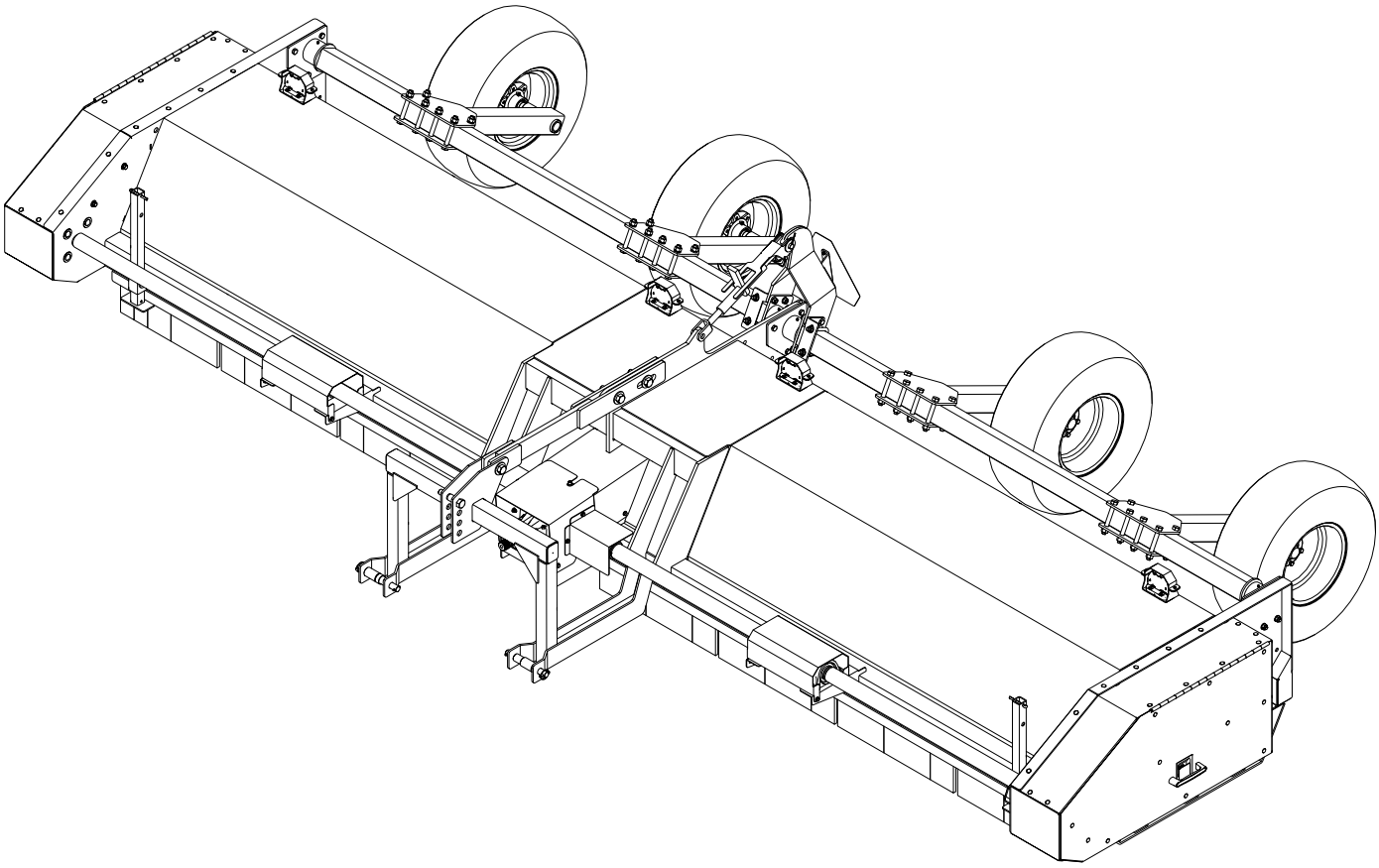
END DRIVE SHREDDER

2025

ALLOWAY



OPERATOR'S MANUAL

PN: 507-5-0022 (2025)

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.

PN: 507-5-0022 (2025)

TABLE OF CONTENTS

GENERAL INFORMATION

The purpose of this manual is to assist you in operating and maintaining your End Drive Shredder. 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 End Drive Shredder with safety shields removed to provide a better view. The End Drive Shredder 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

Maximum Outside Body Width:

12’	179.81 in. (4.6 m)
15’	215.81 in. (5.5 m)
16’	227.81 in. (8.8 m)
18’	251.81 in. (6.4 m)
20’	275.81 in. (7.0 m)
22’	299.81 in. (7.6 m)
24’	323.81 in (8.2 m)
25’	335.81 in. (8.5 m)
27’	359.81 in. (9.1 m)

Cutting Height ..... 3 - 18 in. (7.62 cm to 45.7 cm)

Width of Cut

12’	150 in. (3.8 m)
15’	186 in. (4.7 m)
16’	198 in. (5.0 m)
18’	222 in. (5.6 m)
20’	246 in. (6.2 m)
22’	270 in. (6.8 m)
24’	294 in. (7.5 m)
25’	306 in. (7.8 m)
27’	330 in. (8.4 m)

Number of Knives	Cup-Knife	L-Knife
12’	74	148
15’	88	176
16’	92	184
18’	108	216
20’	120	240
22’	132	264
24’	144	288
25’	148	296
27’	160	320

Recommended Tire Size: ..... 12.5 x 16 (Implement) or 12.4 x 24 (Traction)

Tire Inflation Pressure: ..... 25 psi

Rotor: Speed ..... 1350 RPM Dynamically Balanced

Drive: PTO ..... 1000 RPM

Weight of Shredder (approximate):

12’	3789 lbs. (1719 kg)
15’	4777 lbs. (2167 kg)
16’	4867 lbs. (2208 kg)
18’	5490 lbs. (2490 kg)
20’	5858 lbs. (2657 kg)
22’	6300 lbs. (2858 kg)
24’	6442 lbs. (2922 kg)
25’	6605 lbs. (2996 kg)
27’	7625 lbs. (3457 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, seirous 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 equiped 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 seatbelt, place transmission in neutral, engage parking brake, and ensure all other controls are disengaged before starting power unit engine.**

- **A minimum 20% of tractor and quipment 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. Weight distribution 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 to 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 continued from previous page)

- **Use extreme care and reduced 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 scalpers to the ground and service each unit individually.**

- **Always raise scalper arms before moving in reverse.**

(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**
- ♦ **Electrocution 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 under a raised implement, read and follow all Operator's Manual instructions and safety rules. Implement must be attached to tractor. Hydraulic system leak-down, hydraulic system failure or movement of controls 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**

(Safety Rules continued on next page)

(Safety Rules continued from previous page)

components has stopped before approaching for service.

- **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

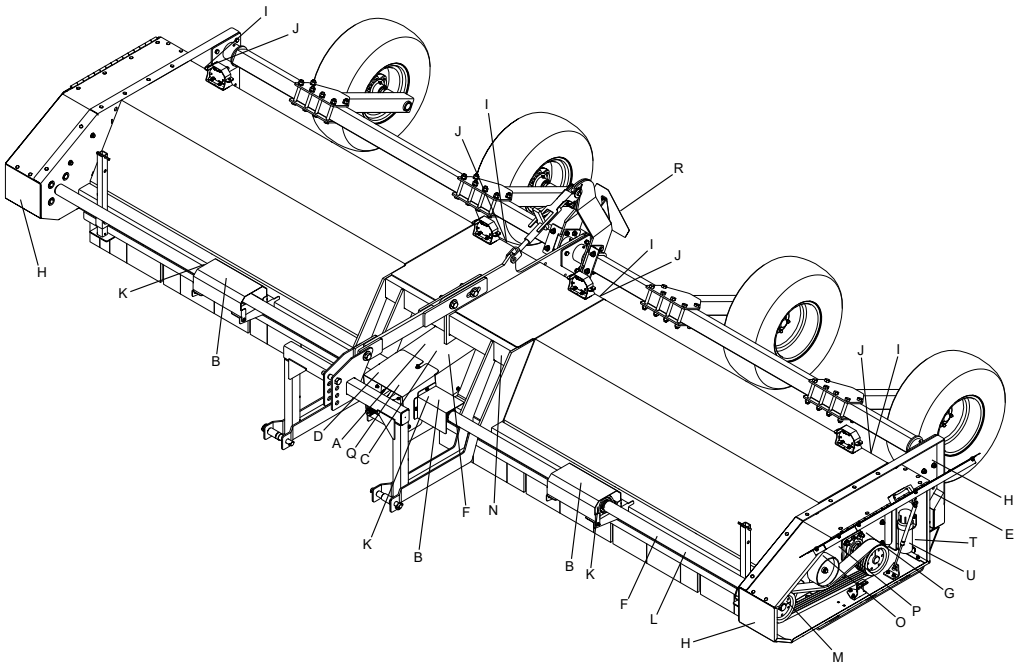
- **Follow manual instructions for storage.**

- **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

SAFETY GUARD DO NOT REMOVE

B. 100-3-1367 Safety Guard

WARNING

HIGH-PRESSURE FLUID HAZARD

To prevent serious injury or death:

1. Relieve pressure on system before repairing, adjusting or disconnecting.
2. Wear proper hand and eye protection when searching for leaks. Use wood or cardboard instead of hands.
3. Keep all components in good repair.

505-3-0315

C. 505-3-0315 High Pressure Fluid Warning

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

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.

D. 500-3-0980 Missing Shields Warning

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 servicing.
2. Keep hands and feet away from flails when engine is running.
3. Keep other people away.

E. 500-3-0182 Rotating Flails

(Safety Decals continued on next page)

SAFETY & INSTRUCTIONAL DECALS

ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

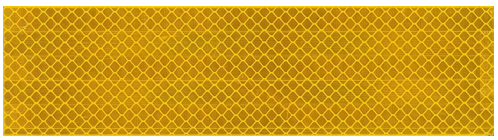
Replace Immediately If Damaged!

G. 500-3-0979 Rotating Part Hazard

K. 506-3-0194 Shield Missing Danger

L. 903-17456 Driveline Safety Sign

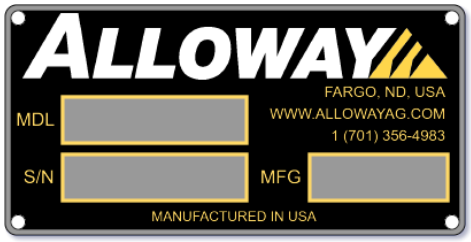
M. 500-3-1149 Belt Tension



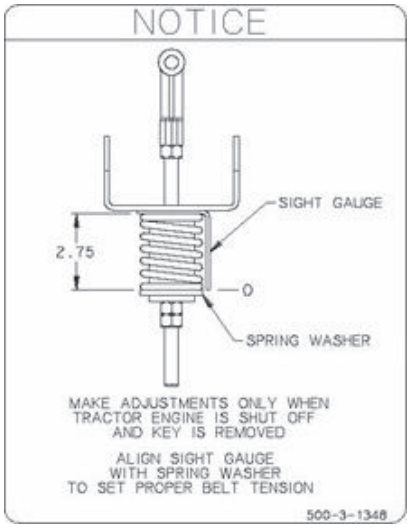
H. 200-3-4004 Amber Reflector 9 x 2

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

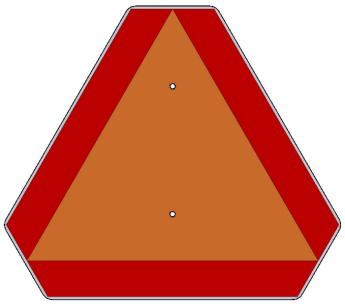
J. 200-3-4034 Orange Fluorescent Reflector 9 x 2



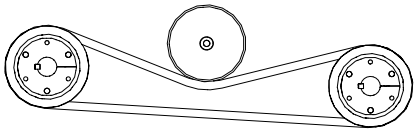
N. 200-3-1366 Serial Number Tag



O. 500-3-1348 Belt Tension

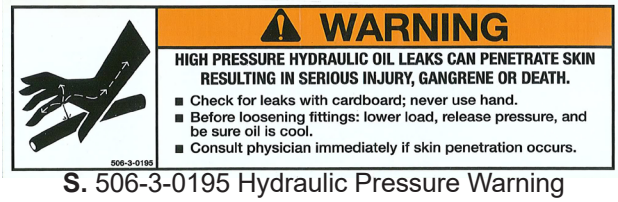


R. 500-3-1696 SMV Sign

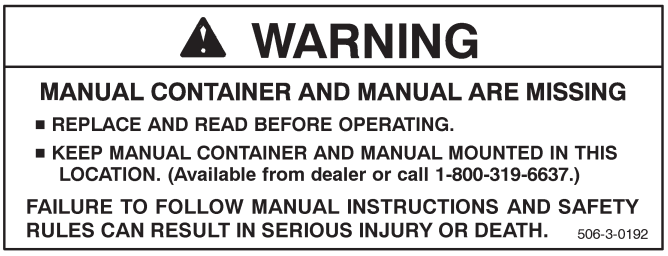


P. 902-15143 Belt Routing

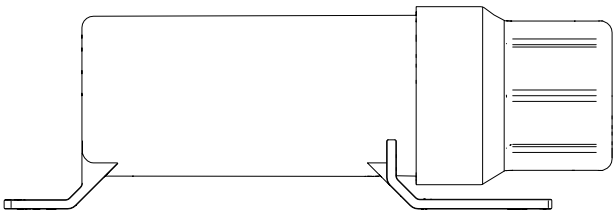
Q. 700-3-0519 PTO Speed Warning



S. 506-3-0195 Hydraulic Pressure Warning
On Each Hydraulic Cylinder



T. 506-3-0192 Manual Container Warning



U. 100-3-3957 Manual Container

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 bolts for 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 Shredder 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 all bolts to be sure they are tight.

—— 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 safety decals. Explain their meanings 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.

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.

American Society of Agricultural & Biological Engineers (ASAE) and the Occupational Safety and Health Administration (OSHA).

Anyone who will be operating and/or maintaining the Shredder 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 Shredder.

DATE	OPERATOR'S NAME	OPERATOR'S SIGNATURE

OPERATION

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

In addition to the design and configuration of equipment, hazard control and accident prevention depend on 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 Flail Shredder is designed to pick up and shred crop and plant residue left in the field. Rotational power to the flails is provided by the tractor PTO.

— Be familiar with the flail shredder before starting.

— The owner is responsible for training operators in the safe operation of the flail shredder.

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 Alloway 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.**

■ **Before dismounting power unit or performing any service or maintenance, follow these steps: disengage power to equipment, 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.**

■ **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 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.**

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

■ **Keep bystanders away from equipment.**

■ **Operate tractor PTO at the RPM speed stated in "Specifications" section.**

■ **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. Use respirator or filter mask where appropriate.**

PRINCIPAL COMPONENTS

The Alloway Flail Shredder consists of a large rotating drum with free-swinging steel flails attached. The flails pick up or strike crop residue or trash and shred it. Rotational power to the drum is provided by the tractor PTO through a gearbox in the front of the machine, transfered through drive shafts to the side(s), where a belt links them together.

For removing the center strip of crop residue, an optional center divider wedge can be mounted under the gearbox to push trash into the flails, or a hydraulic center cutter mounted at the rear of the machine.

The flail shredder is designed to be used as a pull-type, semi-mounted or 3-point mounted machine.

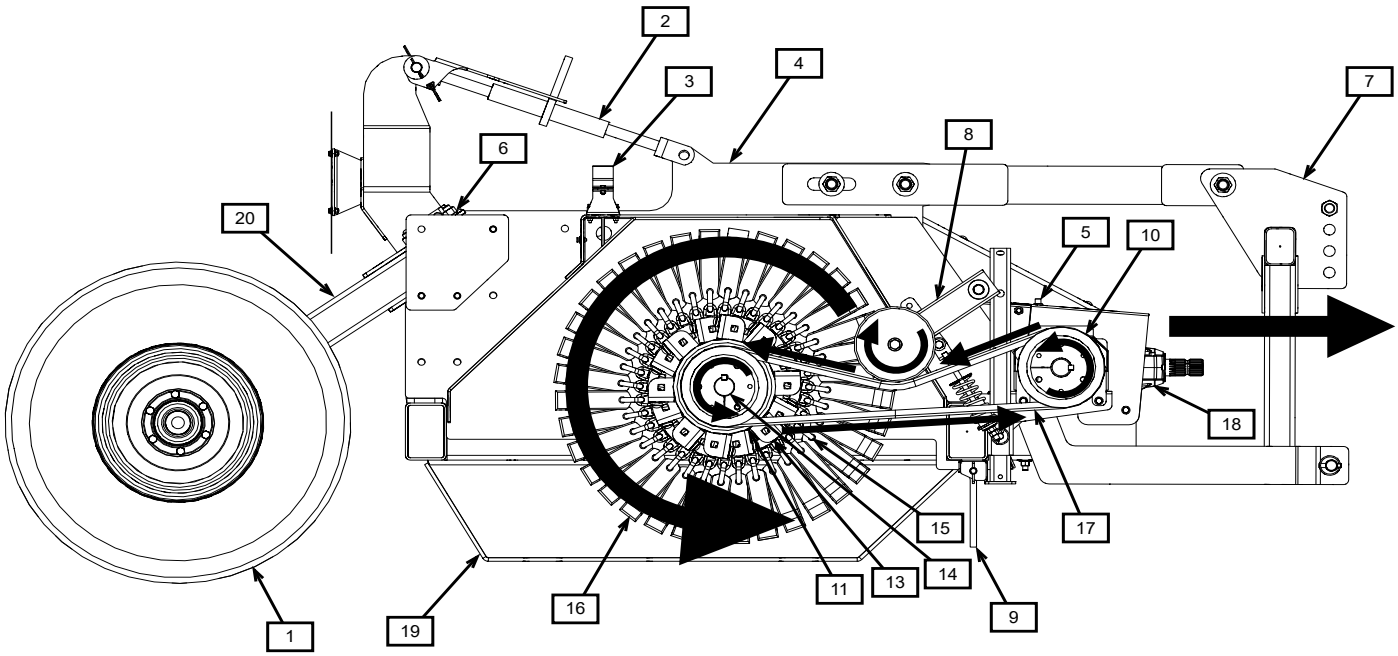


Figure 1. End Drive Shredder Principal Components

1. Wheels
2. Ratchet/Hydraulic Lift
3. Lights
4. Frame
5. Dip Stick
6. Rockshaft
7. 3-Point Hitch Pin
8. Tensioner
9. Rubber Flaps
10. Drive Pulley
11. Rotor (Flail Tube)
12. End Bearing
13. Flail Tube Clip
14. Drive Shaft
15. D-Ring
16. “Cup” or “L” Knife Flails
17. Drive Belt
18. Gearbox
19. Skid Plate
20. Rear Strut

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 flail shredder.**

—— Check all bolts to be sure they are tight.

—— Check all lubrication points and grease as instructed in Lubrication Schedule, page 33.

—— 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 and the safety chain is installed. On 3-point hitch units, be sure retainers are used on the mounting pins.

—— 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. Bring to specified level.

—— Check flails. Inspect for damage or breakage. Make sure the swing freely on their mount. Repair or replace as required.

—— Check condition of cutter blade (if so equipped.

—— Inspect all hydraulic lines, hoses, couplers, and fittings. Tighten, repair, or replace any leaking or damaged components.

—— Install and secure all guards, doors, and covers.

—— Check PTO clutch operation (See Servicing Weasler Modular Friction Clutch, page 44).

CHOOSING THE CORRECT EQUIPMENT

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

1. Horsepower

Use Table 1 for selecting the tractor horsepower class appropriate for your unit's width.

Increase the horsepower level by 25 percent when operating in hilly, soft or wet conditions.

2. Tractor Weight

By following recommendations for tractor horsepower, the tractor will have sufficient weight to provide stability for unit during field operation or when transporting.

When using a 3-point mounted shredder, It is recommended that each tractor be equipped with a full complement of suitcase weights on the tractor front (see Figure 2 for example). This will provide the required front weight for turning and extra traction if equipped with front wheel assist.

Width	Minimum Horsepower
12'	70
15'	90
16'	100
18'	110
20'	120
22'	130
25'	150
27'	150

Table 1: Tractor Horsepower vs. Unit Width

Figure 2. Front Suitcase Weights

3. 3 - Point Hitch

The 3-point hitch models require the tractor to be equipped with a Category II or Category III 3-point hitch. If the hitch can be converted from one to the other, use a Category III to provide a wider stance and more stability.

Use the upper pin hole for Category III and the lower hole for Category II as shown in Figure 3.

For easier attachment, use a quick hitch. If not using a quick hitch, use optional hitch extension.

4. Load Sensing Hydraulics (3-Point models only)

Many newer tractors are equipped with load sensing hydraulics. The operator is responsible for setting the tractor hydraulic system to allow the 3-point hitch to float. Refer to the tractor manual for specific instructions.

The float feature will allow the unit to follow the ground contours during operation. This applies to 3-point mounted machines only.

5. Drawbar (Pull-type models only)

The tractor drawbar must be set to provide 16” - 20” (406 mm - 508 mm) between the end of the PTO shaft and the center of the drawbar pin for all and 1000 rpm PTO. See Figure 4. This dimension will provide the required clearance for the CV (Constant Velocity) joint on the front of the driveline.

IMPORTANT

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

NOTE: On pull-type models, do not cut driveline.

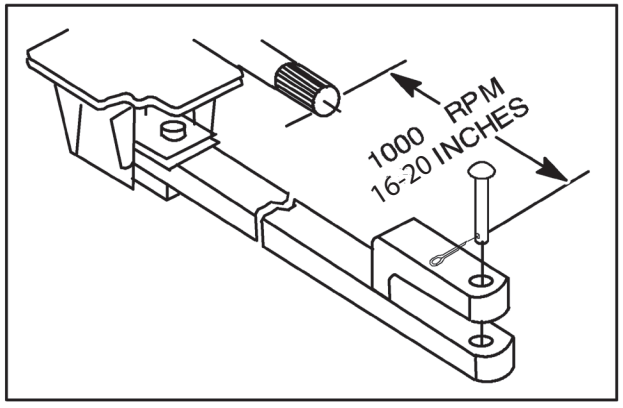


Figure 4. Drawbar Dimensions

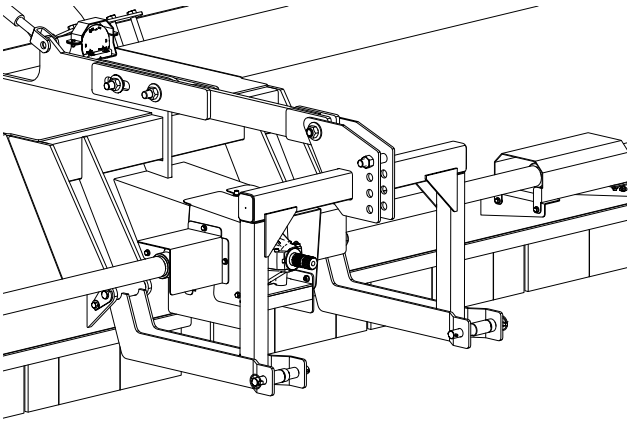


Figure 3. 3-Point Hitch Attachment

BREAK-IN OF THE FLAIL SHREDDER

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

IMPORTANT

- **Before operating the unit in the field, run the PTO clutch. See Servicing Weasler Modular Friction Clutch, page 39.**

After operating for 1/2 hour

1. Check all nuts, bolts and other fasteners. Tighten to specifications given in the Bolt Torque Chart, page 72.
2. Tighten wheel bolts to specifications given in the Bolt Torque Chart, page 72.
3. Check that flails are in good condition and swing freely.
4. Check oil level in gearbox. Add oil if needed.
5. Check that PTO driveline shield turns freely.
6. Lubricate all grease points.

After operating for 5 to 10 hours

1. Repeat Steps 1 to 5 above.
2. Follow regular service schedule as outlined in Service & Maintenance.

PTO Driveline Length
(3-Poinf & 2-Point models only)

The unit is equipped with a PTO driveline long enough to fit any tractor and 3-point linkage system.

The operator is responsible for measuring the dimensions of the driveline through its working range. These dimensions will indicate if the driveline requires shorting to operate on the particular tractor/ unit attachment system. The operator must check dimensions before using the unit for the first time and each time a different tractor is used with the unit

Use the following procedure when determining driveline dimension:

1. Clear the area of bystanders, especially children.

WARNING

- **Keep bystanders away from equipment.**

2. Attach the 3-point hitch to the unit but not the PTO driveline.

3. Raise the unit until the tractor PTO and gearbox shafts are the same height.

4. Measure the dimension between the shaft grooves on the tractor and implement ends. If this dimension is less than 34.81 inches, the shaft will require shortening.

5. Move the unit to its highest and lowest working position and measure this dimension again. The unit's shaft can telescope (see Figure 6) before it has been shortened.

6. If required, shorten the shaft to prevent bottoming out during use. NOTE: An extra inch of compression space in the shaft can eliminate bottoming out during use. Measure to make sure.

7. Use an abrasive wheel power saw to cut the male end of the shaft. Cut the same amount from both the splined shaft and the safety shield. See Figure 5. Use a file to remove any burrs from the cut end.

