER, ELBOW 90°, 6FJX x 6MJ	2
4	905-03199	ADAPTER, TEE, 6FJX X 6MJ X 6MJ	2
5	905-03280	ADAPTER, BULKHEAD UNION, 6MJ x 6MJBH	28
6	905-03303	ADAPTER, ELB 90, 6MJ X 4MORB	2
7	905-03304	ADAPTOR - 8MORB X 6FJIC	2
8	905-19192	HOSE, 3/8 x 18", 6FJX x 6FJX	2
9	905-19194	HOSE, 3/8 x 90", 6FJX x 6FJX	2
10	905-19196	HOSE, 3/8 x 72", 6FJX x 6FJX	2
11	905-19215	HOSE, 3/8 x 44", 6FJX x 6FJX	2
12	905-19298	HOSE, 3/8" x 132", 6FJX x 6FJX	13
13	905-98090	COUNTER BALANCE VALVE	2
**	905-21453	STANDARD HYD CYL 2"X12"	2
		**NOT INCLUDED IN HOSE KIT	

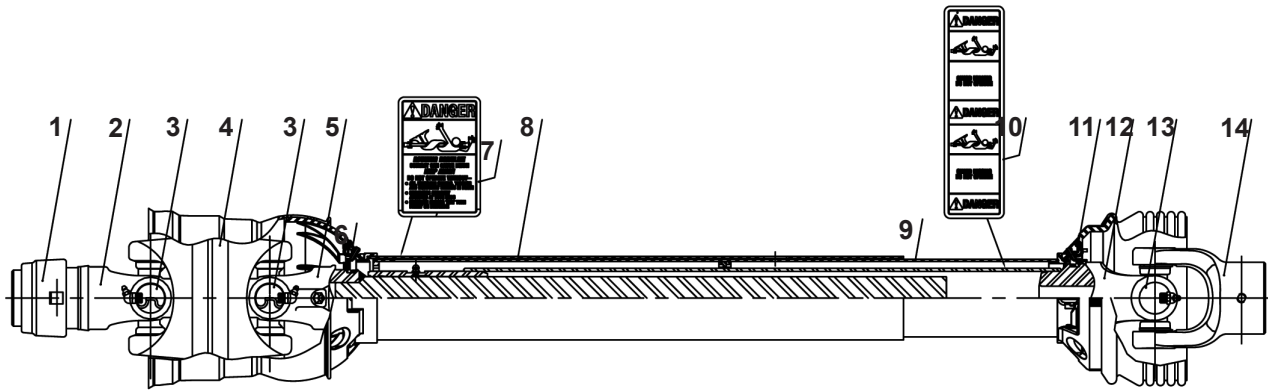
HITCH HYDRAULIC COMPONENTS



HITCH HYDRAULIC COMPONENTS

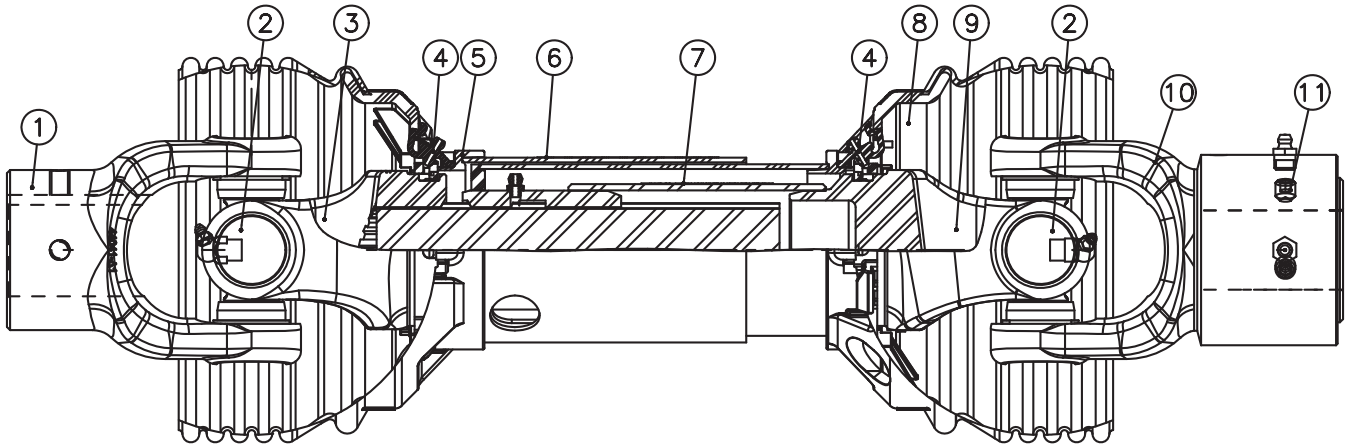
ITEM NO.	PART NO.	DESCRIPTION	Qty.
1-1	905-19176	HOSE, 3/8 x 105.0, 8MB x 6FJX (SHORT HITCH)	1
1-2	905-19279	HOSE, 3/8 x 140.0, 8MB x 6FJX (LONG HITCH)	1
2-1	905-19154	HOSE, 3/8 x 115.0, 8MB x 6FJX (SHORT HITCH)	1
2-2	905-19139	HOSE, 3/8 x 150.0, 8MB x 6FJX (LONG HITCH)	1
3	905-19126	QUICK COUPLER	2
4	905-03114	ADAPTER, 90° ELBOW, 6MJ x 8MB	2
5	905-21400	CYLINDER, 3-1/2 x 8	1