IMPORTANT

- **Cut only the male end. Never cut the female end.**

8. Never cut more than 9 inches from the male end. Cutting 1 inch from the male end shortens both the minimum and maximum lengths by 1 inch.

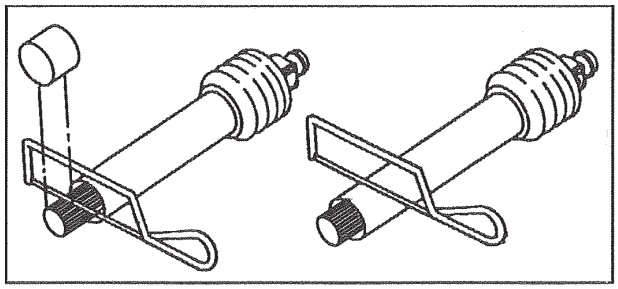


Figure 5. Cutting the Driveline Shaft

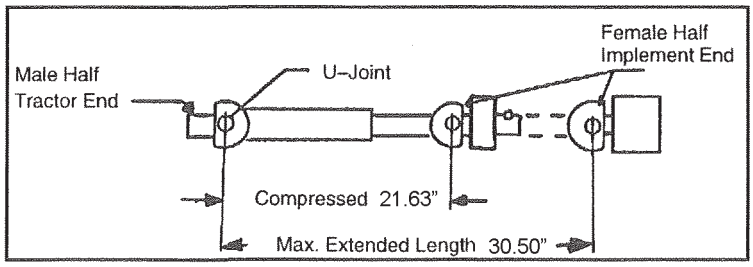


Figure 6. Driveline Dimension - 3-Pt Hitch

ATTACHING SHREDDER TO TRACTOR

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

WARNING

- **Keep bystanders away from equipment.**

2. Clear the area of bystanders, especially children.

3. 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-point and 2-point models:

4. Set the height of the 3-point hitch so that quick hitch claws are lower than the mounting pins.

5. Make sure 3-point hitch is set in the non-sway position. See tractor manual for details.

6. Align the claws under the mounting pins (see Figure 7) while backing up.

NOTE: For a Category II hitch, use the bottom hole for the center pin. For a Category III hitch, use the top hole for the center pin.

7. When the claws are under the pins, slowly raise the 3-point hitch. Make sure each mounting pin seats in its respective claw.

8. Release the claw retainer locks to secure the mounting pins in the claws.

9. Check the top link frame. It should be free to slide in mounting slots. This movement allows the unit to follow the ground contour when cresting a hill or going through a depression.

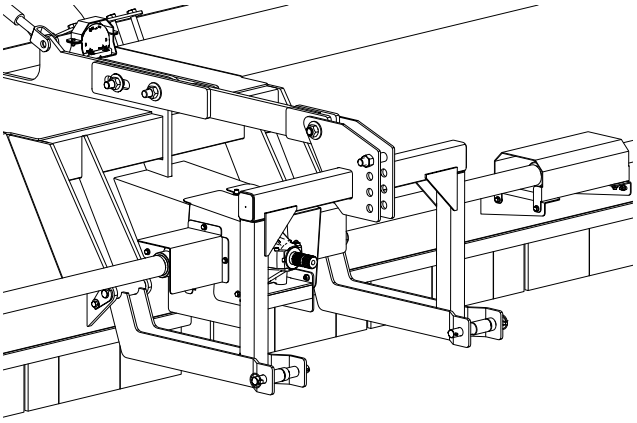


Figure 7. 3-Point hitch attachment points

Pull-type model:

4. Use the hydraulic cylinder (see Figure 8) on top of the hitch to set the hitch height.

5. Check and set the drawbar height.

6. Back the tractor up to the hitch.

7. Use a hardened drawbar pin with a mechanical retainer, such as a Klik pin.

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

9. Use the hydraulic cylinder to transfer the unit's weight to the drawbar.

10. Make sure the drawbar is pinned in center position.

Figure 8. Pull- Type hitch attachment point

Attach PTO Driveline:

11. Check and set the drawbar dimension.

IMPORTANT

- **The drawbar may need repositioning to provide clearance for the driveline.**

12. Attach the driveline to the tractor by retracting the locking collar. Slide the yoke over the shaft and push on the yoke until the lock collar clicks into position. Make sure the yoke is locked into position. See Figure 9.

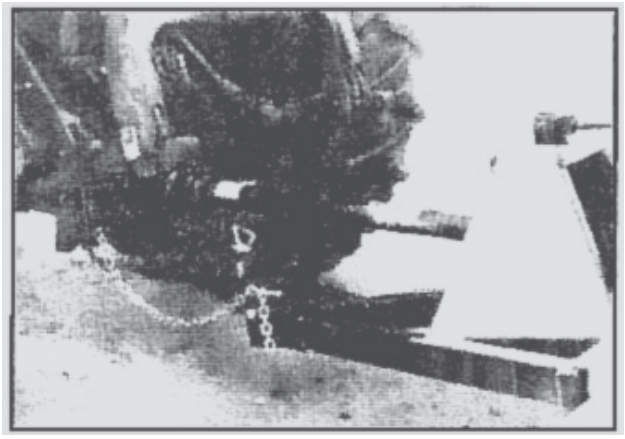


Figure 9. Hitch PTO Components

Attach Hydraulics:

13. Use a clean cloth to clean hose ends and area around the couplers on the tractor.

14. Insert the hose male ends into the tractor couplers. Make sure hoses lock in place.

15. Route hoses along or over the hitch and secure in position with clips, tape, or plastic ties. Provide enough slack for turning and lifting.

Raise Stands:

16. Use hitch ratchets or 3-point hitch to raise the front of the machine.

17. Unpin front frame stands. Raise and pin in their upper position. See Figure 10.

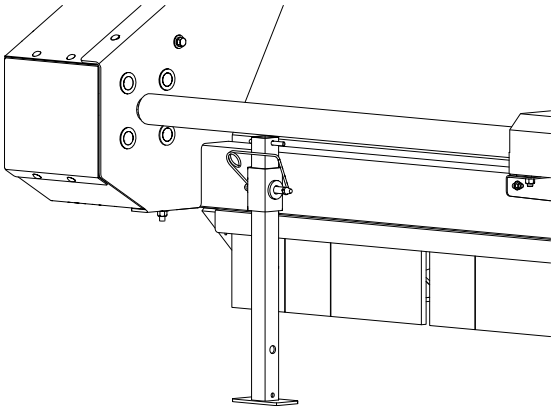


Figure 10. Parking Stand

REMOVING SHREDDER FROM TRACTOR

1. Reverse the above procedure (Steps 1-17) when removing unit from the tractor.

FIELD OPERATION

The Alloway Flail Shredder 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 Shredder to the Tractor, and Transporting the Unit.

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 Alloway 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.**

- **Before dismounting power unit or performing any service or maintenance, follow these steps: disengage power to equipment, 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.**

WARNING

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

- **Do not allow bystanders in the area when operating, attaching, removing, assembling, or servicing equipment.**

- **Inspect and clear area of stones, branches, or other hard objects that might be thrown, causing injury or damage.**

- **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.**

CAUTION

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

- **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.**

- **Keep bystanders away from equipment.**

- **Operate tractor PTO at the RPM speed stated in “Specifications” section.**

- **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. Use respirator or filter mask where appropriate.**

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. Check operation of any electric lights.
7. Be sure you are in compliance with all applicable lighting and marking regulations when transporting. Check with local authorities.
8. Never transport the unit faster than 20 mph (32 kmph). The ratio of the tractor weight to the shredder weight plays an important role in defining acceptable travel speed. Table 2 summarizes the recommended travel speed-to-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 16km/h (10 mph)	2 to 1 or less
Do not tow	more than 2 to 1

Table 2: Speed vs. Weight Ratio

PREPARING FOR OPERATION

1. Pull into the field and position the unit in a level area.
2. Lower into operating position.
3. 3-Point hitch models: Set the 3-point so the quick hitch is vertical and the floating upper mast is forward.

Flail Height:

4. Set the unit to give a flail height of **atleast 2-1/2 to 6 inches (75 to 150 mm)** above the ground. This will minimize the amount of stones and dirt picked up by the flails under all operating conditions.

NOTE: To avoid unnecessary wear on knives and related parts, never set the unit lower than the recommended setting.

Figure 11. Flail Height

SET OPERATING HEIGHT

Pull-type models:

Use the cylinder on the hitch and ratchet/cylinder on the rockshaft to set the unit height.

Figure 13. Pull-type Models

3-Point hitch models:

Use the ratchet on the cylinder stops on the rear struts and on third link of 3-point to set the unit height.

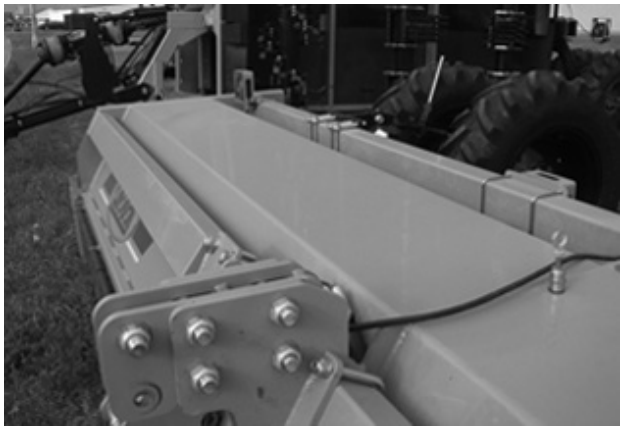


Figure 12. 3-Point Hitch Models

3-Point & 2-Point Hitch Models:

1. Set lower 3-point arms in the free-float position.
2. Set the hitch in the non-swing position.
3. Set the hydraulic system to allow the 3-point to float. Refer to tractor manual for instructions.
4. **3-Point models only:** Be sure the floating mast is free to slide in its mounting frame to allow the machine to follow ground contours. Refer to Figure 14.

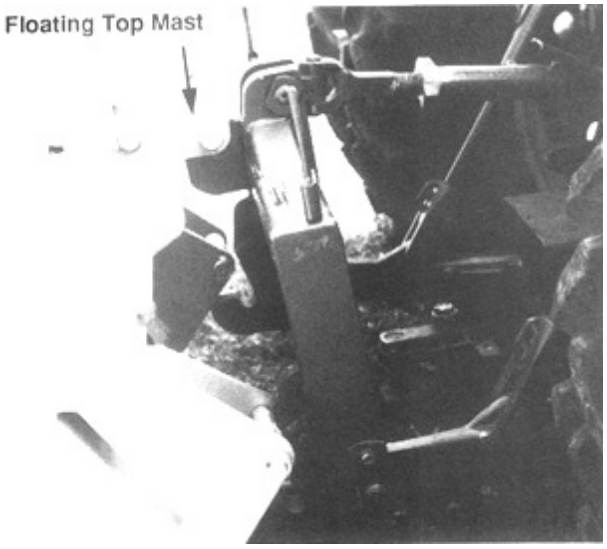


Figure 14. Free-float position

FLAIL TYPES

The shredder is factory equipped with “L” or cup type flails. The two types are interchangeable.

“L” Flails, “L” Flails w/ D-Ring

“L” flails (Figure 15) work best when trash or crop residue is standing.

Cup Flails

Cup flails (Figure 16) can pick up material from the ground and work best in matted trash conditions.

The standard cup flail is 11 inches (279 mm) long and is used for most applications. Optional 7 and 9 inch (177 and 228 mm) flails are available to match the tip position to ground contour.

Attach optional cup flails as follows (see Figure 18):

1. Leave standard flails located between the rows.

2. Remove others and install shorter flails to follow ground contour. Be sure to mount the same size flails on opposite sides of the tube. Measure the row spacing and flail position carefully to minimize ground contact.

SETTING FLAIL HEIGHT

1. Be sure wheels are set to follow in the center of furrow row. **atleast 2-1/2 to 6 inches (75 to 150 mm)**above the ground.

2. Align the unit with the working area on or between rows on flat farming.

3. 3-**Point models:** Set the 3-point hitch so the wheels carry only a small portion of the unit’s weight and act more as stabilizing wheels. See tractor manual for setting hitch.

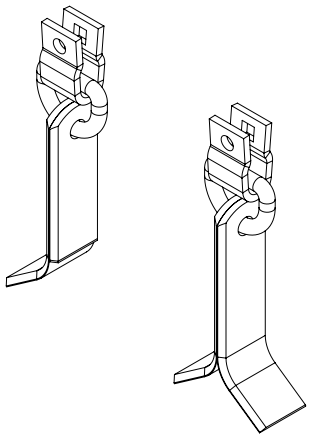


Figure 15. “L” Flails

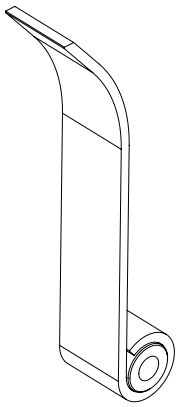


Figure 16. Cup Flails

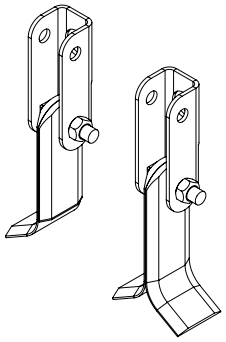


Figure 17. Cotton Flails

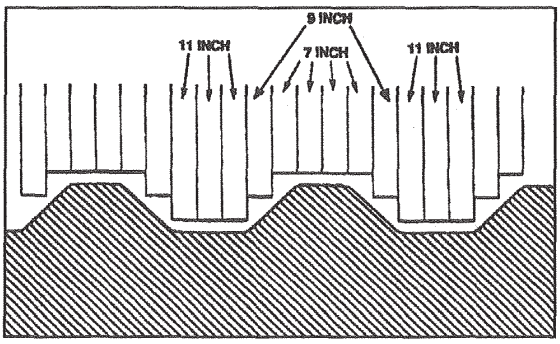


Figure 18. Optional Flail Contour

SETTING OUTER TRAILING WHEELS

Normally, wheels are set to track in the row centers, between the raised seed beds. Tire position will determine flail height, but depth of furrow is also a factor in setting flail height. In some conditions the furrow between the seed beds is deeper on the ends, where irrigation waters enter the field. As furrows change depth, flail height will change.

To compensate for the depth change, move the trailing wheels against the side of the outer seed bed (see Figure 19). The wheels will then tend to climb up the side of the seed bed and prevent the flails from hitting the top of the bed.

Set the flail height after the wheels have been moved against the seed bed.

Adjust wheel position by moving spindle to different hole location in spindle holder tube.

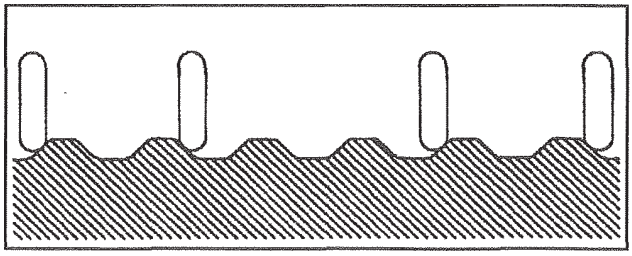


Figure 19. Wheel Position

STARTING THE TRACTOR

1. Run tractor engine at low idle.
2. Slowly engage PTO control to start the shredder.
3. Slowly bring tractor engine to rated PTO speed. Never exceed rated speed.

STOPPING THE TRACTOR

WARNING

- **Before dismounting power unit or performing any service or maintenance, follow these steps: disengage power to equipment, 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.**

1. Slowly decrease engine speed to low idle.
2. Slowly disengage PTO clutch. The overrunning clutch will allow the shredder to freewheel down.
3. Restart the unit only after the drums quit turning The PTO will not need to be disengaged to lift the unit on the ends or while turning.

HAZARD AREA

WARNING

- **Make certain all movement of equipment 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, and other debris and throw it out with enough force to severely injure bystanders.

Keep out of shaded area shown in Figure 20.

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

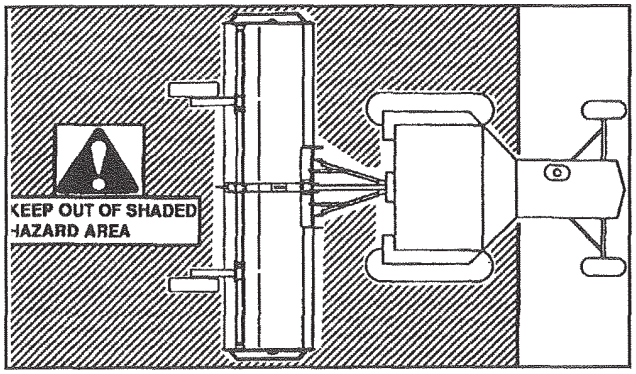


Figure 20. Hazard Area

GROUND SPEED

Travel speed can vary between 3 and 8 mph (5 and 13 kmph) depending on the bulk of residue and terrain conditions. The operator is responsible for noting the condition of the work, setting the speed to obtain a quality shredding job and maintaining control of the unit.

Speed may be increased if shredding quality is good.

Decrease speed if trash is left standing or if some is not picked up.

TURNING

3-Point mounted units:

Always raise the unit slightly to lift rear wheels off the ground before turning. This will eliminate side loads on the wheel assembly.

Pull-type units:

The front universal joint is equipped with a CV (Constant Velocity) joint to allow for turning. Although the CV joint allows for sharper turns than a regular driveline, it does have limitations, as shown in Figure 21.

CV joint angle should not exceed 80 degrees in either operating or standstill condition of the drive-line. 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.**

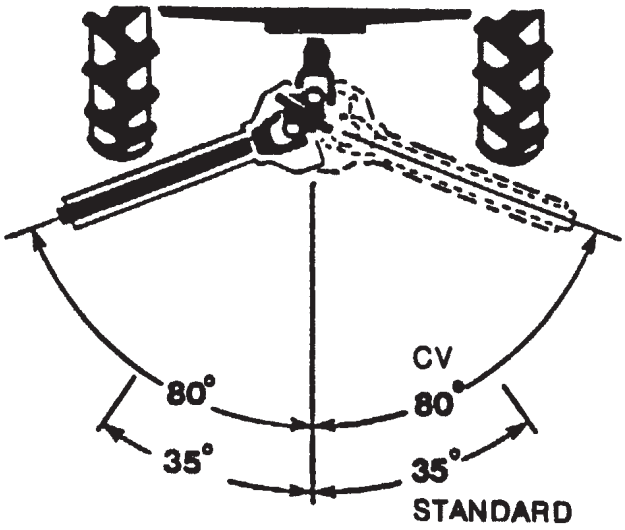


Figure 21. CV Joint Angles

ADDITIONAL EQUIPMENT

End Tow Kit *(Optional)*

An optional end tow kit (Figure 22) can be added to longer units for ease of travel on roads.

Figure 22. End Tow Installed

Front Shield Flap

All units are equipped with front shield flaps (Figure 23) along the front of the frame. The shield flaps stop or deflect any trash, stones or other debris picked up by the flails.

Be sure the shield flaps are in good condition for operation. Replace if damaged, torn or missing.

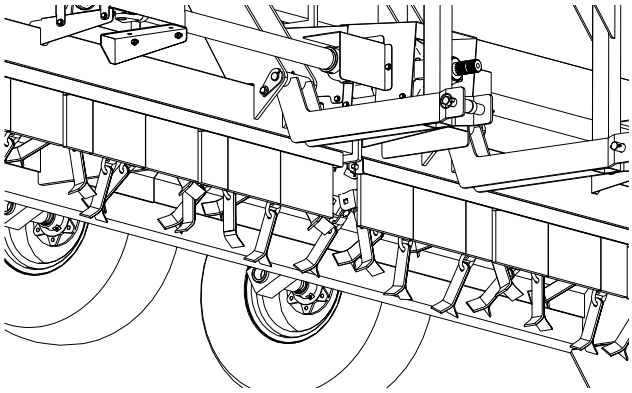


Figure 23. Front Shield Flap

End Guards & Skids

All units are equipped with end guard skids (Figure 24) to prevent flying debris or flail-to-ground contact.

WARNING

- **Replace damaged or missing skids immediately.**

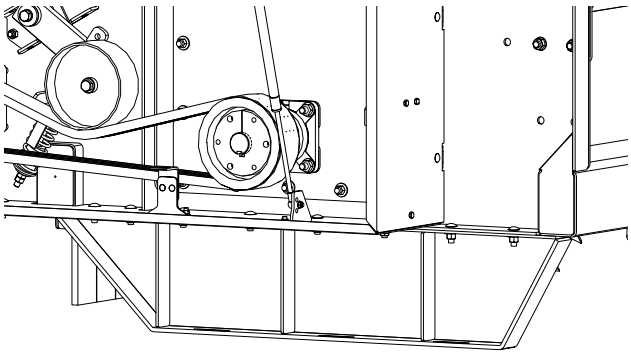


Figure 24. Skids

STORAGE

WARNING

- **Block equipment securely for storage.**
- **Keep children and bystanders away from storage area.**

At the end of the season, the shredder should be thoroughly inspected and prepared for storage. Repair or replace any worn or damage components to prevent unnecessary down time at the beginning of the next season.

To ensure a long, trouble-free life, prepare the unit for storage by carrying out the following procedure:

1. Clear the area of bystanders, especially children.
2. Thoroughly wash the unit, using a pressure washer to remove all dirt, mud, debris and residue.
3. Inspect the flails and rotors for damage or entangled material. Remove entangled material. Repair or replace damaged parts.
4. Inspect all hydraulic hoses, lines, couplers and fittings. Tighten loose fittings. Replace any hose that is cut, nicked, abraded or separating from the crimped end of a fitting.
5. Change gearbox oil.
6. Lubricate all grease fittings. Make sure all grease cavities have been filled with grease to remove any water residue remaining from pressure washing.
7. Touch up all paint nicks and scratches to prevent rust.
8. Move to storage area. Select a dry area free of debris. Store in an area away from human activity.
9. Unhook from tractor (see Removing the Shredder from the Tractor, page 19).
10. Place safety stands or large blocks under the frame to take the load off the tires.

NOTE: Do not deflate tires.

11. If the unit cannot be placed indoors, cover with a waterproof tarpaulin and tie securely. Store away from human activity
12. Do not allow children to play on or around the stored unit.

SERVICE & MAINTENANCE

WARNING

■ **Before dismounting power unit or performing any service or maintenance, follow these steps: disengage power to equipment, 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.**

■ **Before working under unit, read manual instructions, securely block up and check stability. Secure blocking prevents equipment from dropping due to hydraulic leak-down, hydraulic system failure or mechanical component failure.**

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

■ **Make sure shields and guards are properly installed and in good condition. Replace if damaged.**

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

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. Use 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 33), to keep a record of all schedualed maintenance.

1. Grease

Use an SAE multi-purpose high-temperature grease with extreme pressure (EP) performance or SAE multi-purpose lithium-based grease.

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 32), to keep a record of all schedualed 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 and repair broken fittings immediately.

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

LUBRICATION SCHEDULE

NOTE: Recommendations are based on normal operating conditions. Severe or unusual conditions may require more frequent lubrication or oil changes. Refer to Figure 26.

Daily or every 8 hrs of operation:

PTO Driveline: Lubricate daily or every 8 hours of operation (every 4 hours if U-joints run at angles). See Figure 25 for lubrication points.