-	500-2-0792	HOSE KIT, SHORT HITCH	-
-	500-2-1242	HOSE KIT, LONG HITCH	-
-	500-2-0789	HYDRAULIC KIT, SHORT HITCH (INCLUDES CYLINDER)	-
-	500-2-1243	HYDRAULIC KIT, LONG HITCH (INCLUDES CYLINDER)	-

LONG HITCH PTO DRIVE SHAFT COMPONENTS



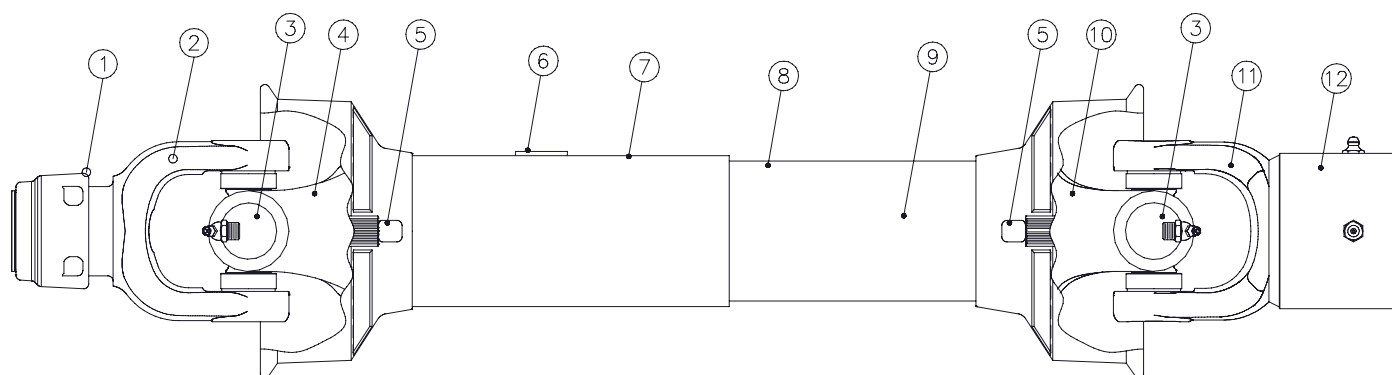
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	903-18240	SSL / AUTO-LOK REPAIR KIT, 1-3/8"	1
	903-18255	SSL / AUTO-LOK REPAIR KIT, 1-3/4"	
2	903-18241	WWCV AUTO-LOK YOKE, 1-3/8"	1
	903-18256	WWCV AUTO-LOK YOKE, 1-3/4"	
3	903-17712	CAT 5 80 E CV CROSS & BEARING KIT	1
4	903-18242	CV CENTER HOUSING	1
5	903-18243	YOKE & SHAFT (1.69-20 SPLINE), 1-3/8"	1
	903-18257	YOKE & SHAFT (1.69-20 SPLINE), 1-3/4"	
6	903-18244	GUARD REPAIR KIT	1
7	903-17455	SAFETY SIGN	2
8	903-18258	OUTER GUARD	1
9	903-18259	INNER GUARD	1
10	903-18247	SAFETY SIGN	
11	903-18248	GUARD REPAIR KIT	1
12	903-18260	YOKE, TUBE, & SLIP SLEEVE	1
13	903-18250	44E CROSS & BEARING KIT	1
14	903-17639	YOKE	1
	903-18216	LONG HITCH PTO DRIVE SHAFT, COMPLETE 1-3/8"	
	903-18217	LONG HITCH PTO DRIVE SHAFT, COMPLETE 1-3/4"	