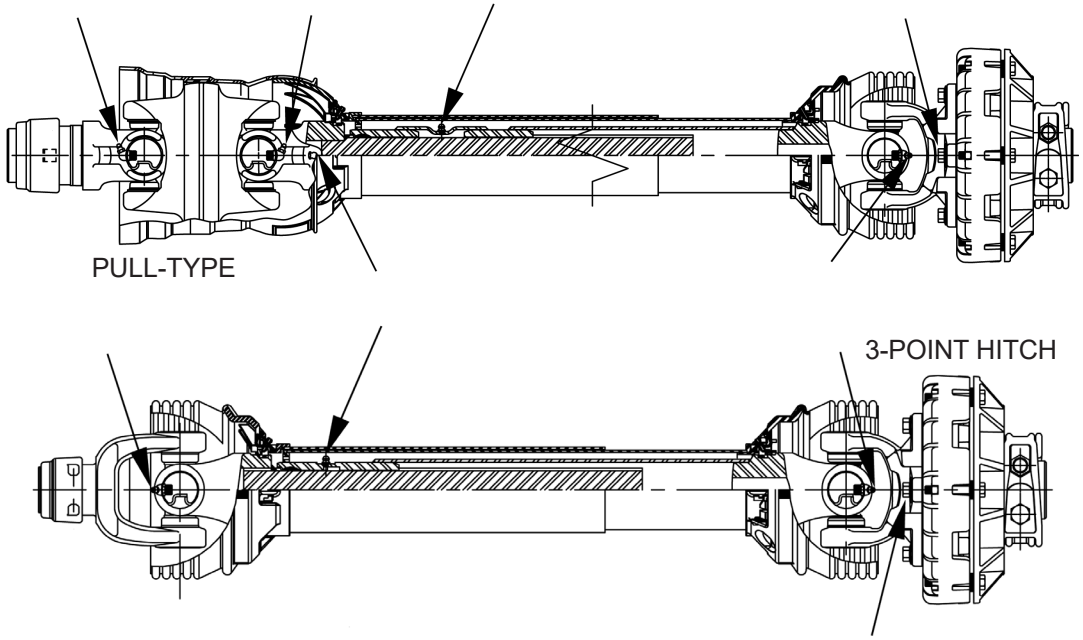
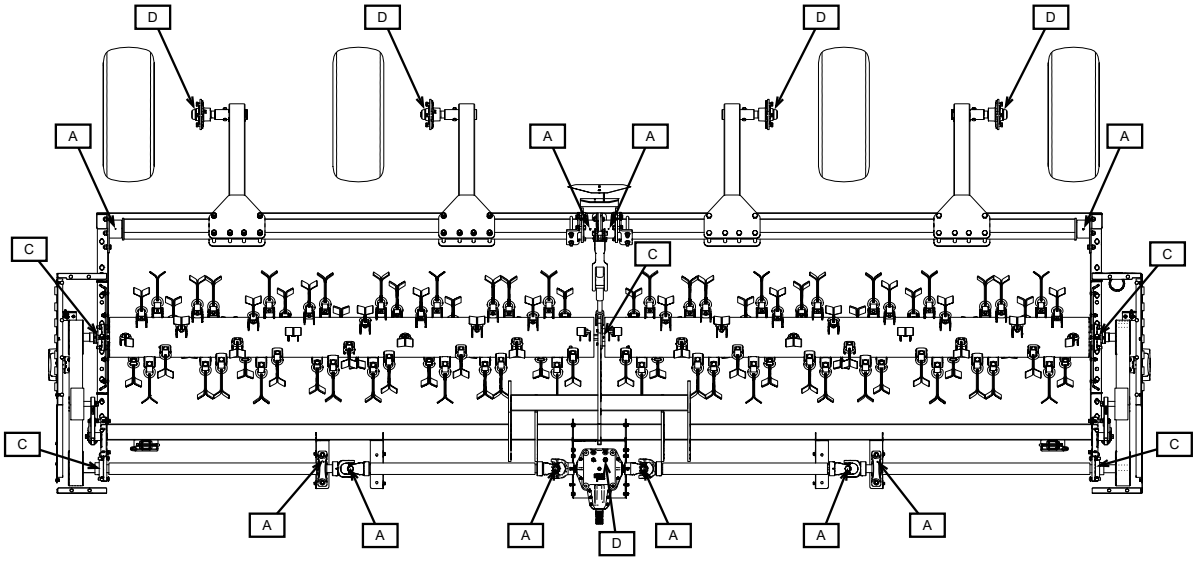


Figure 25. PTO Driveline Lubrication Points



A. Daily or 8 hours
B. 25 hours
C. 40 hours
D. Annually

Figure 26. Lubrication Points

Daily or every 8 hrs of operation:

1. Check gearbox daily or every 8 hours of operation. See Figure 27 for gearbox oil fill location

2. Lubricate CV PTO portion daily or every 8 hours of operation (every 4 hours if U-joints run at angles). See Figure 25 for lubrication points.

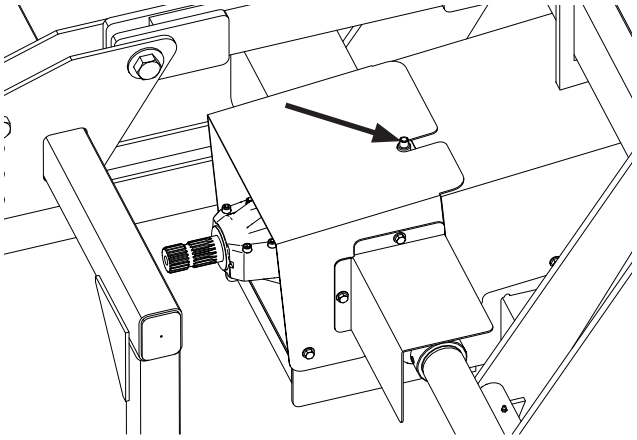


Figure 27. Gearbox Oil Fill/Dipstick Location

Every 25 hrs of operation:

1. Lubricate PTO driveline telescoping section (1 location, Figure 25).
3. Lubricate Rockshaft pivots (4 to 8 locations). See Figure 29.

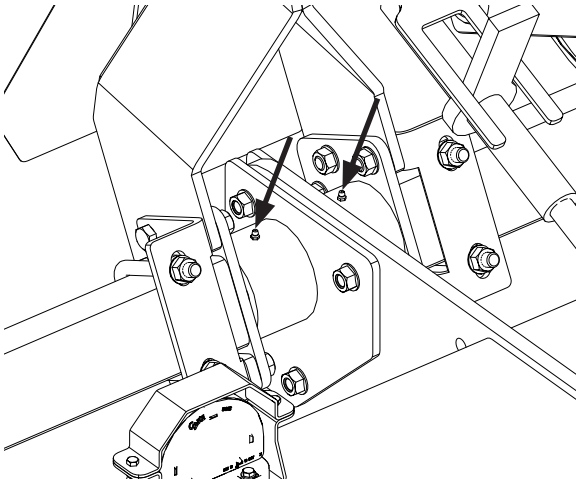


Figure 29. Rockshaft Pivot Lubrication Points

Every 40 hrs of operation:

1. Lubricate rotor end (Figure 28) and center bearings under the unit.

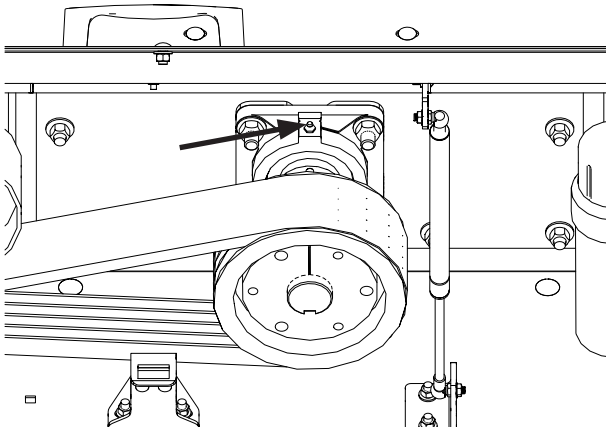


Figure 28. Rotor End Bearing Lubrication Point

Annually

1. 1. Change gearbox oil. Refill with SAE 85W90 gear oil. See Figure 30.

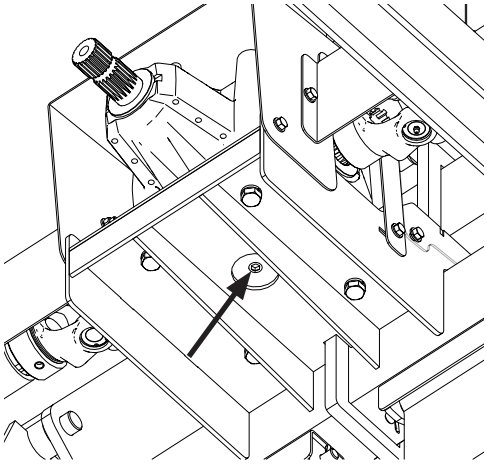


Figure 30. Gearbox Oil Drain Location

2. Repack wheel bearings. See Figure 31.

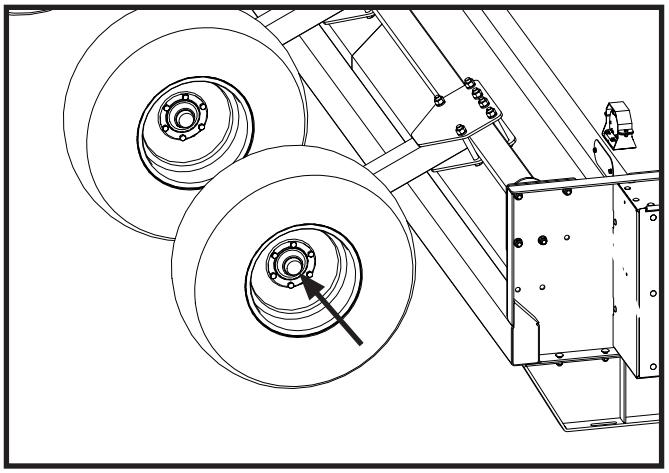


Figure 31. Wheel Bearings

3. Lubricate ratchets as necessary (2 locations each ratchet). See Figure 32.

Figure 32. Ratchet Lubrication Points

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

Date:	Serviced By:	8 Hours or Daily						25 Hours		40 Hours		Annually		
		L PTO Driveline	✔ Gearbox Oil Level	L PTO Driveline (Telescope Section)	L U-Joint	L Rockshaft Pivots	L Overrunning Clutch	L	L Wheel Mounting Tube Bearings	L Rotor End Bearing	L Rotor Inner Bearing	C Gearbox Oil	R Wheel Bearings	L Ratchets

ACCEPTABLE OIL LEAKAGE FROM GEARBOX

Not all gearbox oil leakage or seepage is serious.

IMPORTANT

- **Gearbox oil seepage is acceptable if**

1. **Oil covers less than a 3-inch diameter area around the shaft seal area (see Figure 33).**

2. **Oil covers 4 inches around the vent or drain plugs (see Figure 33).**

If oil covers an area larger than that described in 1 & 2, do the following:

a. **Check gearbox oil level. If it is low, fill to proper level.**

b. **Clean oily area of gearbox. Use a degreaser to remove all oil.**

c. **Closely monitor gearbox for 10 hours of operation. Check oil level often.**

d. **If after 10 hours of operation oil covers less than area described in 1 & 2 above, leakage is acceptable.**

NOTE: Warranty only covers oil leakage that is in excess of above limits.

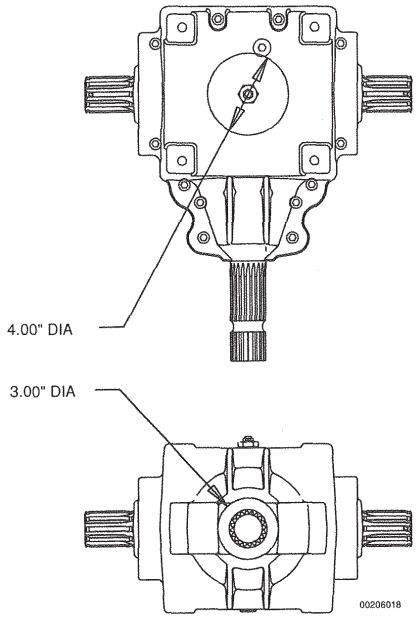


Figure 33. Acceptable Oil Leakage

CHANGING GEARBOX OIL

Although gearbox oil last a long time, dust, dirt and moisture can enter through the breather during operation. These contaminants must be removed annually to ensure a long life for working components. In very dusty or dirty conditions, change the oil twice annually.

1. Clear area of bystanders, especially children.

2. Shut off tractor, place all controls in neutral, set parking brake, remove key and wait for all moving parts to stop.

3. Raise the unit to provide access to bottom of gearbox. Place safety stands or large blocks under frame.

4. Disconnect PTO driveline and hydraulic lines.

5. Place a pan under drain plug. Remove drain plug and dip stick plug (see Figure 34).

6. Allow gearbox to drain for 10 minutes.

NOTE: To remove the most contaminants, drain oil when gearbox is hot.

7. Re-install and tighten drain plug.

8. Dispose of used oil in an approved container.

9. Add SAE 85W90 gear oil through the dip stick cover. Use the dip stick to check the oil level (Figure 35) and add oil accordingly.

10. Re-install and tighten fill plug.

11. Reconnect PTO driveline and hydraulic lines.

12. Remove blocks or safety stands.

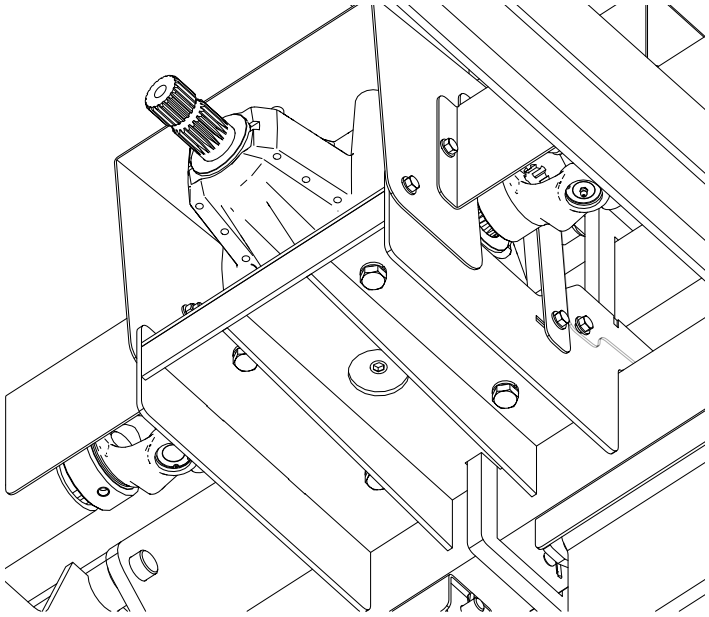


Figure 34. Drain Plug (underside of unit)

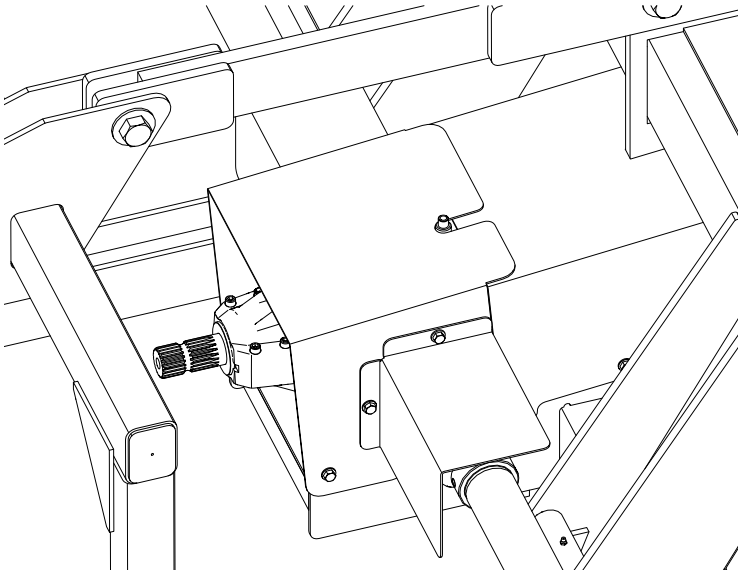


Figure 35. Dipstick Location

SETTING RATCHETS

Mechanical ratchets provide height setting for the unit. To set ratchets, follow this procedure:

1. Clear the area of bystanders, especially children.
2. Turn the turnbuckle to achieve the desired ratchet length (see Figure 36).
3. Repeat Step 2 with other ratchets.

WHEEL SPACING

The rear wheels can be adjusted for alignment with crop rows.

1. Clear the area of bystanders, especially children.
2. Shut off tractor, place all controls in neutral, set parking brake, remove key, and wait for all moving parts to stop.
3. Use a jack with sufficient capacity to lift the frame.
4. To determine wheel spacing, measure from the center line of the unit. Mark positions on the frame.
5. Lift frame until wheels have cleared the ground.
6. Place safety stands or large blocks under the frame.

ROCKSHAFT

1. Loosen mounting bolts on one wheel assembly.
2. Slide assembly along the rockshaft to new position (see Figure 38).
3. Tighten mounting bolts to specified torque level.
4. Remove safety stands or blocks.
5. Lower and remove jack.
6. Repeat with other wheel assembly.

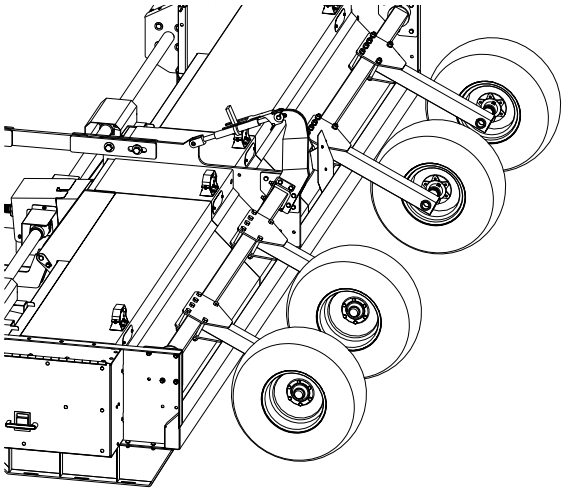


Figure 36. Positioning Wheel Assembly

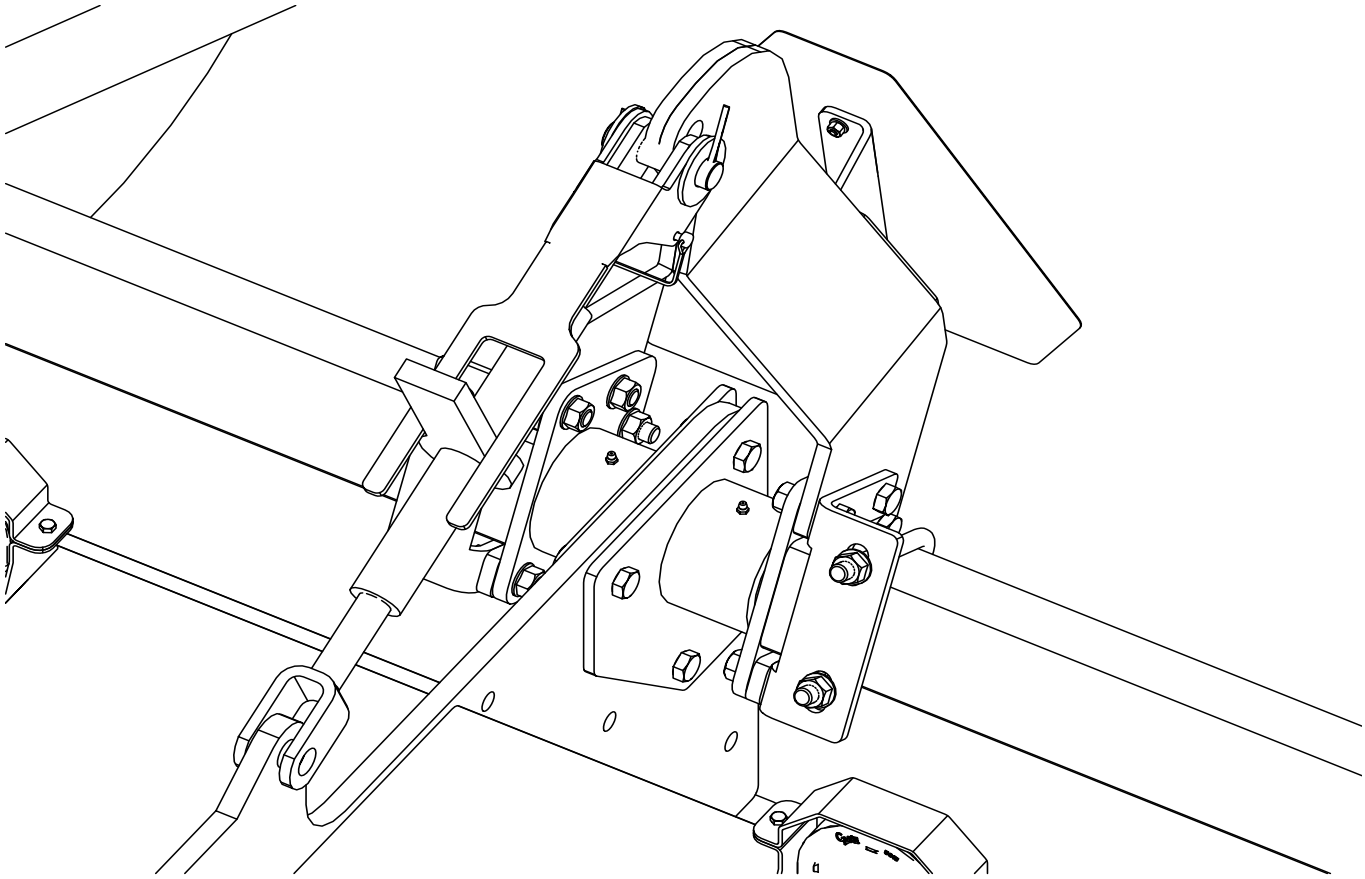


Figure 37. Rockshaft Assembly

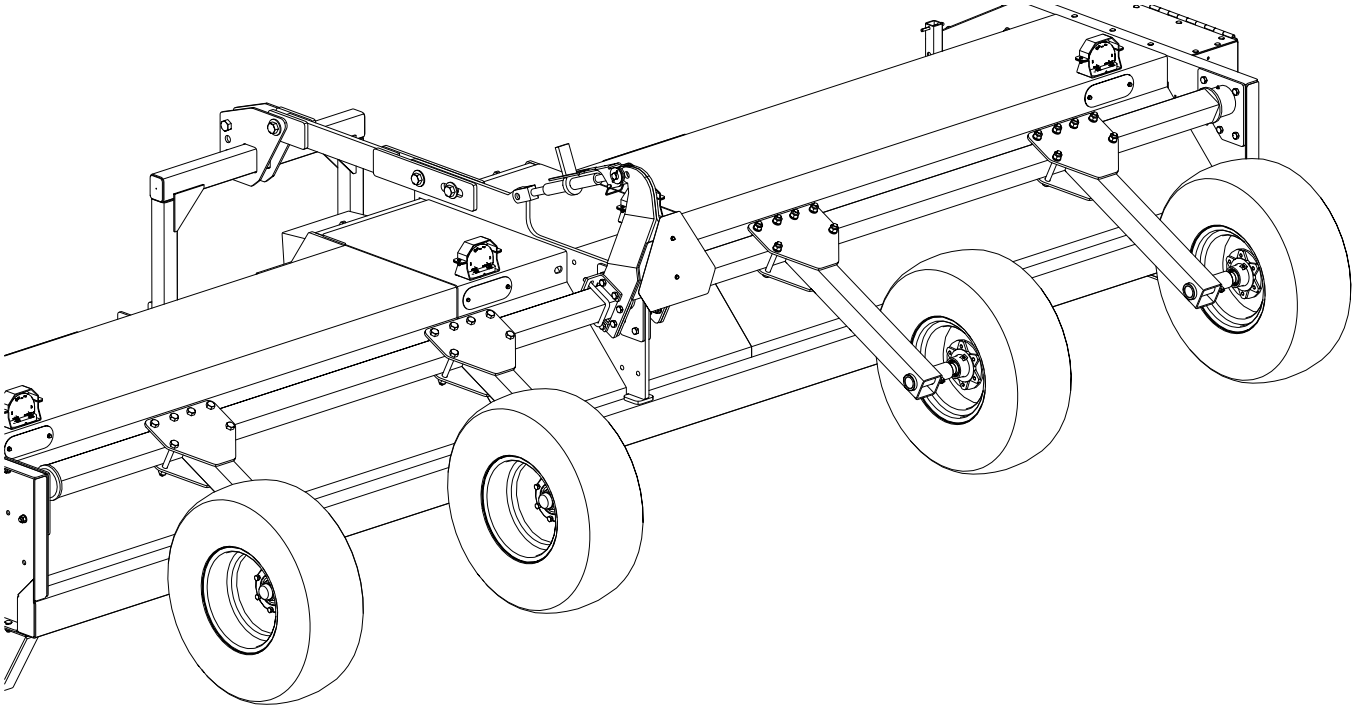


Figure 38. Rockshaft Assembly

REPLACING FLAILS "L" KNIFE W/ D-RING

CAUTION

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

The flails swing on D-rings, which are sandwiched between clips and mounted to the flail tube with bolts. Regularly inspect the flails for wear or damage. To replace worn or damaged flails, follow this procedure:

1. Clear the area of bystanders, especially children.
2. Shut off tractor, place all controls in neutral, set parking brake, remove key, and wait for all moving parts to stop.
3. Disconnect driveline and hydraulic lines from the tractor.
4. Place safety stands or large blocks under the frame.
5. Loosen and remove the mounting bolt on the worn flail and its opposite on the other side of the rotor. Discard worn flails and their mounting hardware.
6. Replace with new flails and and mounting hardware (see Figure 39).

IMPORTANT

- **To maintain rotor balance, always replace opposite pairs of flails and mounting hardware.**

7. Tighten flail mounting bolt to its specified torque.
8. Replace additional worn flails following Step 5 and Step 6.
9. Remove safety stands or blocks from under frame.
10. Lower unit and remove jack.
11. Attach driveline and hydraulic lines to tractor.

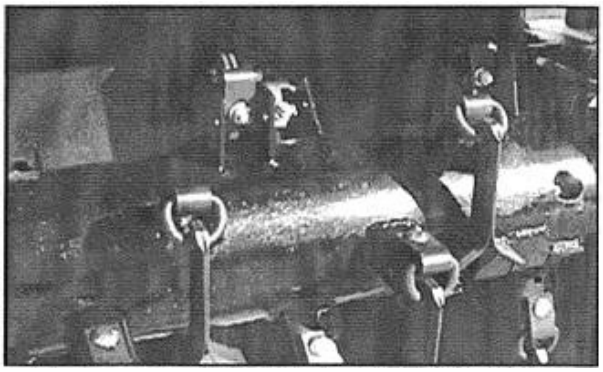


Figure 39. Flail Replacement

REPLACING RUBBER SHIELD FLAPS

Rubber shield flaps on the front of the unit deflect or prevent stones or debris from being ejected when operating unit. Replace if damaged or missing to provide a safe work environment. To replace, follow this procedure:

1. Clear the area of bystanders, especially children.
2. Lower the unit to the ground, place all controls in neutral, shut off engine, set park brake, remove key, and wait for all moving parts to stop before dismounting.