LONG HITCH DRIVELINE COMPONENTS



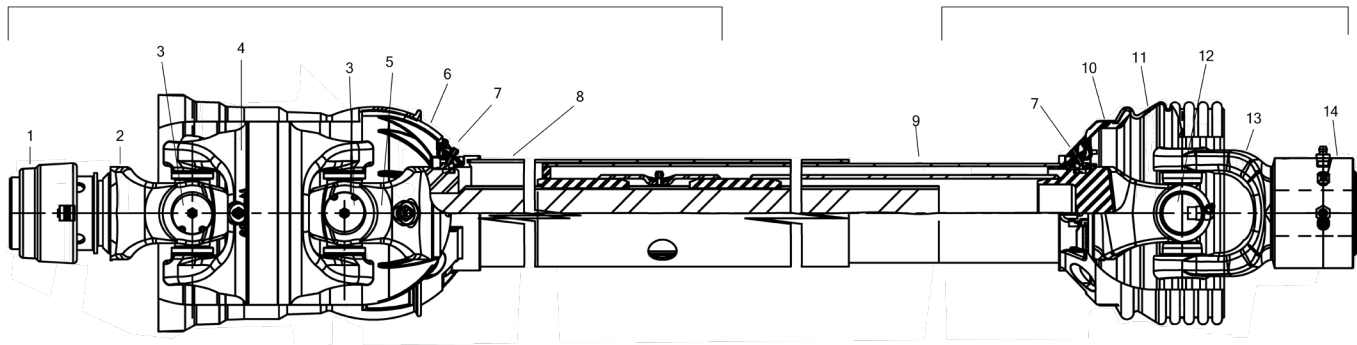
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	903-17639	YOKE	1
2	903-18250	44E CROSS KIT	2
3	903-18430	YOKE & SHAFT (1.69-20 SPLINE)	1
4	903-18248	GUARD REPAIR KIT	2
5	903-18431	OUTER GUARD	1
6	903-17455	SAFETY SIGN	1
7	903-18247	SAFETY SIGN	1
8	903-18432	INNER GUARD	1
9	903-18433	YOKE, TUBE & SLIP SLEEVE	1
10	903-17721	OVERRUNNING CLUTCH ASSY	1
11	903-18434	SETSCREW, 3/8 NC x 3/8	2
	903-18423	COMPLETE LONG HITCH DRIVE SHAFT, COMPLETE	

PTO DRIVE SHAFT COMPONENTS



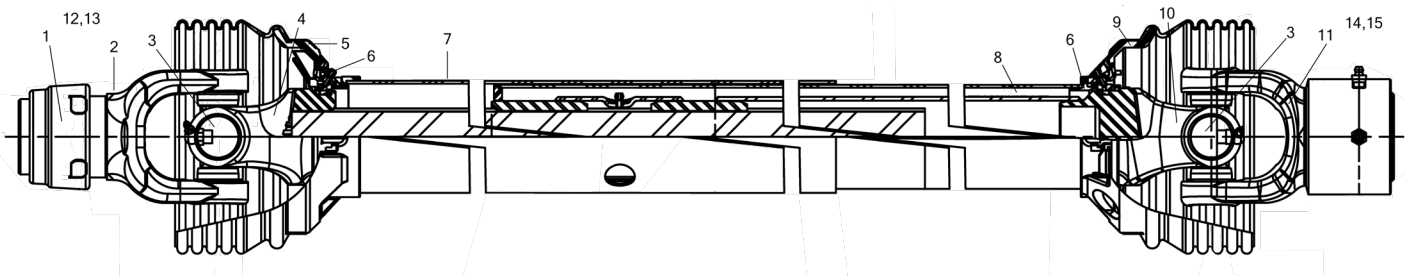
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	903-18106	SAFETY SLIDE LOCK REPAIR KIT, 1-3/8"	1
	903-17772	SAFETY SLIDE LOCK REPAIR KIT, 1-3/4"	
2	903-18116	SAFETY SLIDE LOCK YOKE, 1-3/8"	1
	903-18108	SAFETY SLIDE LOCK YOKE, 1-3/4"	
3	903-17525	44R CROSS & BEARING KIT	1
4	903-18109	YOKE & SHAFT (1.69-20 SPLINE)	1
5	903-17774	NYLON REPAIR KIT	2
6	903-17455	SAFETY SIGN	1
7	903-18110	OUTER GUARD	1
8	903-11111	INNER GUARD	1
9	903-17456	SAFETY SIGN	1
10	903-18112	YOKE, TUBE, & SLIP SLEEVE	1
11	903-17721	OVERRUNNING CLUTCH	1
12	903-18210	OVERRUNNING CLUTCH REPAIR KIT	1
	903-18088	COMPLETE PTO DRIVE SHAFT, COMPLETE 1-3/8"	
	903-18089	COMPLETE PTO DRIVE SHAFT, COMPLETE 1-3/4"	