NOTE: For 3-point hitch units, unhook to gain access to center flaps.

3. Remove the cotter pin from the end of the flap rod and pull rod until the flap comes off.
4. Install new shield flap.
5. Push rod through flaps and re-install cotter pin.

NOTE: Use only genuine Alloway parts when replacing flaps.

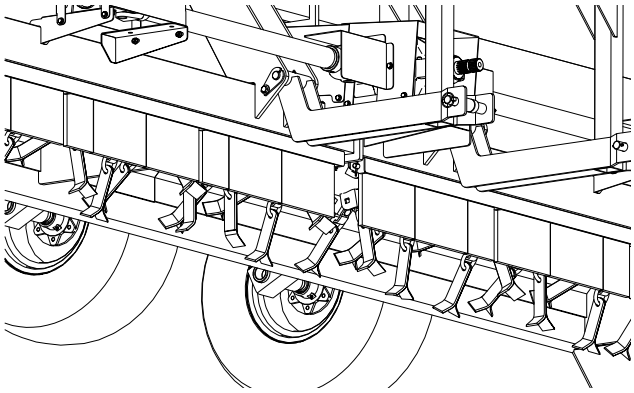


Figure 40. Front Rubber Shield Flaps

SERVICING ROTORS

The shredder rotors are dynamically balanced from the factory and should be maintained to keep them in balance and to prevent excessive wear on drive components.

IMPORTANT

- **Any vibration caused by missing knives or worn drive components can cause excessive damage to the shredder. Vibration is also transmitted through the PTO shaft to the tractor and will damage tractor**

When servicing rotors, follow this procedure:

1. Clear the area of bystanders, especially children.
2. Shut off tractor, place all controls in neutral, set park brake, remove key, and wait for all moving parts to stop.
3. Disconnect unit from the tractor.
4. Remove the PTO driveline from the unit.
5. Remove wheel arms.
6. Use a hoist, crane, or a frame of sufficient capacity to raise the front of the unit and allow back of unit to rest on a solid surface.
7. Leave lifting device attached while working on rotors to prevent tipping.
8. Remove knives. Wear heavy canvas or leather gloves to protect your hands.

CAUTION

- **Use a suitable lifting device of sufficient capacity. Use adequate personnel to handle heavy components.**

Removing components:

1. With unit raised (Step 6), support each end of rotor with crane or hoist.
2. Remove bearing locking collar (see Figure 41).
3. Remove 14 bolts holding bearing plate to body assembly.
4. Slide rotor out to disengage from the center bearing.
5. Check drive bearings for wear and replace if necessary.

Replacing components:

6. Insert stub shaft through end plate hole and locking collar bearing.
7. Install bearing plate bolts and tighten to specified torque.
8. Fasten locking collar and add grease to the bearing.

IMPORTANT

- **To keep drive hub bolts from loosening, use Loctite No. 271 or equivalent and special Hi-Collar lock washers.**

9. Re-install locking collar and tighten in the direction of rotation (see Figure 42).

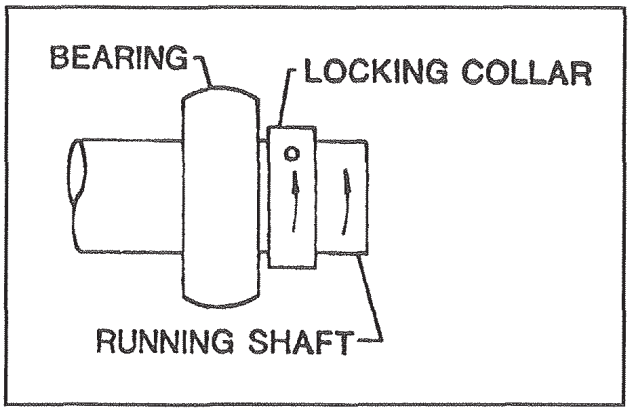


Figure 41. Locking Collar

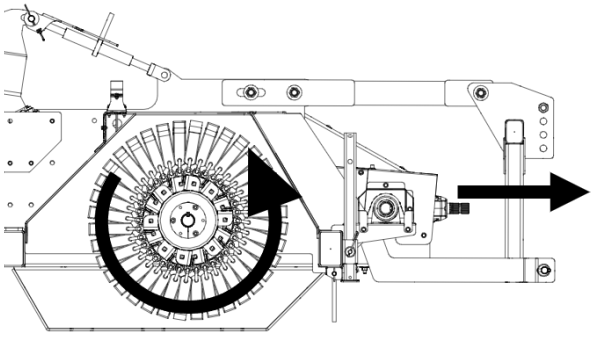


Figure 42. Rotor Direction of Rotation

REPLACING STUB SHAFT

1. Remove rotor (see Servicing Rotors, page 38).
2. Remove three 1/2 x 2-1/2 hex bolts in taper lock hub and re-install bolts in three threaded holes (see Figure 43 and parts on page 60 - 61).
3. Tighten bolts evenly to release taper lock hub from stub shaft.

NOTE: You may have to give a sharp blow directly to each bolt head to help the hub disengage.

4. Unscrew stub shaft from the rotor tube.
5. Install new stub shaft, reversing Steps 1-3.

SERVICING WEASLER MODULAR FRICTION CLUTCH

Tools Required

- 3/4” Socket wrench
- 8” Minimum C-clamps (2)
- 1/4” Hex Allen wrench
- Regular screwdriver or punch
- Duct tape or locking pliers with 3” throat minimum
- Hammer
- 1/2” sq. to 1”sq. barx 9”
- Scale or Vernier

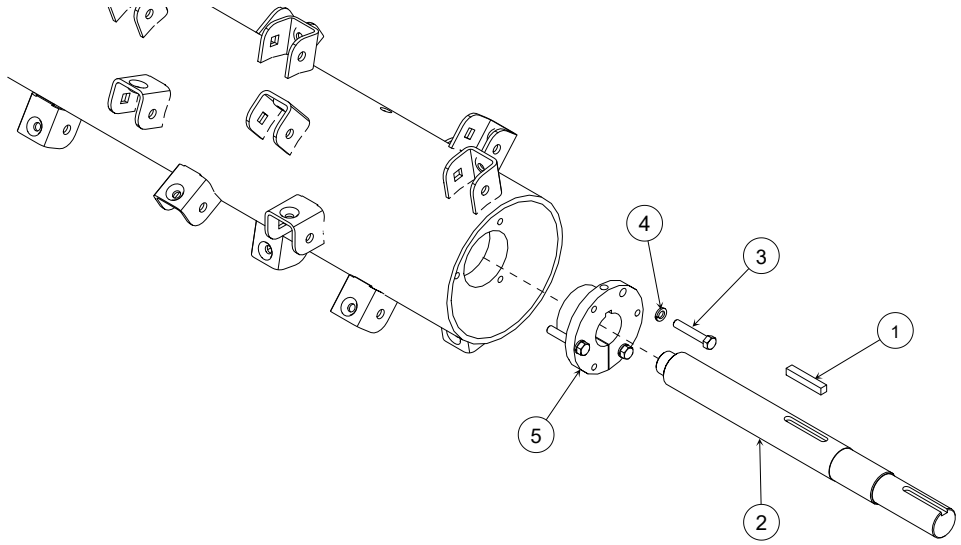


Figure 43. Stub Shaft Assembly

Breaking in the Clutch (Run In)

NOTE: All new clutches must be broken in (Run in) and any clutch that has not been used for approximately 60 days.

1. Shut off tractor and disengage PTO.
2. Disconnect driveline from the tractor PTO shaft.
3. Loosen the bolts on the outside diameter of the clutch until all bolts are just loose, then tighten all bolts 1/2 turn.
4. Attach the shredder to the tractor and the driveline to the tractor PTO. Stand clear of the unit.
5. Start tractor. Engage PTO clutch and run for a few seconds or until clutch visibly smokes.
6. Disengage PTO. Shut off tractor. Disconnect driveline from the tractor.
7. Tighten all bolts on the outside diameter of the clutch until the compression plate is tight against the housing.
8. Grease the fitting on the yoke, using Shell Super Duty or an equivalent lithium grease.
9. For an integral overrunning clutch, make sure clutch turns freely in one direction.

Removing the Driveline

1. Shut off tractor and disengage PTO.
2. Disconnect driveline from PTO shaft.
3. Remove the clamp bolts attaching the clutch to the shredder's input shaft.

NOTE: The shaft is heavy. Provide adequate support to prevent dropping shaft or personal injury.

4. Grasp the clutch firmly with both hands and slide off the input shaft.

Rebuilding Friction Pack

Disassembly

1. Position clutch and universal joint assembly on a bench so that end is accessible.
2. Remove the long bolts on the outside of the housing that hold the friction pack together.
3. Remove the plate(s) and all internal components. Leave the yoke/hub intact.
4. Discard friction discs.
5. If rebuilding the overrunning clutch, refer to Rebuilding Overrunning Clutch, page 41, beginning with Step 2.

Inspection

6. Inspect the steel and iron parts for wear, warp ing, or cracks, and replace if necessary.
7. Inspect the yoke/hub for looseness. If there is more than .03 end play, replace.
8. Clean any rust or dust from the plate surfaces with a wire brush or steel wool.

Assembly

9. Into housing place one new friction disc, then separator plate, then second friction disc.
10. Add the pressure plate so that the flat surface rests on the friction disc. **NOTE:** The tangs on the plate must fall into the reliefs in the housing.
11. Add the disc spring so that its inside diameter contacts the fins of the pressure plate.
12. Assemble the compression plate and all the long bolts. Make sure all nuts rest in their pockets.
13. Tighten all long bolts to 30 lbs.-ft.

Rebuilding Overrunning Clutch

Disassembly

1. Remove the four bolts that secure the friction pack. Remove the friction pack.
2. Using screwdriver and pliers, remove the retaining ring that holds the overrunning clutch together.
3. Slide the collar and washer off the clutch hub, noting the orientation of the collar for reinsertion.
4. Remove and discard the keys and leaf springs.

Inspection

5. Inspect the steel parts for wear and replace if necessary.
6. Inspect the yoke/hub for looseness. If there is more than .03 end play, replace.
7. Using screwdriver, scrape any hardened grease from the overrunning key pockets.

Assembly

8. Using Shell Super Duty grease or equivalent, inject one grease gun pump into each key pocket. Evenly wipe two more pumps over the overrunning surface.
9. Press a new leaf spring into each pocket. The ends should touch the bottom of the pockets.
10. Add new keys. With one hand, hold the two keys in the pockets.
11. Slide the collar onto the hub, orienting collar correctly.
12. Add washer.
13. Install retaining ring.
14. Make sure clutch spins freely and only in correct direction.
15. Reassemble friction pack.

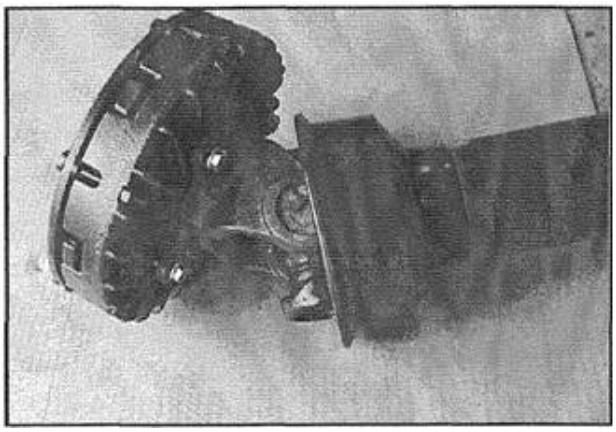


Figure 44. Weasler Modular Friction Clutch

MOUNTING CLUTCH ONTO SHREDDER

1. Mount and bolt the clutch hub onto the shredder input shaft. Make sure shaft and clutch grooves line up.
2. Re-install any shielding that was moved or removed.
3. Run the clutch before using. Refer to Breaking in the Clutch (Run In), page 40.

TROUBLE SHOOTING

The Alloway End Drive Shredder uses swinging flails to pick up and shred crop residue left in the field. 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
Shredder doesn't track	Poor wheel spacing	Set wheels in center of crop rows
	3 Point not set	Set 3-point hitch in non-sway position
	Shredder not level	Level shredder (see Set Operating Height, page 23)
	Irrigation furrows not even	Set wheels against seed bed (see Setting Outer Trailing Wheels, page 26)
Shredder doesn't follow ground contour	3 Point not set	Set 3 point in float position See tractor manual to set Load Sensing hydraulic system
	Shredder too high	Set shredder closer to ground
	Irrigation furrows not even	Set wheels against seed bed
Shredder vibrates	Driveline doesn't telescope	Remove, disassemble, and clean telescoping joint
	Rotor out of balance	Replace damaged or broken flails and flails 180 degree opposite Check for missing balance weights or rebalance
Debris being thrown out from under shredder	Shredder set too low	Raise shredder
	Knives excessively worn	Replace knives
	Rubber shields missing	Replace flaps immediately
Crop residue left	Travelling too fast	Slow travel speed
	Shredder too high	Lower shredder
	Improper flails	Change flails
	Crop residue strip left in shredder center	Add center cutter or divider

ASSEMBLY

WARNING

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

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

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.**

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 that all operating and service personnel know that if 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.**

■ **Check that all hardware is properly installed. Always tighten to torque chart specifications unless instructed otherwise in this manual.**

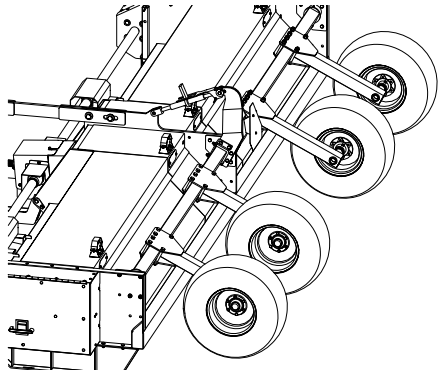


Figure 45. Wheel Assembly Installed

WARNING

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

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.**

■ **Use a suitable lifting device of sufficient capacity. Use adequate personnel to handle heavy components.**

1. Open the crate and cartons containing the attaching components and mounting hardware.
2. Use the packing list to check that all parts have been shipped.AAV
3. Raise the rear of the unit.
4. Place safety stands or large blocks under the frame.
5. Measure the wheel spacing from the center of the unit. Mark the frame.
6. Install the wheel assembly to the mounting tube (Figure 45). Offset struts may be required (see Wheel Assembly parts starting on page 58).
7. Tighten mounting bolts to their specified torque.
8. Install PTO driveline by sliding the yoke with the slip clutch over the input shaft (Figure 46).
9. Tighten mounting bolts to specified torque.
10. Install front parking stands, using pin.

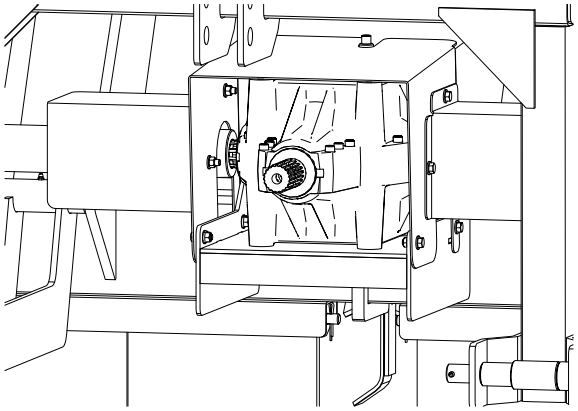


Figure 46. Gearbox Input Shaft

Pull-Type Hitch:

1. Mount hitch to frame using pins and bolts.
2. Install ratchet. Be sure to install retaining pins.
3. Attach Ear Plate to upper tube using U-Bolts and hardware provided.
4. Attach clevis to hitch, using 1-1/4” pin and 3/8 x 3-1/2” cotter pins.
5. Attach tow chain to hitch. See Figure 47 for completed assembly.

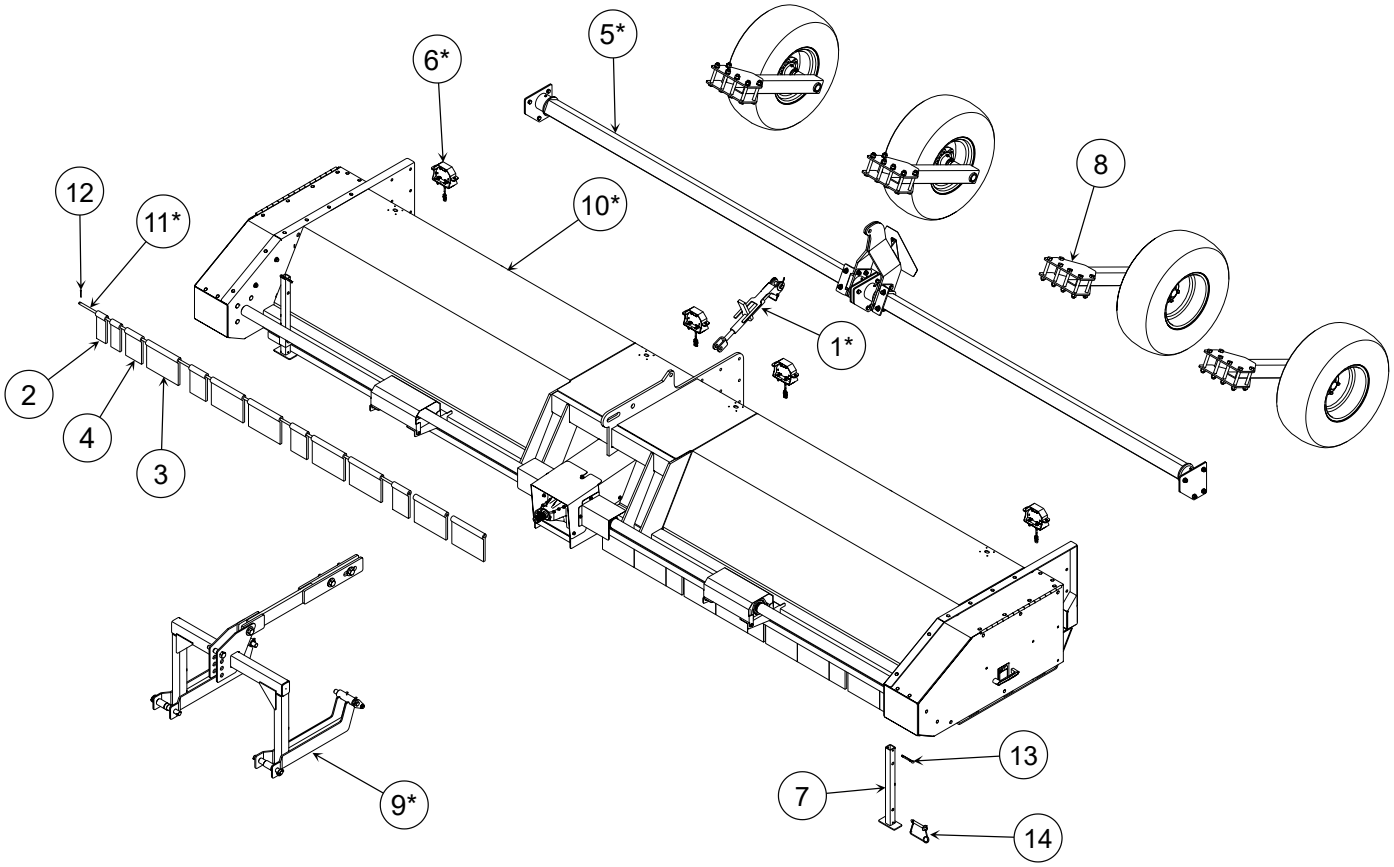
Figure 47. Pull-type Hitch Installed

ALLOWAY

PARTS INDEX

END DRIVE SHREDDER

END DRIVE SHREDDER
MAIN
(COMPONENTS DRAWING)

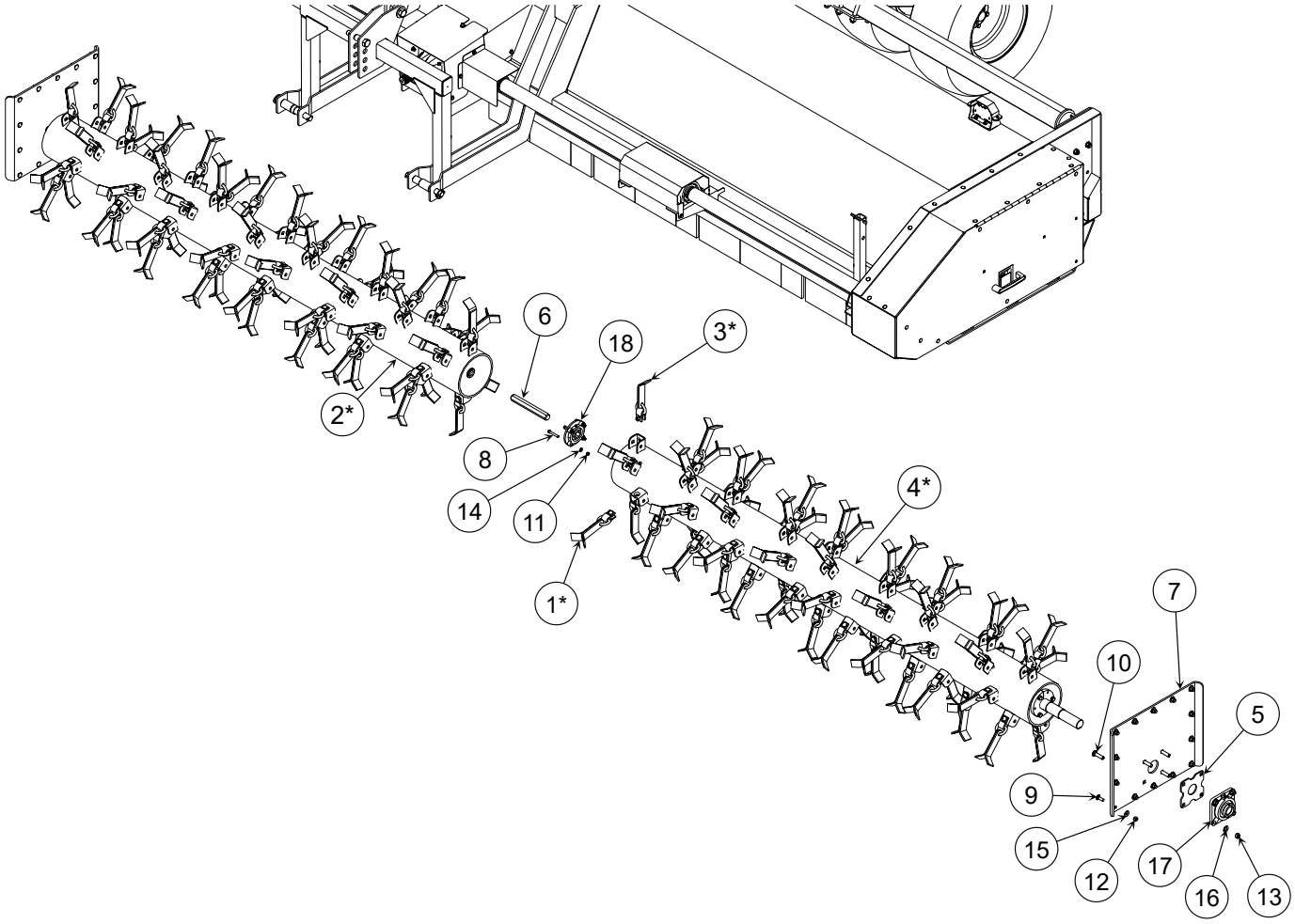


*OPTIONS AVAILABLE

END DRIVE SHREDDER
MAIN
(COMPONENTS BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1-1	500-1-0014	KIT, CARTON REAR STRUT RATCHET	1/2
1-2	507-1-0203	KIT, HYDRAULIC LIFT SHREDDER 12-25FT	1
1-3	507-1-0204	KIT, HYDRAULIC LIFT SHREDDER 27FT	1
2	505-3-0868	FLAP SHIELD 3-1/2"	-
3	505-3-1089	FLAP SHIELD 12"	-
4	505-3-1097	FLAP SHIELD 6"	-
5-1	507-1-0151	ASSY, ROCKSHAFT - 12'	1
5-2	507-1-0123	ASSY, ROCKSHAFT - 15'	1
5-3	507-1-0202	ASSY, ROCKSHAFT - 16'	1
5-4	507-1-0152	ASSY, ROCKSHAFT - 18'	1
5-5	507-1-0153	ASSY, ROCKSHAFT - 20'	1
5-6	507-1-0154	ASSY, ROCKSHAFT - 22'	1
5-7	507-1-0155	ASSY, ROCKSHAFT - 24'	1
5-8	507-1-0156	ASSY, ROCKSHAFT - 25'	1
5-9	507-1-0157	ASSY, ROCKSHAFT - 27'	1
6-1	507-1-0182	KIT, LIGHT SHREDDER END 12'-18'	1
6-2	507-1-0183	KIT, LIGHT SHREDDER END 20'-22'	1
6-3	507-1-0184	KIT, LIGHT SHREDDER END 24'-27'	1
7	507-2-0021	WELD, PARKING STAND	2
8	507-2-0519	ASSY, REAR STRUT SINGLE ROCKSHAFT	2/4
9-1	507-2-0810	ASSY, END DRIVE 3 PT	1
9-2	507-1-0199	ASSY, END DRIVE PULL	1
10-1	507-2-0865	BODY WELD, END DRIVE - 12'	1
10-2	507-2-0866	BODY WELD, END DRIVE - 15'	1
10-3	507-2-0902	BODY WELD, END DRIVE - 16'	1
10-4	507-2-0867	BODY WELD, END DRIVE - 18'	1
10-5	507-2-0868	BODY WELD, END DRIVE - 20'	1
10-6	507-2-0869	BODY WELD, END DRIVE - 22'	1
10-7	507-2-0870	BODY WELD, END DRIVE - 24'	1
10-8	507-2-0871	BODY WELD, END DRIVE - 25'	1
10-9	507-2-0872	BODY WELD, END DRIVE - 27'	1
11-1	507-3-1542	FLAP ROD, SHREDDER - 12' END DRIVE	2
11-2	507-3-1549	FLAP ROD, SHREDDER - 15' END DRIVE	2
11-3	507-3-1497	FLAP ROD, SHREDDER - 16' END DRIVE	2
11-4	507-3-1486	FLAP ROD, SHREDDER - 18' END DRIVE	2
11-5	507-3-1396	FLAP ROD, SHREDDER - 20' END DRIVE	2
11-6	507-3-1550	FLAP ROD, SHREDDER - 22' END DRIVE	2
11-7	507-3-1551	FLAP ROD, SHREDDER - 24' END DRIVE	2
11-8	507-3-1552	FLAP ROD, SHREDDER - 25' END DRIVE	2
11-9	507-3-1553	FLAP ROD, SHREDDER - 27' END DRIVE	2
12	900-23043	PIN, COTTER 3/16 X 1 1/2	4
13	900-23084	PIN, COTTER 3/8 X 3-1/2	2
14	900-42054	PIN, LOCK UP	2

END DRIVE SHREDDER
FLAILS
(COMPONENTS DRAWING)

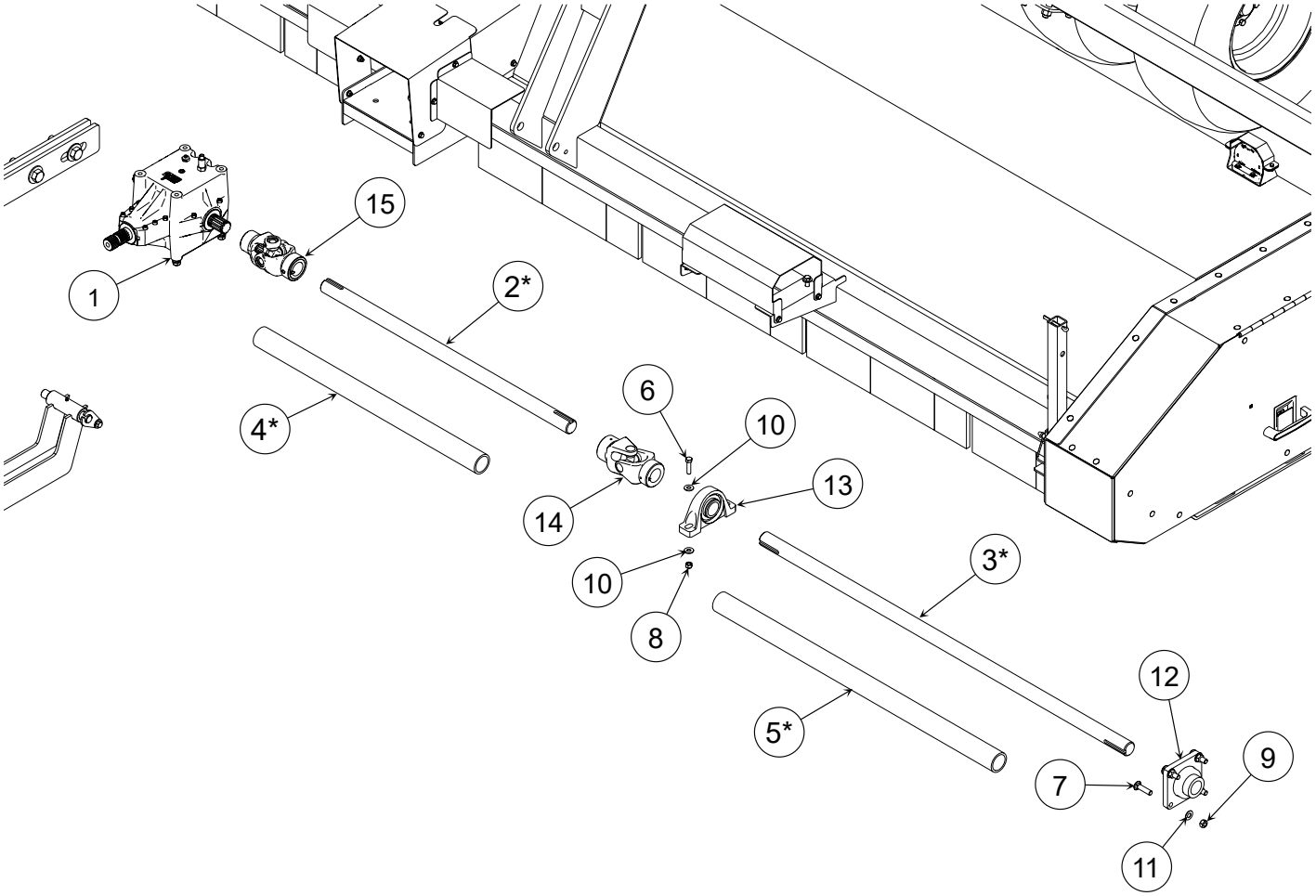


*OPTIONS AVAILABLE

END DRIVE SHREDDER
FLAILS
(COMPONENTS BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1-1	507-2-0358	CLUSTER, L-KNIFE SHREDDER	-
1-2	507-2-0928	CLUSTER, HARDFACED L-KNIFE SHREDDER	-
1-3	507-2-0930	CLUSTER, CUP-KNIFE LONG SHREDDER	-
1-4	507-2-0925	CLUSTER, CUP-KNIFE MEDIUM SHREDDER	-
1-5	507-2-0926	CLUSTER, CUP-KNIFE SHORT SHREDDER	-
1-6	507-2-0931	CLUSTER, COTTON-KNIFE SHREDDER	-
2-1	507-2-0916	WELD, FLAIL TUBE 15' RH END DRIVE	1
2-2	507-2-0907	WELD, FLAIL TUBE 16' RH END DRIVE	1
2-3	507-2-0884	WELD, FLAIL TUBE 18' RH END DRIVE	1
2-4	507-2-0783	WELD, FLAIL TUBE 20' RH END DRIVE	1
2-5	507-2-0920	WELD, FLAIL TUBE 22' RH END DRIVE	1
2-6	507-2-0922	WELD, FLAIL TUBE 24' RH END DRIVE	1
2-7	507-2-0924	WELD, FLAIL TUBE 25' RH END DRIVE	1
2-8	507-2-0941	WELD, FLAIL TUBE 27' RH IS END DRIVE	1
2-9	507-2-0942	WELD, FLAIL TUBE 27' RH OS END DRIVE	1
3-1	507-2-0359	CLUSTER, L-KNIFE END SHREDDER	-
3-2	507-2-0929	CLUSTER, HARDFACED L-KNIFE END SHREDDER	-
3-3	507-2-0932	CLUSTER, COTTON-KNIFE END SHREDDER	-
4-1	507-2-0937	WELD, FLAIL TUBE - 12' END DRIVE	1
4-2	507-2-0915	WELD, FLAIL TUBE - 15' LH END DRIVE	1
4-3	507-2-0908	WELD, FLAIL TUBE - 16' LH END DRIVE	1
4-4	507-2-0885	WELD, FLAIL TUBE - 18' LH END DRIVE	1
4-5	507-2-0782	WELD, FLAIL TUBE - 20' LH END DRIVE	1
4-6	507-2-0919	WELD, FLAIL TUBE - 22' LH END DRIVE	1
4-7	507-2-0921	WELD, FLAIL TUBE - 24' LH END DRIVE	1
4-8	507-2-0923	WELD, FLAIL TUBE - 25' LH END DRIVE	1
4-9	507-2-0939	WELD, FLAIL TUBE - 27' LH IS END DRIVE	1
4-10	507-2-0940	WELD, FLAIL TUBE - 27' LH OS END DRIVE	1
5	507-3-0242	UHMW SEAL PLATE - END BEARING	2
6	507-3-0792	HEX CONNECTING SHAFT	0/1/3
7	507-3-0915	END BEARING PLATE	2
8	900-01121	3/8NC X 2-1/2 HEX BOLT GR 5	0/4/12
9	900-01751	BOLT, CRG, 1/2-13 X 1-1/2, GR5 ZP	28
10	900-01788	CARRIAGE BOLT 5/8 NC X 2-1/2 NC	8
11	900-06500	NUT HEX 3/8 TOP LOCK	0/4/12
12	900-06504	NUT, LOCK, TOP, 1/2-13, GR C ZP	28
13	900-06508	NUT HEX 5/8 UNC TOP LOCK	8
14	900-11033	FLAT WASHER 3/8 ZP	0/4/12
15	900-11035	1/2 FLAT WASHER	28
16	900-11088	WASHER, FLAT, SAE, 5/8, ZP	8
17	901-01386	BEARING - 2.19 4-BOLT ECC. LOCK	2
18	901-01424	1 1/4" STANDARD DUTY PILOTED FLANGE W/ HEX INSERT	0/1/3

END DRIVE SHREDDER
DRIVELINE
(COMPONENTS DRAWING)

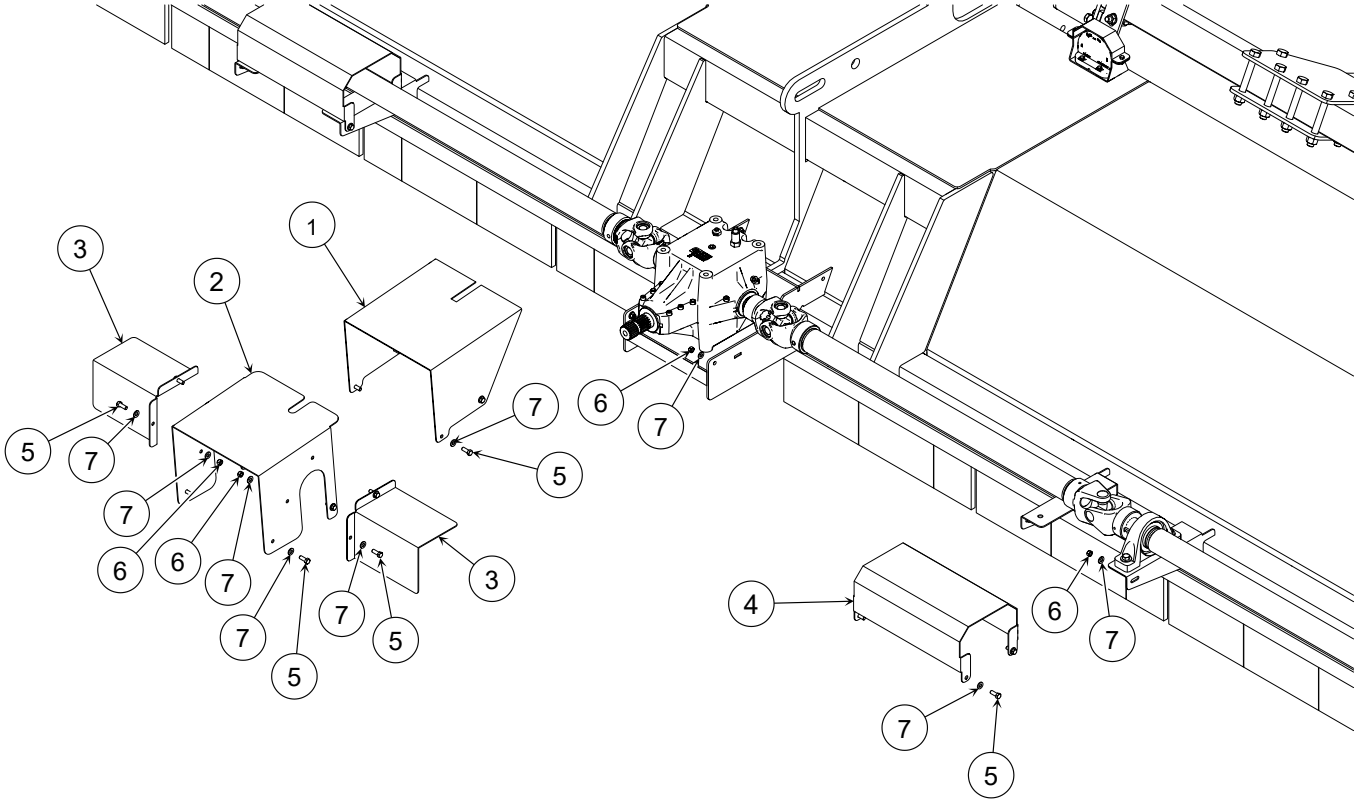


*OPTIONS AVAILABLE

END DRIVE SHREDDER
DRIVELINE
(COMPONENTS BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	507-2-0793	1350 RPM GEARBOX & COUPLER ASSY - END DRIVE	1
2-1	507-3-1501	DRIVE SHAFT, INSIDE - 12' END DRIVE	1
2-2	507-3-1503	DRIVE SHAFT, INSIDE - 15' END DRIVE	2
2-3	507-3-1409	DRIVE SHAFT, INSIDE - 16' END DRIVE	2
2-4	507-3-1409	DRIVE SHAFT, INSIDE - 18' END DRIVE	2
2-5	507-3-1409	DRIVE SHAFT, INSIDE - 20' END DRIVE	2
2-6	507-3-1506	DRIVE SHAFT, INSIDE - 22' END DRIVE	2
2-7	507-3-1508	DRIVE SHAFT, INSIDE - 24' END DRIVE	2
2-8	507-3-1510	DRIVE SHAFT, INSIDE - 25' END DRIVE	2
2-9	507-3-1512	DRIVE SHAFT, INSIDE - 27' END DRIVE	2
3-1	507-3-1504	DRIVE SHAFT, OUTSIDE - 15' END DRIVE	2
3-2	507-3-1499	DRIVE SHAFT, OUTSIDE - 16' END DRIVE	2
3-3	507-3-1487	DRIVE SHAFT, OUTSIDE - 18' END DRIVE	2
3-4	507-3-1434	DRIVE SHAFT, OUTSIDE - 20' END DRIVE	2
3-5	507-3-1507	DRIVE SHAFT, OUTSIDE - 22' END DRIVE	2
3-6	507-3-1509	DRIVE SHAFT, OUTSIDE - 24' END DRIVE	2
3-7	507-3-1511	DRIVE SHAFT, OUTSIDE - 25' END DRIVE	2
3-8	507-3-1513	DRIVE SHAFT, OUTSIDE - 27' END DRIVE	2
4-1	507-3-1515	TUBE, INNER SHIELD 12' END DRIVE	1
4-2	507-3-1517	TUBE, INNER SHIELD 15' END DRIVE	2
4-3	507-3-1518	TUBE, INNER SHIELD 16' END DRIVE	2
4-4	507-3-1435	TUBE, INNER SHIELD 18' END DRIVE	2
4-5	507-3-1416	TUBE, INNER SHIELD 20' END DRIVE	2
4-6	507-3-1522	TUBE, INNER SHIELD 22' END DRIVE	2
4-7	507-3-1524	TUBE, INNER SHIELD 24' END DRIVE	2
4-8	507-3-1526	TUBE, INNER SHIELD 25' END DRIVE	2
4-9	507-3-1528	TUBE, INNER SHIELD 27' END DRIVE	2
5-1	507-3-1516	TUBE, OUTER SHIELD 15' END DRIVE	2
5-2	507-3-1498	TUBE, OUTER SHIELD 16' END DRIVE	2
5-3	507-3-1488	TUBE, OUTER SHIELD 18' END DRIVE	2
5-4	507-3-1435	TUBE, OUTER SHIELD 20' END DRIVE	2
5-5	507-3-1521	TUBE, OUTER SHIELD 22' END DRIVE	2
5-6	507-3-1523	TUBE, OUTER SHIELD 24' END DRIVE	2
5-7	507-3-1525	TUBE, OUTER SHIELD 25' END DRIVE	2
5-8	507-3-1527	TUBE, OUTER SHIELD 27' END DRIVE	2
6	900-01229	1/2-13 X 2 HEX BOLT GRD 5	0/4
7	900-01788	CARRIAGE BOLT 5/8 NC X 2-1/2 NC	8
8	900-06504	NUT, LOCK, TOP, 1/2-13, GR C ZP	0/4
9	900-06508	NUT HEX 5/8 UNC TOP LOCK	8
10	900-11035	1/2 FLAT WASHER	0/8
11	900-11088	WASHER, FLAT, SAE, 5/8, ZP	8
12	901-01008	BEARING - NANFS 211-32 2.00	2
13	901-01142	PILLOW BLOCK BEARING 2"	0/2
14	903-05048	U-JOINT, 44 SERIES 2" X 2" KEYED	0/2
15	903-18495	U-JOINT - 1.75 SPLINED X 2 KEYED 55R	1/2

END DRIVE SHREDDER
CENTER BARRIERS
(COMPONENTS DRAWING)

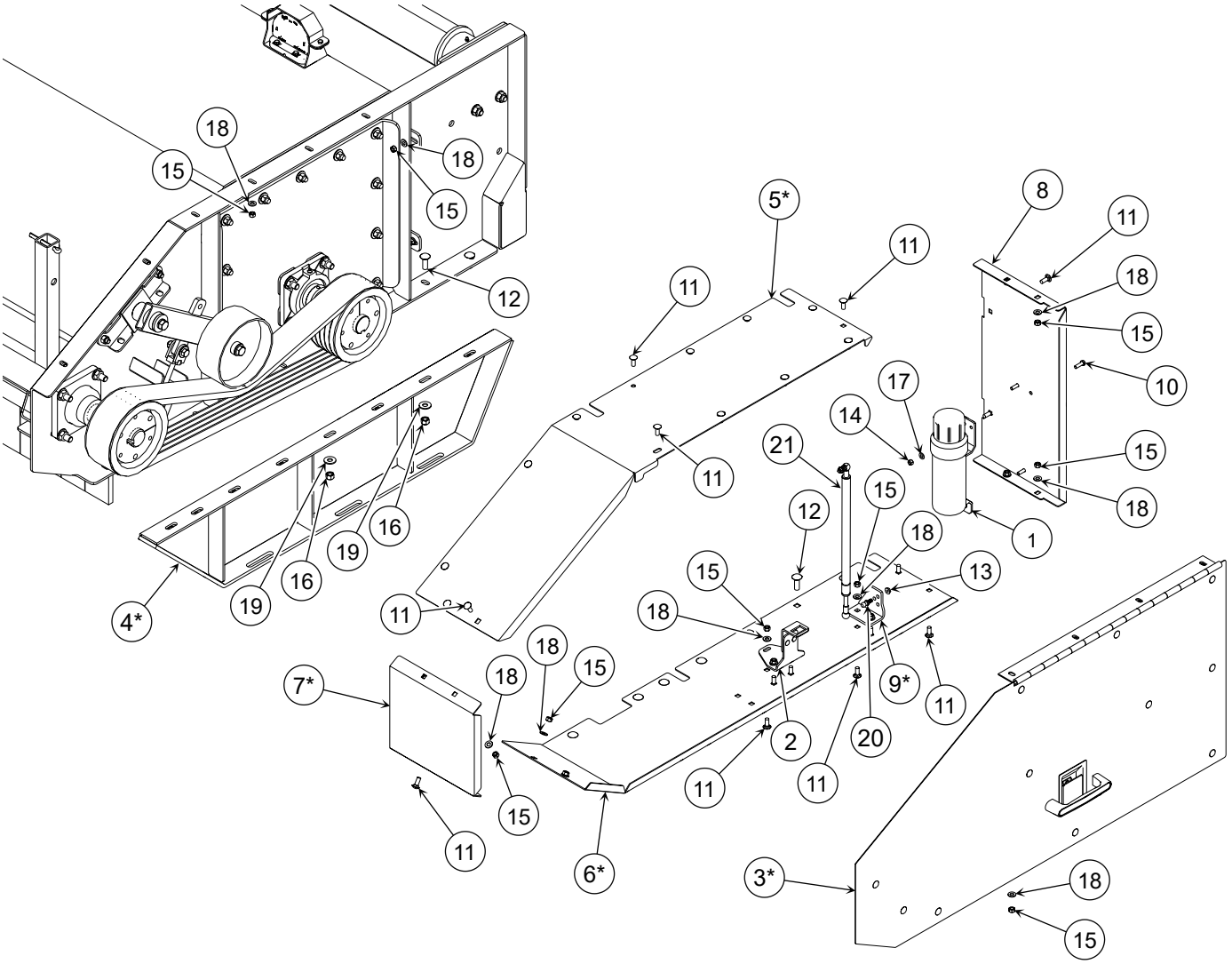


*OPTIONS AVAILABLE

END DRIVE SHREDDER
CENTER BARRIERS
(COMPONENTS BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	507-3-1401	END DRIVE GEAR BOX COVER MOUNT	1
2	507-3-1403	END DRIVE GEAR BOX COVER	1
3	507-3-1432	GEAR BOX U JOINT COVER	1/2
4	507-3-1433	MID SHAFT U JOINT COVER	0/2
5	900-01109	BOLT HEX 3/8UNC X 1 GR 5	26/32
6	900-06500	NUT, LOCK, TOP, 1/2-13, GR C ZP	26/32
7	900-11033	FLAT WASHER 3/8 ZP	52/64

END DRIVE SHREDDER
END BARRIERS
(COMPONENTS DRAWING)