PTO DRIVE SHAFT COMPONENTS (CONSTANT VELOCITY)



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	903-17427	SSL / AUTO-LOK REPAIR KIT, 1-3/8"	1
	903-17772	SSL / AUTO-LOK REPAIR KIT, 1-3/4"	
2	903-18334	WWCV AUTO-LOK YOKE, 1-3/8"	1
	903-18327	WWCV AUTO-LOK YOKE, 1-3/4"	
3	903-18328	AB8/AW24/CAT 6 80° PBL CROSS KIT	1
4	903-18329	WWCV CENTER HOUSING	1
5	903-18405	WWCV YOKE & SHAFT (1.69-20 SPLINE)	1
6	-	OUTER GUARD	1
7	903-18395	GUARD REPAIR KIT	2
8	903-17455	SAFETY SIGN	1
9	903-17456	SAFETY SIGN	1
10	903-18248	GUARD REPAIR KIT	1
11	-	INNER GUARD	1
12	903-17718	YOKE, TUBE, & SLIP SLEEVE	1
13	903-17525	44E CROSS & BEARING KIT	1
14	903-17721	OVERRUNNING CLUTCH	1
	903-17717	GUARD SET * INCLUDES #6, #10 *	
	903-18406	COMPLETE PTO DRIVE SHAFT, COMPLETE 1-3/8"	
	903-18407	COMPLETE PTO DRIVE SHAFT, COMPLETE 1-3/4"	

PTO DRIVE SHAFT COMPONENTS

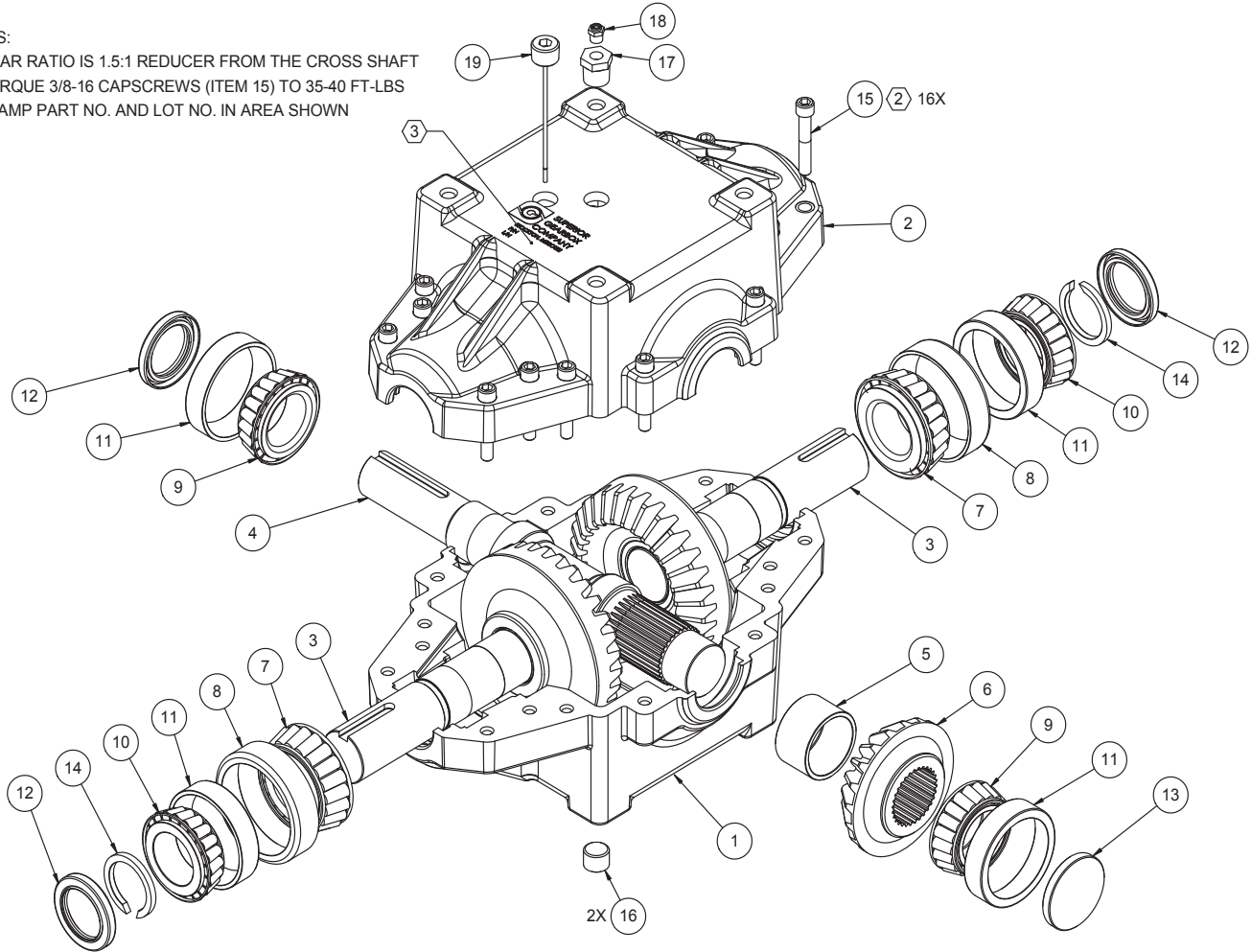


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	903-18106	SSL/AUTO-LOK REPAIR KIT 26-15120	1
	903-17772	SSL/AUTO-LOK REPAIR KIT 26-13387	1
2	903-18116	SAFETY SLIDE LOCK YOKE ASM 44011-1007	1
	903-18108	SAFETY SLIDE LOCK YOKE ASM	1
3	903-17525	CROSS KIT 44E	2
4	903-18449	YOKE & SHAFT (1.69-20 SPLINE) 99-26085	1
5	903-18450	OUTER GUARD 97-26085	1
6	903-18248	GUARD REPAIR KIT 19-15121	2
7	903-17455	SAFETY SIGN 13-10021	1
8	903-17456	SAFETY SIGN 13-10022	1
9	903-18451	INNER GUARD 96-26085	1
10	903-18452	YOKE, TUBE & SLIP SLEEVE 98-26085	1
11	903-17721	OVERRUNNING CLUTCH ASM. 39-10044	1
12	903-18453	JOINT & SHAFT HALF ASM. W/GUARD 93-26085	1
	903-18445	JOINT & SHAFT HALF ASM. W/GUARD 92-26086	1
13	903-18454	JOINT & SHAFT HALF ASM. 95-26085	1
	903-18446	JOINT & SHAFT HALF ASM. 95-26086	1
14	903-18447	JOINT & SHAFT HALF ASM. W/GUARD 92-26085	1
15	903-18448	JOINT & SHAFT HALF ASM. 95-26085	1
	903-18455	PTO SHAFT, 1-3/8" YOKE	1
	903-18456	PTO SHAFT, 1-3/4" YOKE	1

GEAR BOX COMPONENTS

NOTES:

1. GEAR RATIO IS 1.5:1 REDUCER FROM THE CROSS SHAFT
2. TORQUE 3/8-16 CAPSCREWS (ITEM 15) TO 35-40 FT-LBS
3. STAMP PART NO. AND LOT NO. IN AREA SHOWN