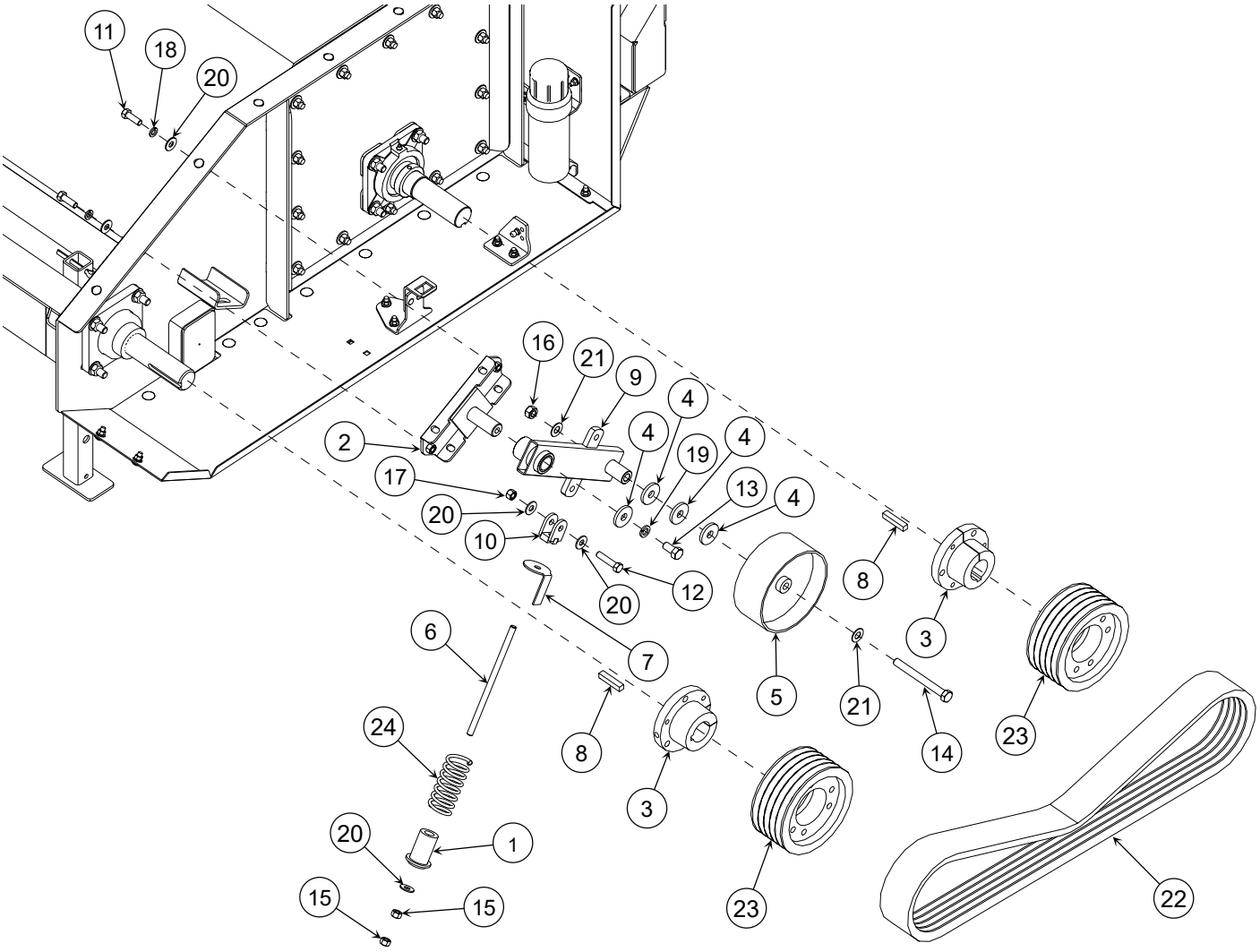


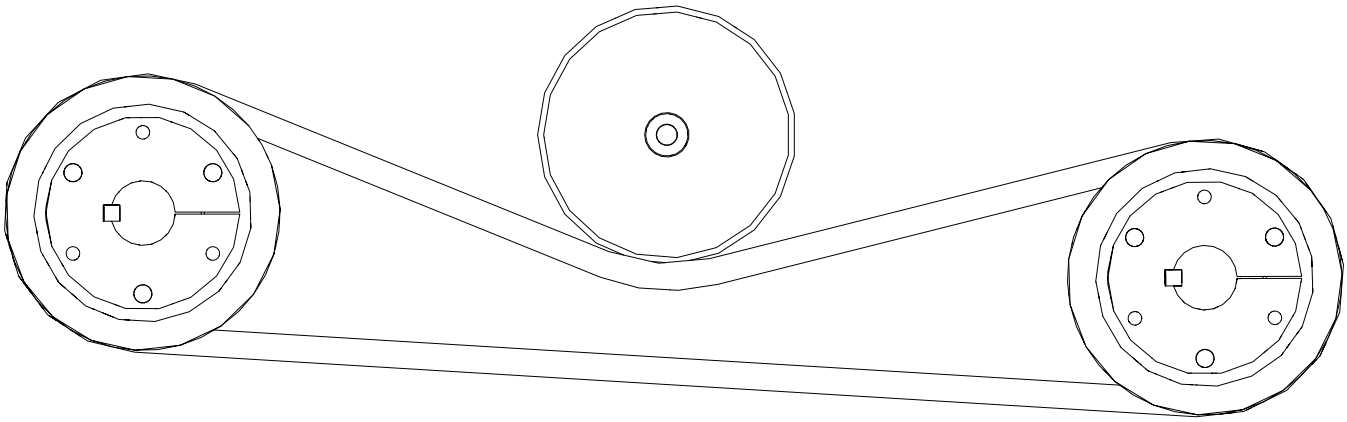
*RIGHT HAND PARTS AVAILABLE

END DRIVE SHREDDER
END BARRIERS
(COMPONENTS BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	100-3-3957	TUBE, MANUAL STORAGE	1
2	500-2-1805	DOOR LATCH ASSY	0/1
3-1	507-2-0801	END DRIVE DOOR ASSEMBLY LH	1
3-2	507-2-0802	END DRIVE DOOR ASSEMBLY RH	0/1
4-1	507-2-0806	SKID PLATE WELD - LH	1
4-2	507-2-0807	SKID PLATE WELD - RH	1
5-1	507-3-1439	DRIVE HOUSING LH TOP SHIELD	1
5-2	507-3-1456	DRIVE HOUSING RH TOP SHIELD	0/1
6-1	507-3-1440	DRIVE HOUSING LH BOTTOM SHIELD	1
6-2	507-3-1455	DRIVE HOUSING RH BOTTOM SHIELD	0/1
7-1	507-3-1441	DRIVE HOUSING LH FRONT SHIELD	1
7-2	507-3-1457	DRIVE HOUSING RH FRONT SHIELD	0/1
8	507-3-1442	DRIVE HOUSING BACK SHIELD	1/2
9-1	507-3-1451	GAS STRUT BRACKET LH END DRIVE	1
9-2	507-3-1458	GAS STRUT BRACKET RH END DRIVE	0/1
10	900-01059	BOLT HEX 5/16 NC X 1	3
11	900-01695	CARRIAGE BOLT 3/8 NC X 1 ZP	30
12	900-01751	BOLT, CRG, 1/2-13 X 1-1/2, GR5 ZP	8
13	900-06137	WHIZ NUT - 5/16 NC	2/4
14	900-06498	5/16 TOP LOCK NUT	3
15	900-06500	NUT HEX 3/8 TOP LOCK	30
16	900-06504	NUT, LOCK, TOP, 1/2-13, GR C ZP	16
17	900-11032	5/16" STANDARD WROUGHT WASHER	3
18	900-11033	FLAT WASHER 3/8 ZP	30
19	900-11035	1/2 FLAT WASHER	16
20	905-06026	BALL STUD, GAS SPRING 10" STROKE	2/4
21	905-06028	GAS SPRING, 10" STROKE, 100 LBS	1/2

END DRIVE SHREDDER
BELT &TENSIONER
(COMPONENTS DRAWING)





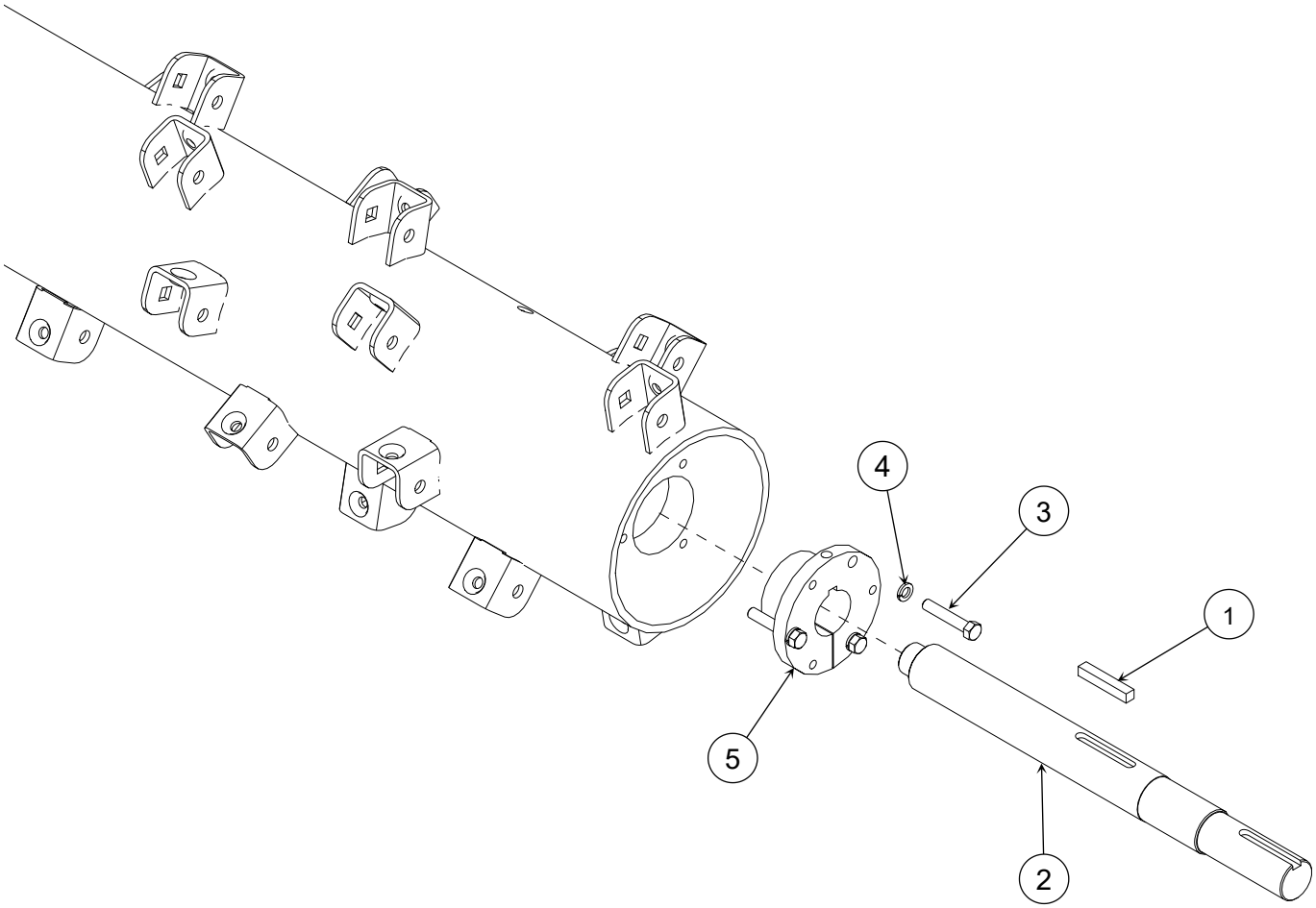
RIGHT HAND SIDE IS MIRRORED WITH SAME PARTS

END DRIVE SHREDDER
BELT &TENSIONER
(COMPONENTS BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	500-2-0580	SPRING SUPPORT WELD	1/2
2	500-2-1384	PIVOT BASE WELD - TENSIONER	1/2
3	500-3-1060	HUB 2" TYPE "E" W/KW	2/4
4	500-3-1246	SPECIAL WASHER	4/8
5	500-3-1248	8" OD FLAT PULLY	1/2
6	500-3-1250	THREADED ROD	1/2
7	500-3-1255	SIGHT GAGE	1/2
8	500-3-1662	KEY - 1/2 X 2-1/2 SQUARE	2/4
9	507-2-0805	PIVOT ARM ASSY	1/2
10	507-2-0811	CLEVIS WELDMENT	1/2
11	900-01225	1/2 NC X 1-1/2 HEX BOLT GR 5	2/4
12	900-01231	BOLT, HEX HEAD, 1/2 NC x 2-1/4, GR5 ZP	1/2
13	900-01339	HEX BOLT 5/8 NC X 1 1/4 GD 5 ZP	1/2
14	900-01369	SCREW, CAP 5/8 X 6 UNC ZP	1/2
15	900-06009	NUT HEX 1/2 UNC	2/4
16	900-06013	NUT, HH, 5/8-11, ZP	1/2
17	900-06504	NUT, LOCK, TOP, 1/2-13, GR C ZP	1/2
18	900-11013	WASHER, LOCK 1/2	1/2
19	900-11015	WASHER, LOCK, 5/8, ZP	1/2
20	900-11035	1/2 FLAT WASHER	3/6
21	900-11088	WASHER, FLAT, SAE, 5/8, ZP	5/10
22	903-01426	BELT 5/5V950	1/2
23	903-08390	PULLEY -5/5V850	2/4
24	905-14005	SPRING - 2.25 OD X .25 WIRE X 5.25 FL X 7.25 COILS	1/2

FLAIL TUBE SHAFT

(COMPONENTS DRAWING)



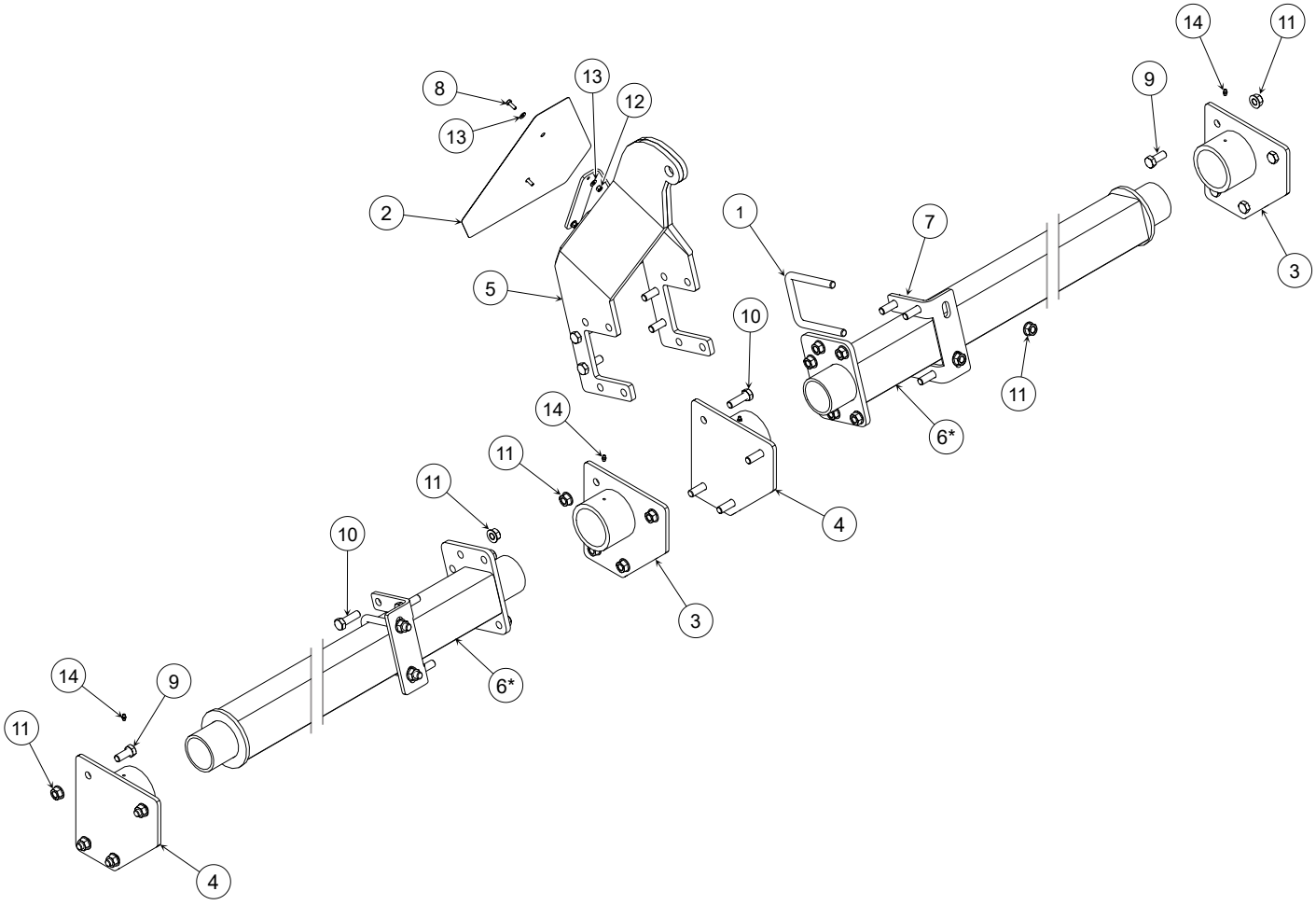
FLAIL TUBES SHAFT

(COMPONENTS BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	100-3-3331	KEY - 1/2 X 1/2 X 3	1
2	507-3-1436	END DRIVE SHAFT - 2.25 DIA	1
3	900-02526	BOLT HEX ½ X 2-3/4 GR 5	3
4	900-11013	WASHER, LOCK 1/2	3
5	903-08461	TYPE E HUB 2-1/4 BORE	1

ROCKSHAFT 12’-25’

(ASSEMBLY DRAWING)



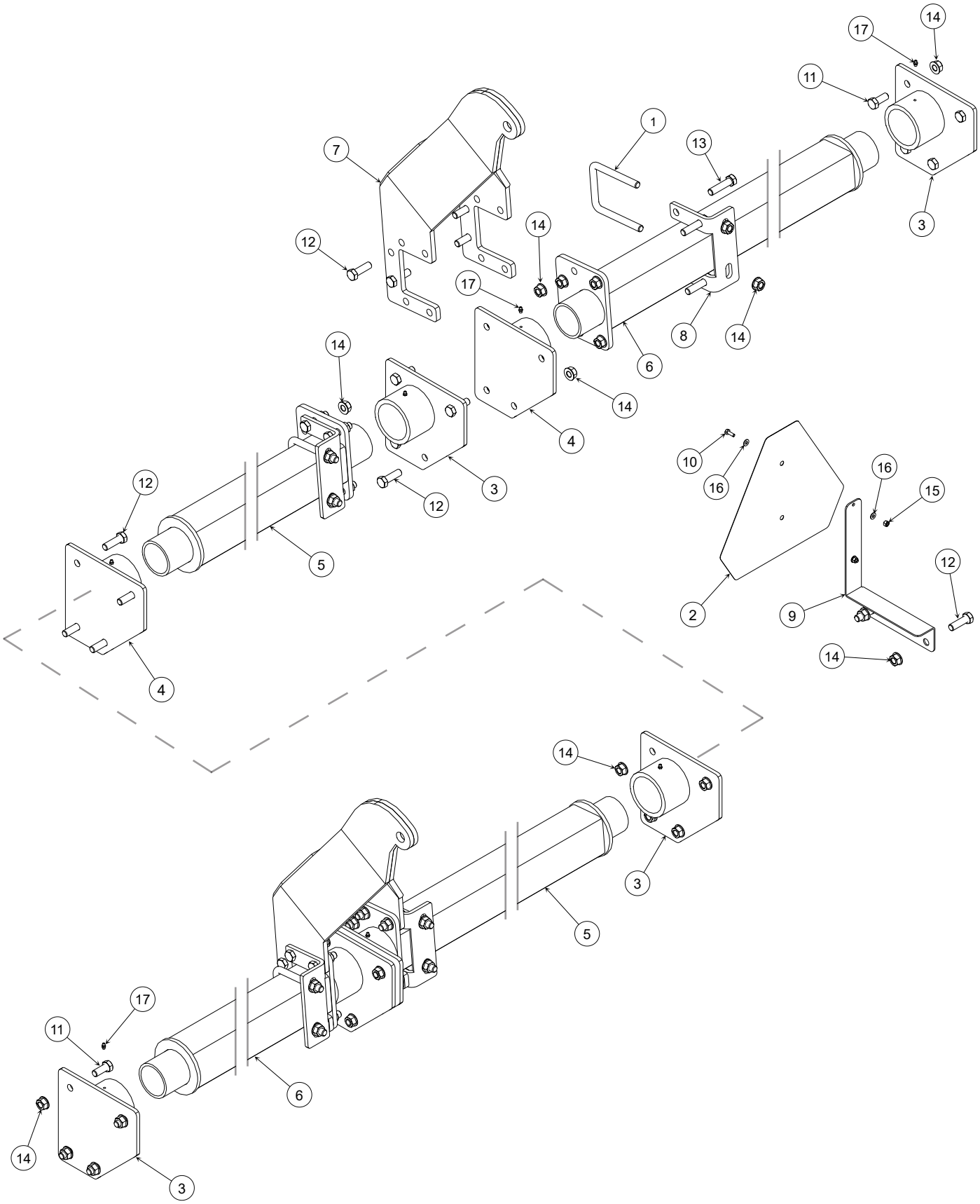
*OPTIONS AVAILABLE

ROCKSHAFT 12’-25’

(ASSEMBLY BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	200-3-1438	U-BOLT, 5/8 NC X 4 X 5.5 LG	2
2	500-3-1696	SMV SIGN	1
3	507-2-0491	OUTER PIVOT TUBE WELD - RH	2
4	507-2-0492	OUTER PIVOT TUBE WELD - LH	2
5	507-2-0493	CENTER ROCKSHAFT EAR WELD	1
6-1	507-2-0512	ROCKSHAFT WELD - 12'	2
6-2	507-2-0498	ROCKSHAFT WELD - 15'	2
6-3	507-2-0913	ROCKSHAFT WELD - 16'	2
6-4	507-2-0513	ROCKSHAFT WELD - 18'	2
6-5	507-2-0514	ROCKSHAFT WELD - 20'	2
6-6	507-2-0515	ROCKSHAFT WELD - 22'	2
6-7	507-2-0516	ROCKSHAFT WELD - 24'	2
6-8	507-2-0517	ROCKSHAFT WELD - 25'	2
7	507-3-1275	ROCKSHAFT PLATE	2
8	900-01005	1/4-20 X 3/4 ZP HEX BOLT	2
9	900-01341	HEX BOLT, 5/8 X 1-1/2 NC GR5 ZP	8
10	900-01345	BOLT, HH, 5/8-11 X 2, GR5 ZP	16
11	900-06145	5/8 WHIZ NUT	28
12	900-06496	1/4-20 TOP LOCK HEX NUT	2
13	900-11031	¼ FLAT WASHER	4
14	905-15024	ZERK 1/4-28 UNF STRAIGHT	4
-	507-1-0151	ASSY, ROCKSHAFT - 12'	1
-	507-1-0123	ASSY, ROCKSHAFT - 15'	1
-	507-1-0202	ASSY, ROCKSHAFT - 16'	1
-	507-1-0152	ASSY, ROCKSHAFT - 18'	1
-	507-1-0153	ASSY, ROCKSHAFT - 20'	1
-	507-1-0154	ASSY, ROCKSHAFT - 22'	1
-	507-1-0155	ASSY, ROCKSHAFT - 24'	1
-	507-1-0156	ASSY, ROCKSHAFT - 25'	1

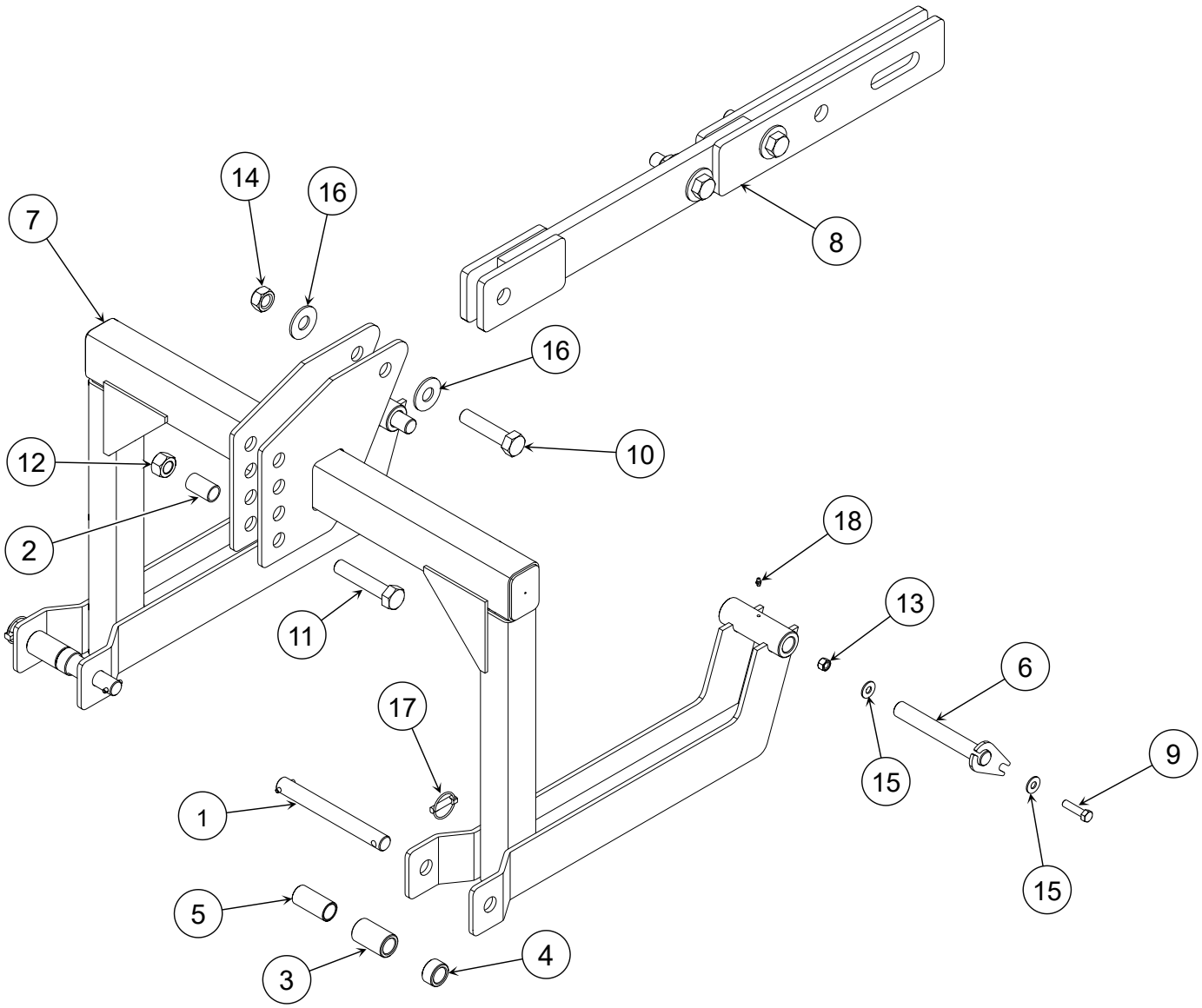
ROCKSHAFT 27’
507-1-0157
(ASSEMBLY DRAWING)



ROCKSHAFT 27’
507-1-0157
(ASSEMBLY BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	200-3-1438	U-BOLT, 5/8 NC X 4 X 5.5 LG	4
2	500-3-1696	SMV SIGN	1
3	507-2-0491	OUTER PIVOT TUBE WELD - RH	4
4	507-2-0492	OUTER PIVOT TUBE WELD - LH	4
5	507-2-0518	ROCKSHAFT WELD - 27' INSIDE	2
6	507-2-0521	ROCKSHAFT WELD - 27' OUTSIDE	2
7	507-2-0777	ROCKSHAFT EAR WELD OUTSIDE	2
8	507-3-1275	ROCKSHAFT PLATE	4
9	507-3-1382	NON WR SMV BRACKET	1
10	900-01005	1/4-20 X 3/4 ZP HEX BOLT	2
11	900-01341	HEX BOLT, 5/8 X 1-1/2 NC GR5 ZP	8
12	900-01345	BOLT, HH, 5/8-11 X 2, GR5 ZP	22
13	900-01347	5/8" X 2-1/2 NC HEX BOLT	16
14	900-06145	5/8 WHIZ NUT	54
15	900-06496	1/4-20 TOP LOCK HEX NUT	2
16	900-11031	1/4 FLAT WASHER	4
17	905-15024	ZERK 1/4-28 UNF STRAIGHT	8