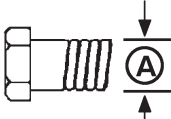
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	903-15291	CASTING, MACHINE BOTTOM THREADED	1
2	903-15292	CASTING, MACHINE TOP HALF	1
3	903-15591	SUBA, R600 STUB SHAFT/GEAR	2
4	903-15592	SHAFT, CROSS R600 1.5i SPLINED	1
5	903-15593	SPACER, 2.25 X 1.939, 1.324	1
6	903-15595	GEAR, R600 1.50:1 SPLINE 20 TOOTH	1
7	901-01151	BEARING CONE 3782	2
8	901-01153	BEARING CUP 3720	2
9	901-01328	BEARING CONE 25580	2
10	901-01150	BEARING CONE 25581	2
11	901-01152	BEARING CUP 25520	4
12	901-09125	SEAL, TC-1.750-2.437-.312	3
13	903-15594	SEAL, END CAP, 2.45-.312	1
14	900-39030	RETAINING RING, 1.750	2
15	900-03033	BOLT, 3/8-16 X 2.25 SHCS	16
16	905-03078	PLUG, 1/2-14 NPT SCHD W/3M	2
17	905-01159	BUSHING, 1/2 NPT TO 1/8 NPT	1
18	905-03080	PLUG, VENT 5 PSI	1
19	903-15411	DIP STICK, STANDARD	1
-	903-15399	GEAR BOX, COMPLETE	1

BOLT TORQUE CHART

SAE Series Torque Chart

Always tighten hardware to these values unless a different torque value or tightening procedure is listed for a specific application. Fasteners must always be replaced with the same grade as specified in the manual parts list.

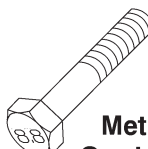
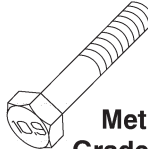
Make sure fastener threads are clean and you properly start thread engagement.

SAE Bolt Head Identification		 SAE Grade 2 (No Dashes)		 SAE Grade 5 (3 Radial Dashes)		 SAE Grade 8 (6 Radial Dashes)	
Ⓐ Diameter (Inches)	Wrench Size	MARKING ON HEAD					
		SAE 2		SAE 5		SAE 8	
		ft./lb.	(Nm)	ft./lb.	(Nm)	ft./lb.	(Nm)
1/4"	7/16'	6	(8)	10	(13)	14	(18)
5/16'	1/2"	12	(17)	19	(26)	27	(37)
3/8"	9/16"	23	(31)	35	(47)	49	(67)
7/16"	5/8"	36	(48)	55	(75)	78	(106)
1/2"	3/4"	55	(75)	85	(115)	120	(163)
9/16"	13/16"	78	(106)	121	(164)	171	(232)
5/8"	15/16"	110	(149)	170	(230)	240	(325)
3/4"	1-1/8"	192	(261)	297	(403)	420	(569)
7/8"	1-5/16"	306	(416)	474	(642)	669	(907)
1"	1-1/2"	350	(475)	680	(925)	1020	(1383)
1-1/8"	1-11/16"	450	(610)	885	(1200)	Bolt Diameter 	
1-1/4"	1-7/8"	600	(815)	1255	(1700)		
1-3/8"	2-1/16"	675	(915)	1620	(2200)		
1-1/2"	2-1/4'	920	(1250)	2200	(2900)		

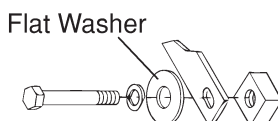
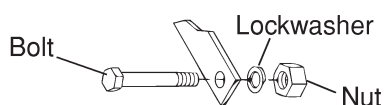
Metric Series Torque Chart

Use only metric tools on metric hardware. Always tighten hardware to these values unless a different torque value or tightening procedure is listed for a specific application. Fasteners must always be replaced with the same grade.

Make sure fastener threads are clean and you properly start thread engagement.