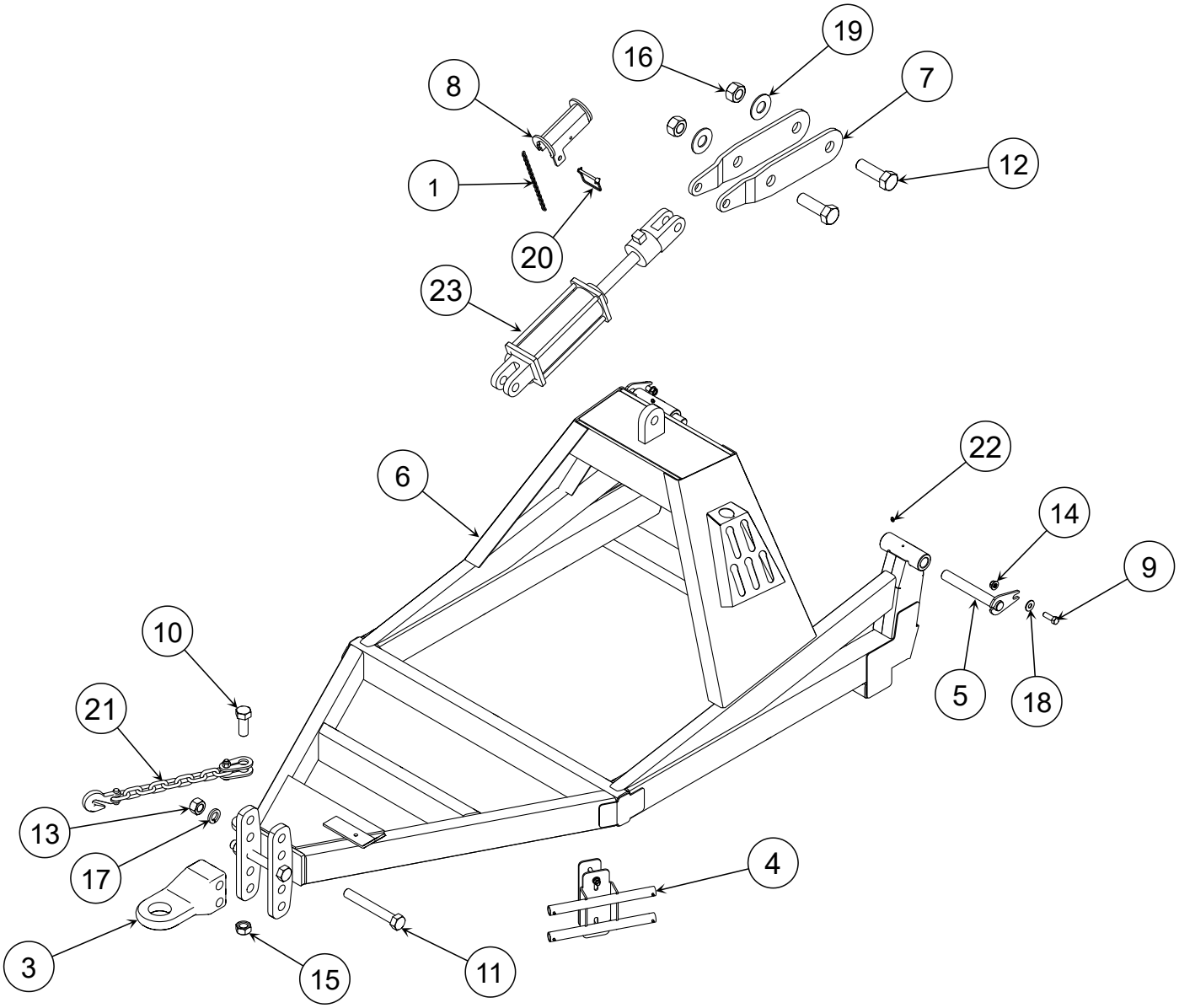
3 POINT HITCH
507-2-0810
(ASSEMBLY DRAWING)



3 POINT HITCH
507-2-0810
(ASSEMBLY BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	200-2-0553	PIN ASSY - LOWER 3 PT HITCH	2
2	200-3-0151	MAST SPACER BUSHING	1
3	200-3-0959	SPACER - LOWER 3 PT HITCH	2
4	200-3-0960	SPACER - LOWER 3 PT HITCH	2
5	200-3-0961	BUSHING - LOWER 3 PT	2
6	507-2-0499	1-1/8" PIN WELDMENT	2
7	507-2-0808	3 PT END DRIVE WELDMENT	1
8	507-2-0809	3 PT END DRIVE TOP MAST WELDMENT	1
9	900-01229	1/2-13 X 2 HEX BOLT GRD 5	2
10	900-01529	BOLT, HH 1 NC X 4-1/2 GR5 ZP (FULL THREAD)	3
11	900-01531	HEX BOLT - 1NC X 5 GR5 ZP	1
12	900-06019	1-8 HEX NUT	1
13	900-06504	NUT, LOCK, TOP, 1/2-13, GR C ZP	2
14	900-06514	NUT, LOCK, 1" NC, TOP, ZP	3
15	900-11035	1/2 FLAT WASHER	4
16	900-11040	WASHER, FLAT, 1	6
17	900-25012	KLICK PIN - 7/16 X 2	2
18	905-15024	ZERK 1/4-28 UNF STRAIGHT	2

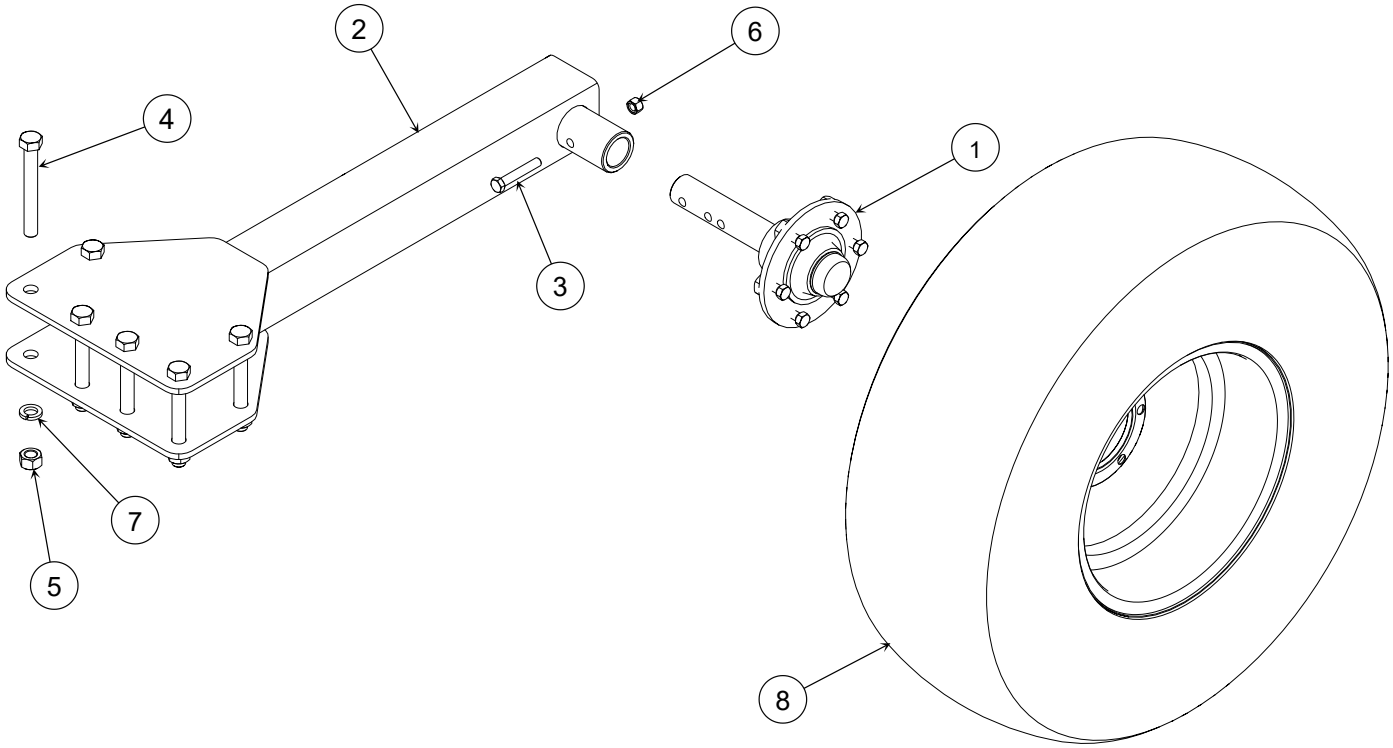
PULL TYPE HITCH
507-1-0199
(ASSEMBLY DRAWING)



PULL TYPE HITCH
507-1-0199
(ASSEMBLY BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	120-3-0472	RETAINING CHAIN	1
2	500-2-0792	HOSE KIT - SHORT HITCH	1
3	505-3-0831	HITCH TONGUE COMP CAT3	1
4	507-1-0100	CYLINDER DEPTH STOP KIT - SHREDDER PULL	1
5	507-2-0499	1-1/8" PIN WELDMENT	2
6	507-2-0797	WELD, HITCH, PULL TYPE	1
7	507-3-0580	CYL MOUNT PLATE - PULL TYPE	2
8	700-2-0159	CYLINDER STOP, SHORT, WELDMENT	1
9	900-01225	1/2 NC X 1-1/2 HEX BOLT GR 5	2
10	900-01515	HEX BOLT 1 NC X 2.5 GD 5 ZP	1
11	900-01541	HEX BOLT - 1NC X 7-1/2 GR5 ZP	2
12	900-01596	HEX BOLT 1-1/4 NC X 4	2
13	900-06019	1-8 HEX NUT	2
14	900-06143	1/2 NC SPIRALOCK NUT ZP GR5	2
15	900-06514	NUT, LOCK, 1" NC, TOP, ZP	1
16	900-06518	TOP LOCK NUT - 1-1/4	2
17	900-11021	LOCK WASHER - 1	2
18	900-11035	1/2 FLAT WASHER	2
19	900-11042	FLAT WASHER	2
20	900-42055	SNAPPER PIN .25 X 2.50 USABLE LENGTH	1
21	905-07123	TOW CHAIN SAFETY 21,000 LB	1
22	905-15024	ZERK 1/4-28 UNF STRAIGHT	2
23	905-21400	HYD CYL - 3.5 X 8	1

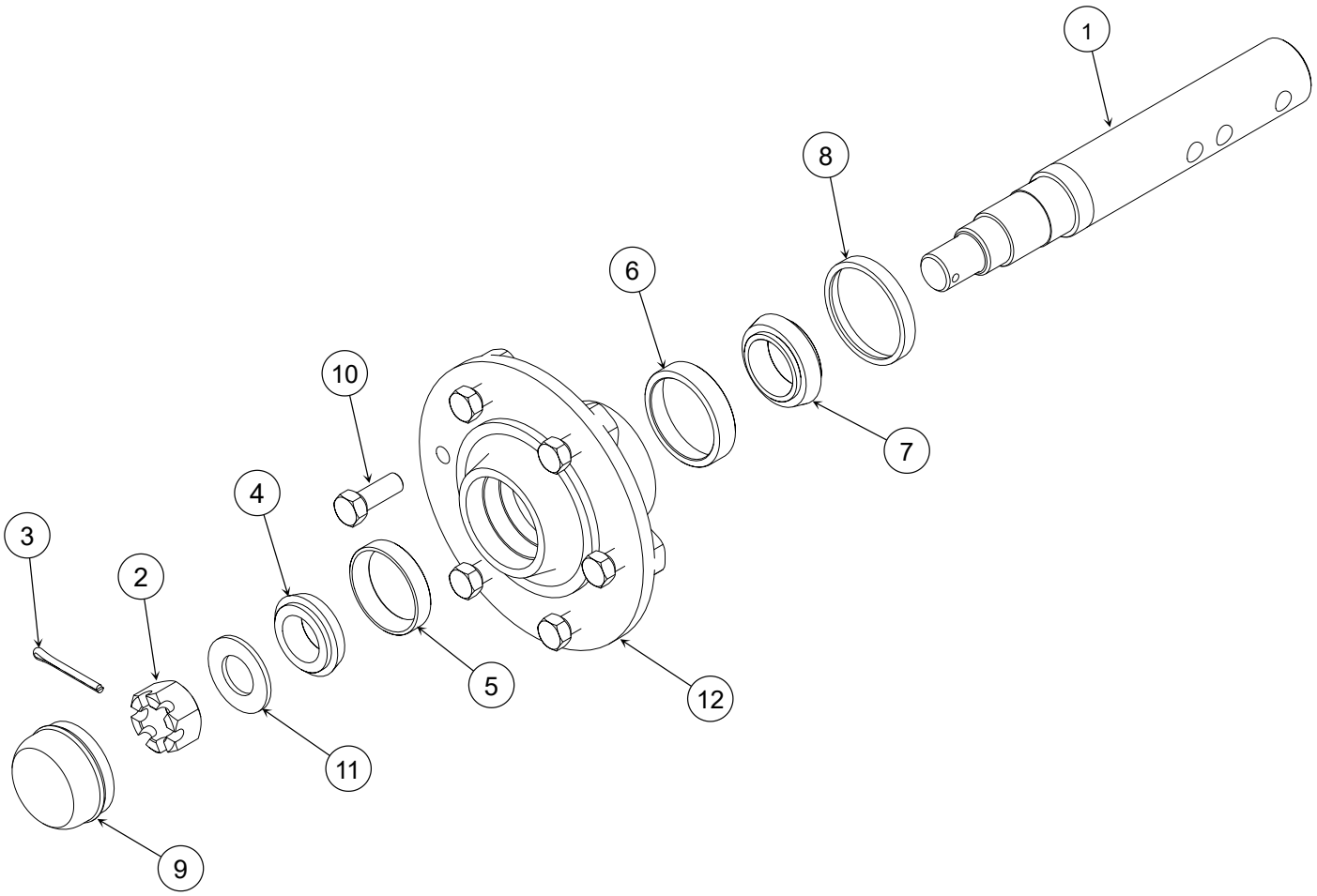
REAR SINGLE STRUT FOR ROCKSHAFT
507-2-0519
(ASSEMBLY DRAWING)



REAR SINGLE STRUT FOR ROCKSHAFT
507-2-0519
(ASSEMBLY BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	200-2-2344	ASSY, HUB & SPINDLE, 6 BOLT	1
2	507-2-0500	REAR STRUT WELD - SINGLE FOR ROCKSHAFT	1
3	900-01237	BOLT HEX ½-13 X 3	1
4	900-01427	HEX BOLT - 3/4NC X 6 GR5 ZP	6
5	900-06015	NUT, HH, 3/4-10, ZP	6
6	900-06504	NUT, LOCK, TOP, 1/2-13, GR C ZP	1
7	900-11017	WASHER, LOCK, 3/4, ZP	6
8	905-09181	ASSY, TIRE & RIM - 12.5L-16 (W10LX16)	1

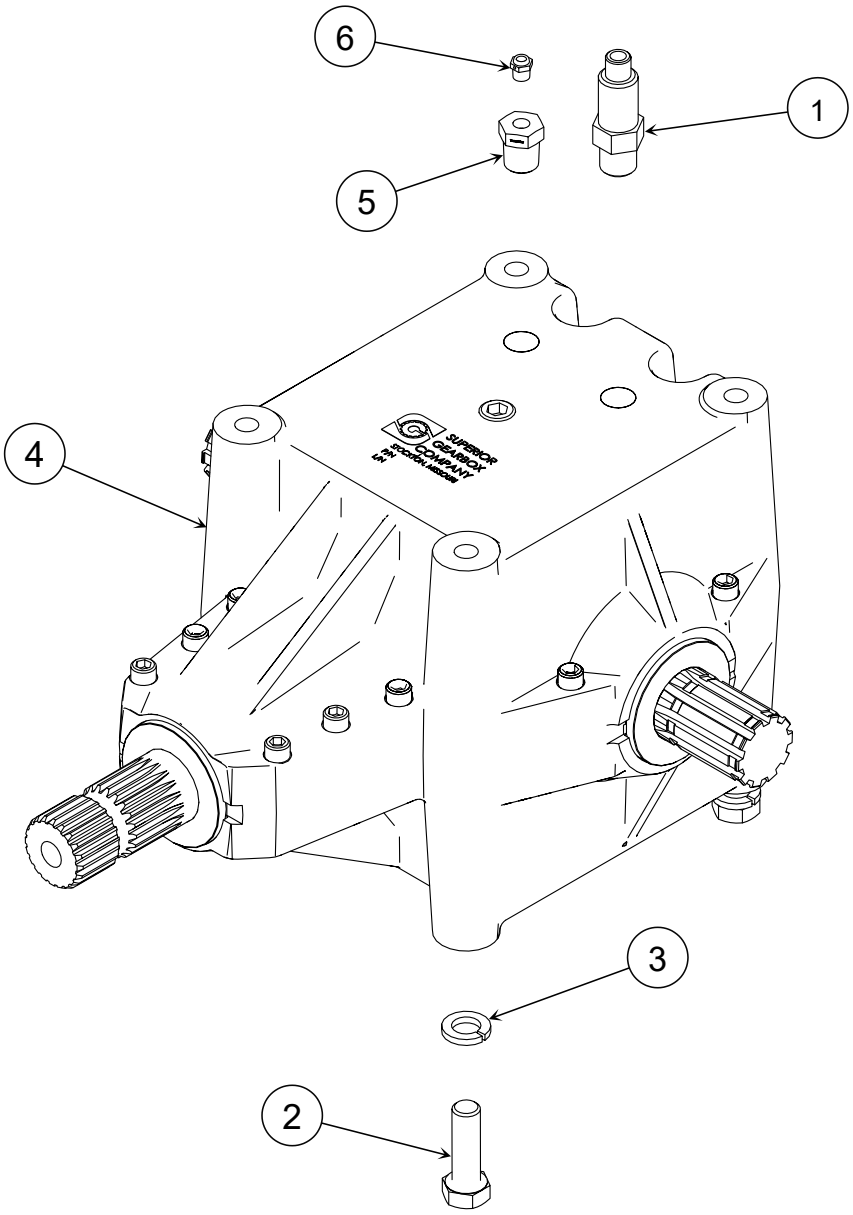
HUB & SPINDLE - 6 BOLT
200-2-2344
(ASSEMBLY DRAWING)



HUB & SPINDLE - 6 BOLT
200-2-2344
(ASSEMBLY BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	200-3-4440	SPINDLE - 6 BOLT (HD)	1
2	900-06062	NUT, SLOTTED HEX, 1-12	1
3	900-23045	PIN, COTTER, 3/16 x 2	1
4	901-01015	BEARING CONE, LM67048	1
5	901-01016	CUP BEARING, LM67010	1
6	901-01024	BEARING CUP, LM29710	1
7	901-01025	BEARING CONE, LM29749	1
8	901-09002	BORE SEAL	1
9	905-09009	DUST CAP	1
10	905-09010	WHEEL BOLT 1/2-20 X 1.06	6
11	905-09068	WASHER, 1 SAE	1
12	905-09176	6 BOLT HUB W/O CUPS	1

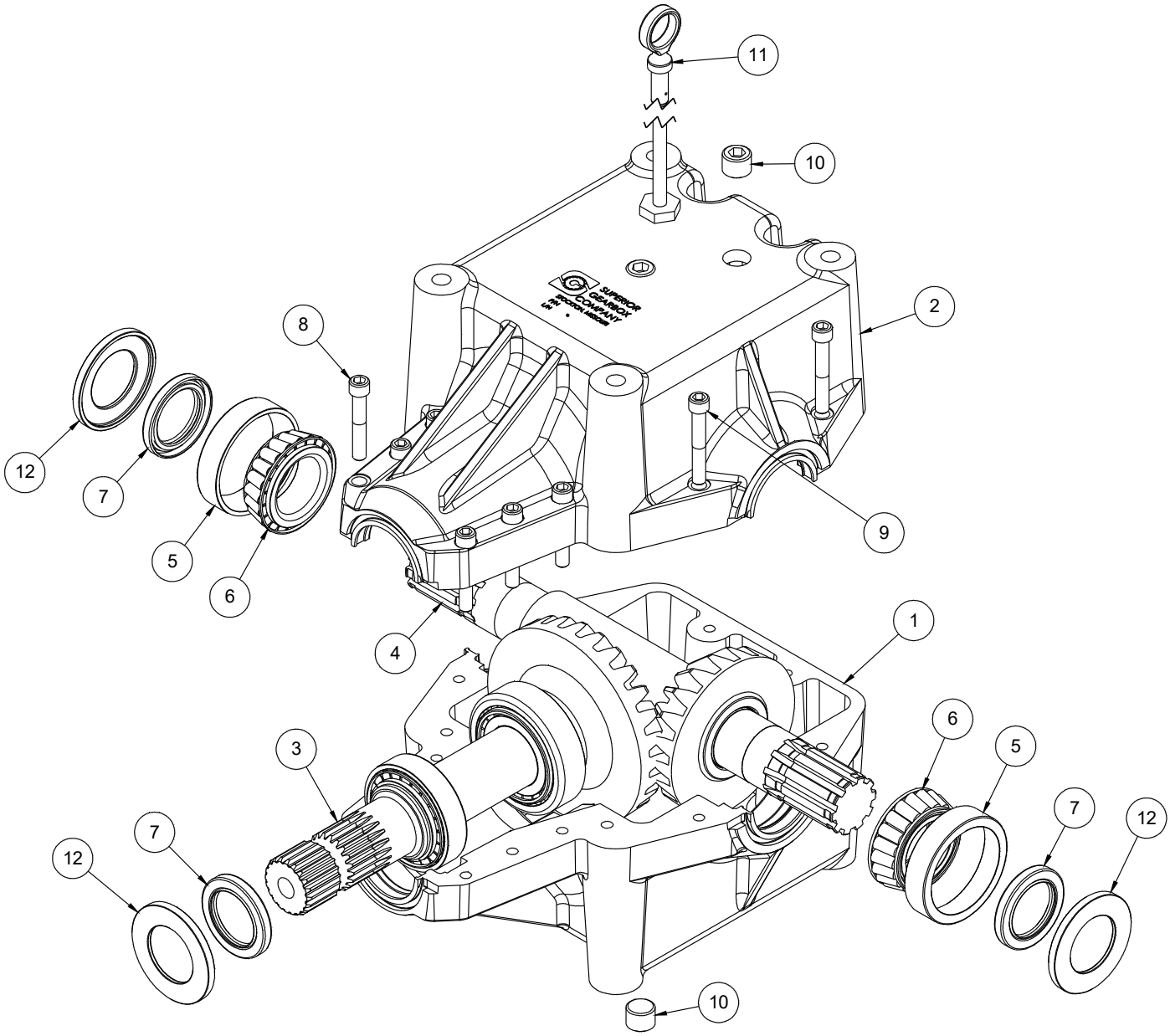
1350 RPM GEARBOX & COUPLER ASSY - FOR END DRIVE
507-2-0793
(ASSEMBLY DRAWING)



1350 RPM GEARBOX & COUPLER ASSY - FOR END DRIVE
507-2-0793
(ASSEMBLY BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	507-3-0268	DIPSTICK SUPPORT BRACKET	1
2	900-01345	BOLT, HH, 5/8-11 X 2, GR5 ZP	4
3	900-11015	WASHER, LOCK, 5/8, ZP	4
4	903-15589	GEARBOX (1:1.35 GEAR RATIO)	1
5	905-01159	BUSHING, 1/2" X 1/8" NPT	1
6	905-03080	ADAPTER, PLUG, VENT, 2MP	1

GEARBOX (1:1.35 GEAR RATIO)
903-15589
(ASSEMBLY DRAWING)