Ⓐ Diameter & Thread Pitch (Millimeters)	Wrench Size	COARSE THREAD				FINE THREAD				Ⓐ Diameter & Thread Pitch (Millimeters)	Metric Bolt Head Identification
		MARKING ON HEAD				MARKING ON HEAD					
		Metric 8.8		Metric 10.9		Metric 8.8		Metric 10.9			
		Nm	ft./lb.	Nm	ft./lb.	Nm	ft./lb.	Nm	ft./lb.		
6x1.0	10 mm	8	6	11	8	8	6	11	8	6x1.0	 Metric Grade 8.8
8x1.25	13 mm	20	15	27	20	21	16	29	22	8x1.0	
10x1.5	16 mm	39	29	54	40	41	30	57	42	10x1.25	
12x1.75	18 mm	68	50	94	70	75	55	103	76	12x1.25	
14x2.0	21 mm	109	80	151	111	118	87	163	120	14x1.5	 Metric Grade 10.9
16x2.0	24 mm	169	125	234	173	181	133	250	184	16x1.5	
18x2.5	27 mm	234	172	323	239	263	194	363	268	18x1.5	
20 x 2.5	30 mm	330	244	457	337	367	270	507	374	20x1.5	
22 x 2.5	34 mm	451	332	623	460	495	365	684	505	22 x 1.5	
24 x 3.0	36 mm	571	421	790	583	623	459	861	635	24 x 2.0	
30 x 3.0	46 mm	1175	867	1626	1199	1258	928	1740	1283	30 x 2.0	

Typical Washer Installations



8/9/00

ABBREVIATIONS

AGAgriculture
 ASAE American Society of Agricultural Engineers
 ATF Automatic Transmission Fluid
 BSPP British Standard Pipe Parallel
 BSPTM British Standard Pipe Tapered Male
 CV Constant Velocity
 CCW Counter-Clockwise
 CW Clockwise
 DIA Diameter
 EP Extreme Pressure
 F Female
 FB Female O-Ring Boss
 FJ Female Boss
 FJX Female Swivel JIC
 FP Female Pipe
 ft./lb Foot Pound
 GA Gauge
 GR (5, etc.) Grade (5, etc.)
 HHCS Hex Head Cap Screw
 HT Heat Treated
 in Inch
 JIC Joint Industry Council 37° Flare
 kg Kilogram
 km/h Kilometers Per Hour
 lb Pound
 LH Left Hand
 LT Left
 in Inches
 m Meter
 mm Millimeter
 M Male
 MB Male O-Ring Boss
 MJ Male JIC
 MJX Male Swivel JIC
 MP Male Pipe
 MPa Mega Pascal
 MPH Miles Per Hour
 N Newton

NC National Course
 NF National Fine
 NPSM National Pipe Straight Mechanical
 NPT National Pipe Tapered
 NPT SWF National Pipe Tapered Swivel Female
 Nm Newton Meter
 OSHA... Occupational Safety and Health Administration
 P Pitch
 PBY Power Beyond
 psi Pounds per Square Inch
 PTO Power Take Off
 QD Quick Disconnect
 RH Right Hand
 ROPS Roll Over Protection Structure
 RPM Revolutions Per Minute
 RT Right
 SAE Society of Automotive Engineers
 SMV Slow Moving Vehicle
 UNC Unified Coarse
 UNF Unified Fine
 UNS Unified Special
 ZP Zinc Plate

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WARRANTY

Please Enter Information Below and Save For Future Reference.

Date Purchased: _____ From (Dealer): _____

Model Number: _____ Serial Number: _____

ALLOWAY STANDARD, d/b/a ALLOWAY, warrants this product to be free from defect in material and workmanship 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 ALLOWAY, 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 ALLOWAY, a ALLOWAY authorized dealer or distributor, and/or a ALLOWAY 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 obtained through ALLOWAY.**

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.

ALLOWAY makes no warranty, express or implied, with respect to tires or other parts or accessories not manufactured by ALLOWAY. Their respective manufacturers, if any, provide warranties for these items, separately. ALLOWAY'S obligation under this Warranty is limited to, at ALLOWAYS' option, the repair or replacement, free of charge, of the product if ALLOWAY, in its sole discretion, deems it to be defective or in noncompliance with this Warranty. The product must be returned to ALLOWAY 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. ALLOWAY shall complete such repair or replacement within a reasonable time after ALLOWAY 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.

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

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5650 13th Ave N, Ste A
Fargo, North Dakota 58102
701-356-4983



WARRANTY

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Under no circumstances will this Warranty apply in the event that the product, in the good faith opinion of ALLOWAY, 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.

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

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