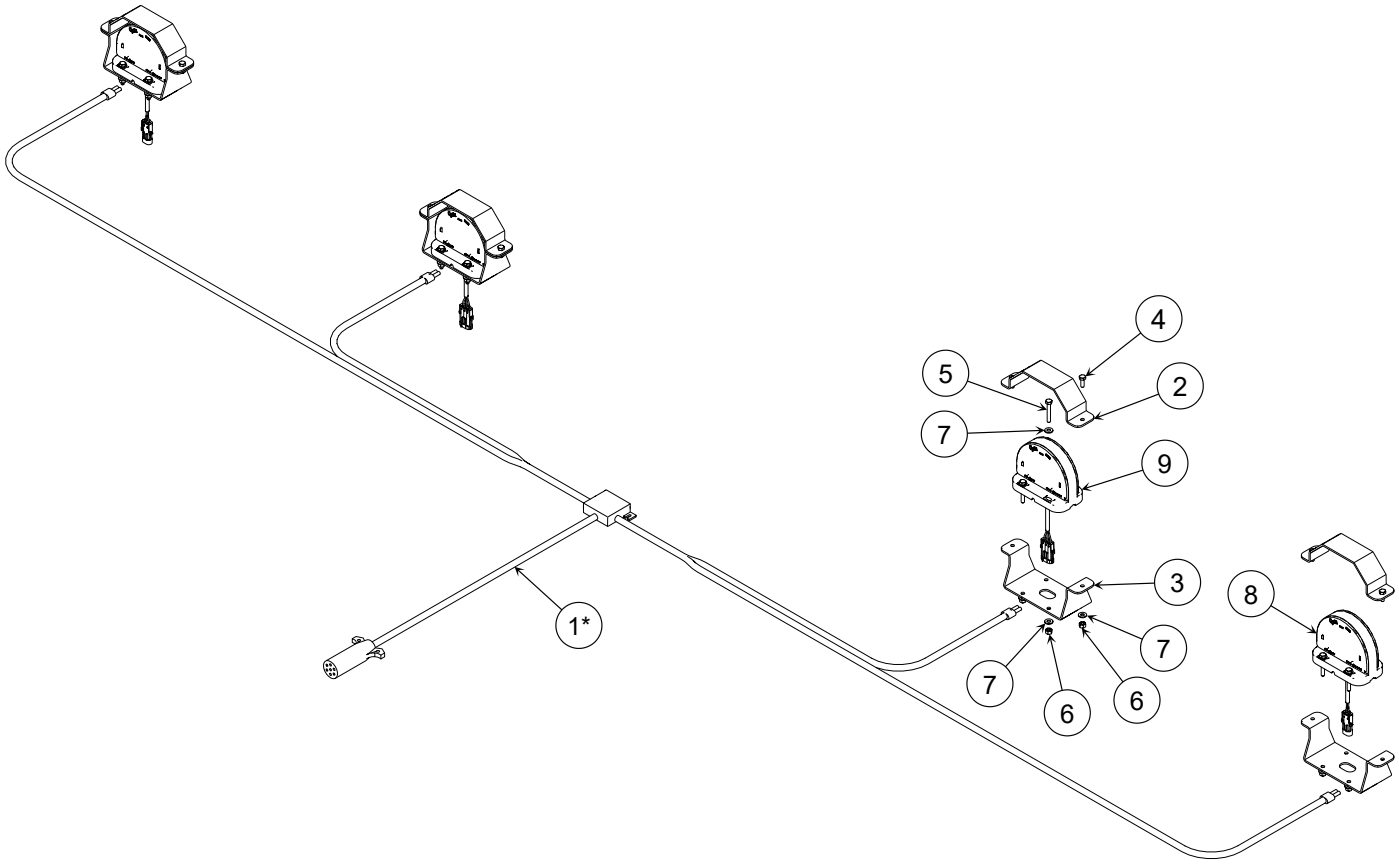


GEARBOX (1:1.35 GEAR RATIO)
903-15589
(ASSEMBLY BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	903-18222	HSG, HACH TAP R800 STR GRD GR	1
2	903-18223	HSG, MACH R800 THRU	1
3	903-15590	SUBA, R800 STUB SHAFT/GEAR	1
4	903-15546	ASSY, CROSS SHAFT/GEAR	1
5	901-01152	BRG, CUP TK#25520 3.265	2
6	901-01328	BRG, CONE TK#25580 1.75	2
7	901-09125	SEAL, 1.75-2.437-.312 (R) TC	3
8	900-03033	BOLT, 3/8-16 X 2.25 SHCS	8
9	900-03032	BOLT, 3/8-16 X 2.50 SHCS	4
10	905-03078	PLUG, 1/2-14 NPT SCHD W/3M	4
11	903-18225	DIPSTICK, R800 1/2-14 NPT	1
12	901-09233	GUARD, SEAL 3.00 x 1.745	3
13	900-39030	RETAINING RING, EXT 1.750 SHFT	4
14	-	LUBE/EP 80W90	110

LIGHT KIT - END DRIVE

(ASSEMBLY DRAWING)

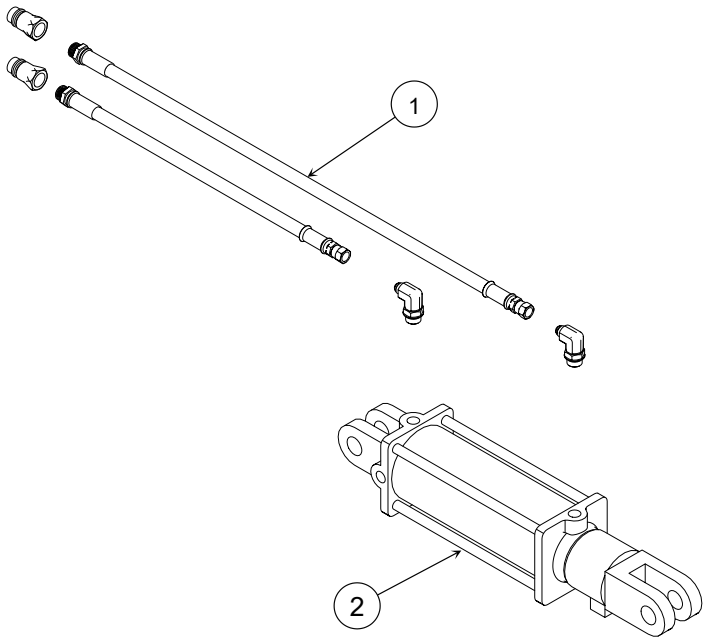


LIGHT KIT - END DRIVE

(ASSEMBLY BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1-1	507-3-0218	WIRE HARNESS, 12-18FT SHREDDER	1
1-2	507-3-0237	WIRE HARNESS, 20-22FT SHREDDER	1
1-3	507-3-0238	WIRE HARNESS, 24-27FT SHREDDER	1
2	507-3-1375	SHREDDER LIGHT TOP BRACKET	4
3	507-3-1377	SHREDDER LIGHT BRACKET BOTTOM	4
4	900-01005	1/4-20 X 3/4 ZP HEX BOLT	8
5	900-01015	1/4 NC X 1-3/4 HEX BOLT	16
6	900-06496	1/4-20 TOP LOCK HEX NUT	24
7	900-11031	¼ FLAT WASHER	40
8	904-01363	GROTE, HALF MOON LIGHT- AMBER	2
9	904-01364	GROTE, HALF MOON LIGHT-RED	2
-	507-1-0182	KIT, LIGHT SHREDDER END 12'-18'	1
-	507-1-0183	KIT, LIGHT SHREDDER END 20'-22'	1
-	507-1-0184	KIT, LIGHT SHREDDER END 24'-27'	1

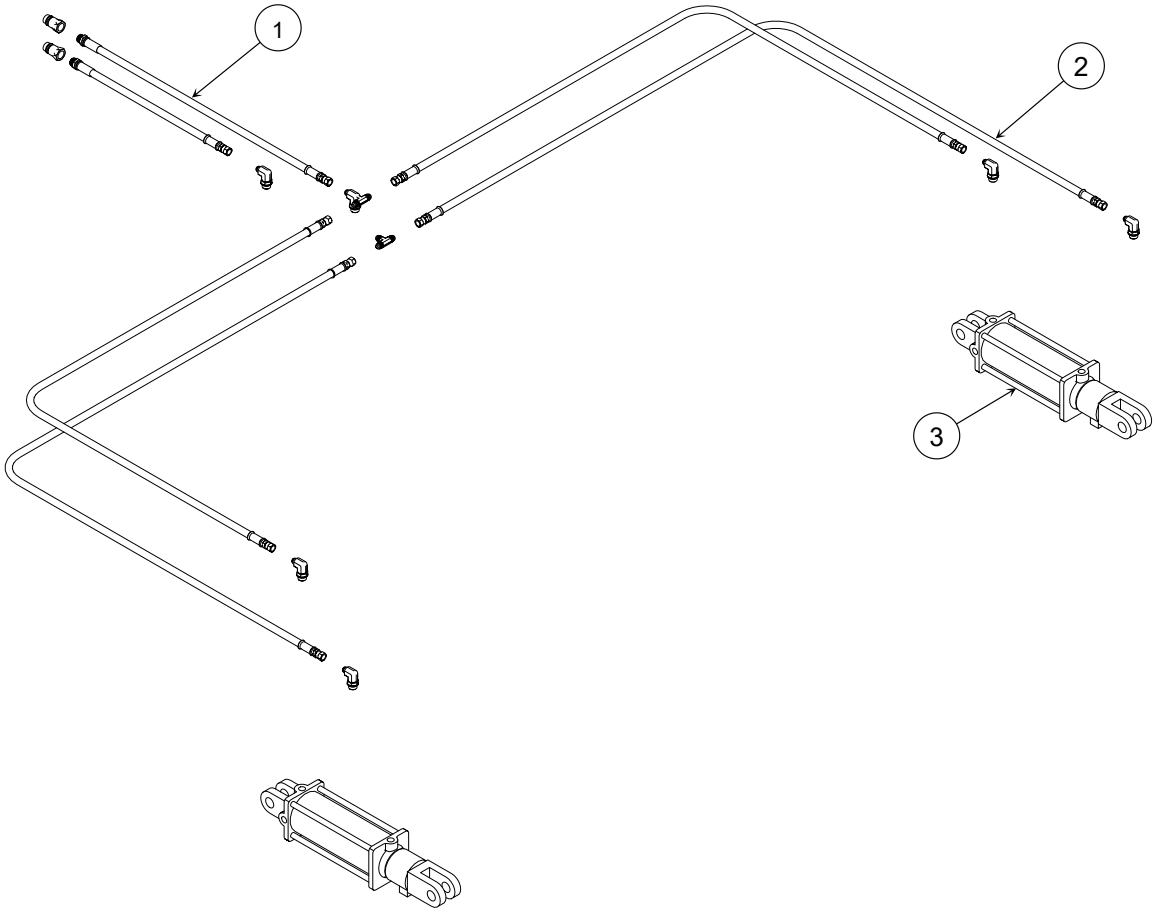
SHREDDER HYDRAULIC LIFT KIT - 12’-25’
507-1-0203
(ASSEMBLY DRAWING)



SHREDDER HYDRAULIC LIFT KIT - 12’-25’
507-1-0203
(ASSEMBLY BILL OF MATERIALS)

ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	507-2-0962	HOSE KIT - END DRIVE STRUT	1
2	905-21400	HYD CYL - 3.5 X 8	4

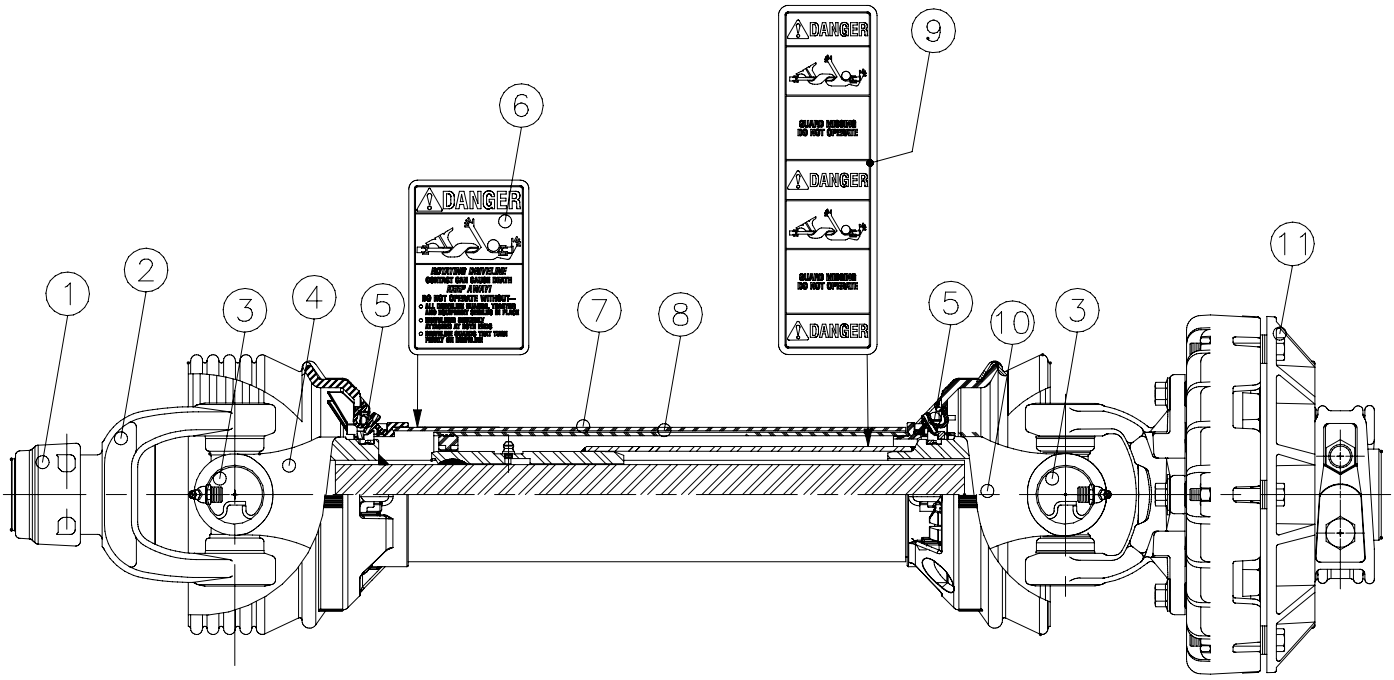
SHREDDER HYDRAULIC LIFT KIT - 27'+
507-1-0204
(ASSEMBLY DRAWING)



SHREDDER HYDRAULIC LIFT KIT - 27’+
507-1-0204
(ASSEMBLY BILL OF MATERIALS)

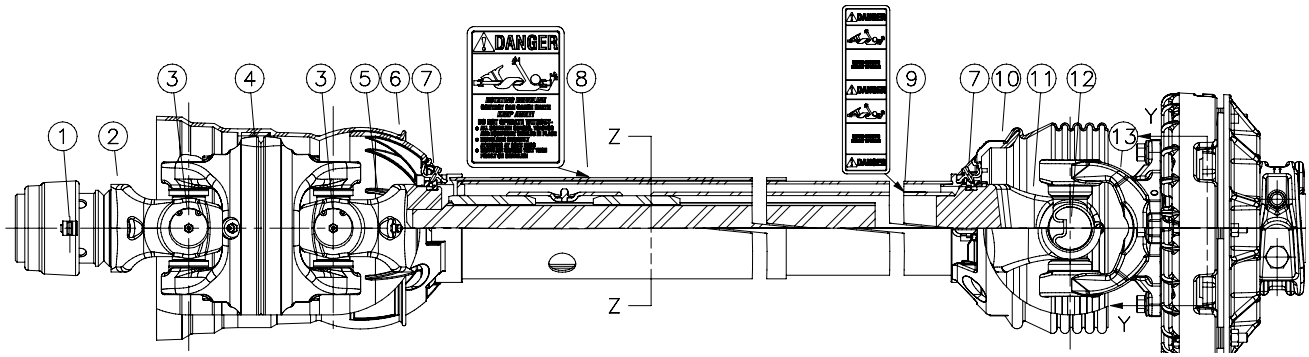
ITEM NO.	PART NO.	DESCRIPTION	Qty.
1	507-2-0962	HOSE KIT - END DRIVE STRUT	1
2	507-2-0963	HOSE KIT - END DRIVE STRUT 27'+	4
3	905-21400	HYD CYL - 3.5 X 8	4

2-POINT & 3-POINT PTO COMPONENTS



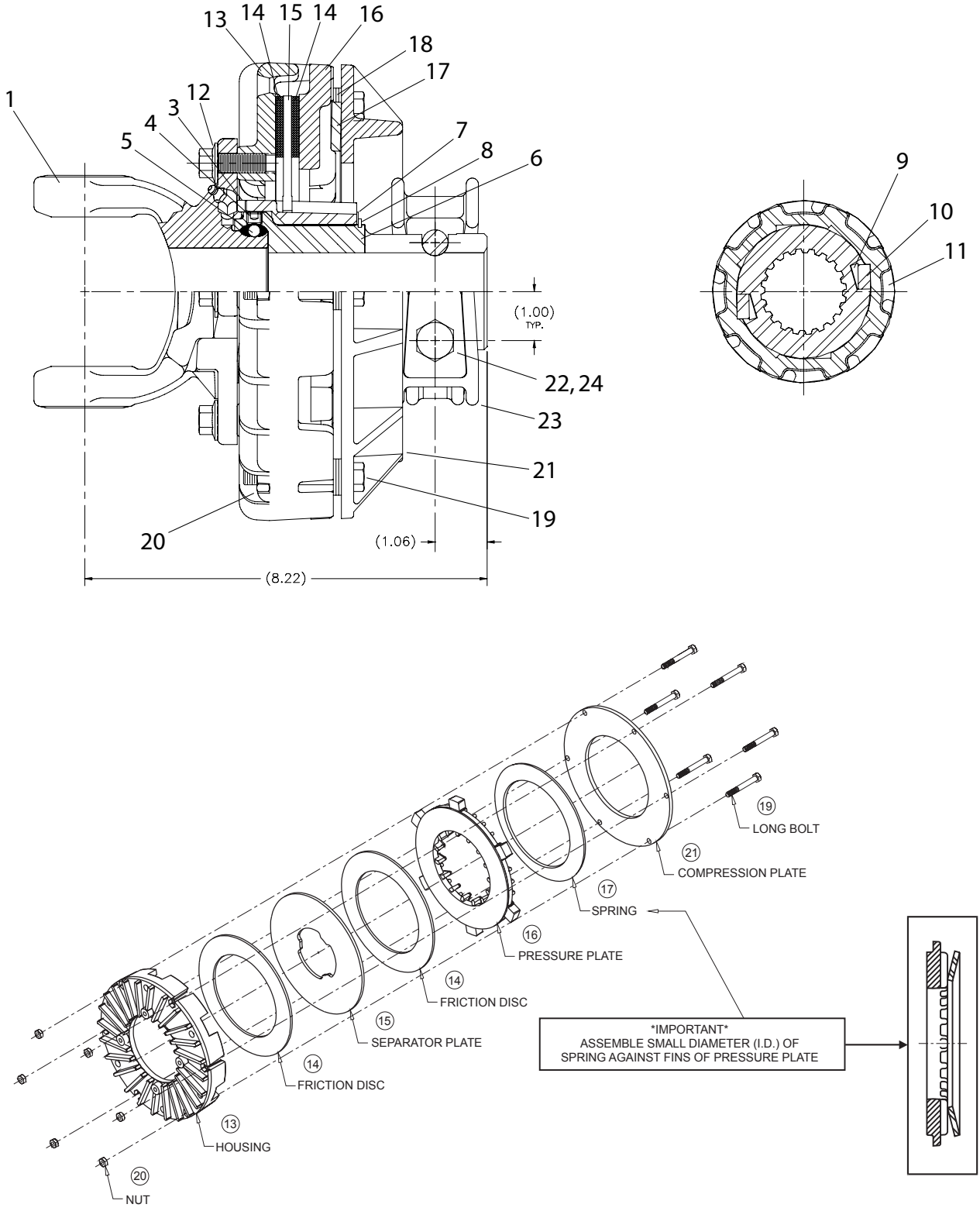
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	903-18106	SSL / AUTO-LOK REPAIR KIT, 1-3/8”	1
	903-17772	SSL / AUTO-LOK REPAIR KIT, 1-3/4”	1
2	903-18403	SAFETY SLIDE LOCK YOKE ASSEMBLY, 1-3/8”	1
	903-17418	SAFETY SLIDE LOCK YOKE ASSEMBLY, 1-3/4”	
3	903-17239	55E CROSS & BEARING KIT	2
4	903-18404	YOKE & SHAFT (1.69-20 SPLINE)	
5	903-18248	GUARD REPAIR KIT (NOT SHOWN)	2
6	903-17455	SAFETY SIGN	1
7	903-18319	OUTER GUARD	1
8	903-18320	INNER GUARD	1
9	903-17456	SAFETY SIGN	1
10	903-18321	YOKE, TUBE, & SLIP SLEEVE	1
11	903-18303	OVER RUNNING FRICTION CLUTCH ASSEMBLY	1
	903-18313	SLIP CLUTCH PTO, 1-3/8”, COMPLETE	
	903-18335	SLIP CLUTCH PTO, 1-3/4”, COMPLETE	

PULL-TYPE PTO COMPONENTS



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	903-18106	SSL / AUTO-LOK REPAIR KIT 1-3/8”	1
	903-17772	SSL / AUTO-LOK REPAIR KIT 1-3/4”	1
2	903-18334	WWCV AUTO-LOK YOKE ASSEMBLY 1-3/8”	1
	903-18327	WWCV AUTO-LOK YOKE ASSEMBLY 1-3/4”	1
3	903-18328	AB8/AW24EBL CROSS & BEARING KIT	2
4	903-18329	WWCV CENTER HOUSING	1
5	903-18330	WWCV YOKE & SHAFT (1.69-20 SPLINE)	1
6	903-18389	OUTER GUARD	1
7	903-18248	GUARD REPAIR KIT	2
8	903-17455	SAFETY SIGN	1
9	903-17456	SAFETY SIGN	1
10	903-18390	INNER GUARD	1
11	903-18391	YOKE, TUBE, & SLIP SLEEVE	1
12	903-17239	55E CROSS & BEARING KIT	1
13	903-18303	OVER RUNNING FRICTION CLUTCH ASSEMBLY	1
	903-18283	GUARD SET	1
	903-18315	CV SLIP CLUTCH PTO, 1-3/8”, COMPLETE	
	903-18314	CV SLIP CLUTCH PTO, 1-3/4”, COMPLETE	

TORQ MASTER CLUTCH COMPONENTS



TORQ MASTER CLUTCH COMPONENTS

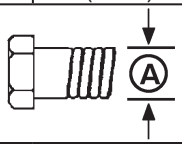
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	903-18191	YOKE	1
2	903-18226	OVERRUNNING REPAIR KIT, (2, 6, 7, 8, 9) {Not Shown}	
3	903-18165	WAVE SPRING	1
4	903-18154	SET SCREW, .315-18 X .25 LG	1
5	903-17541	BALL, Ø.250, GRADE 5	31
6	903-18232	OVERRUNNING INNER HUB	1
7	903-18167	WASHER	1
8	903-18168	RETAINING RING	1
9	903-18170	LEAF SPRING	2
10	903-18171	OVERRUNNING KEY	2
11	903-18169	OVERRUNNING HUB	1
12	900-03055	BOLT, M10 X 1.50 X 25mm LG, CLASS 10.9	4
13	903-18227	HOUSING	1
14	903-18175	FRICTION DISC	2
15	903-18174	SEPARATOR PLATE	1
16	903-18228	PRESSURE PLATE	1
17	903-18195	SPRING	1
18	900-11236	WASHER, M8 NARROW	24
19	900-03053	BOLT, M8 X 1.25 X .60 LG, CLASS 10.9	6
20	900-06548	NUT, M8 X 1.25	6
21	903-18229	COMPRESSION PLATE	1
22	903-03098	BOLT, .500-13 X 3.50 LG., GRADE 8	2
23	903-18340	HUB CLAMP	2
24	900-06549	NUT, LOCK .500-13, GRADE G	2
	903-18233	CLAMP - INCLUDES: #22 - #24	
	903-18234	YOKE & HUB ASM. - INCLUDES: #1 - #11	
	903-18235	FRICTION PACK - INCLUDES: #12 - #21	
	903-18303	FRICTION OVERRUNNING CLUTCH ASSEMBLY - INCLUDES: 903-18336, 903-18337, 903-18338	

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.

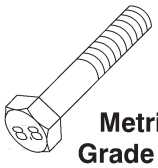
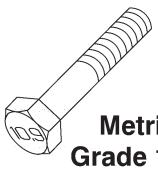
Make sure fastener threads are clean and you properly start thread engagement.

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)		

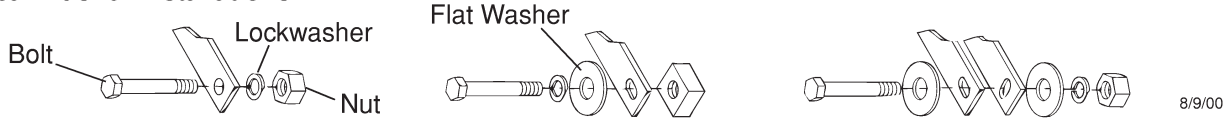
Metric Series Torque Chart

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** MARKING ON HEAD				**FINE THREAD** MARKING ON HEAD				Ⓐ Diameter & Thread Pitch (Millimeters)	**Metric Bolt Head Identification**
		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	
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	 **Metric Grade 10.9**
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

AG ..... Agriculture
ASAE ..... American Society of Agricutural 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
HH ..... Hex Head
HT ..... Heat Treated
in ..... Inch
JIC ..... Joint Industry Counicl 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

INDEX

WARRANTY

Please Enter Information Below and Save For Future Reference.

Date Purchased: _____ From (Dealer): _____

Model Number:_____ Serial Number: _____

ALLOWAY STANDARD, d/b/a ALLOW AY, 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 obtainable 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.

THERE ARE NO WARRANTIES, WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE OF THIS WARRANTY. ALLOWAY MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, AND ALLOWAY SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY AND/OR ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

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

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

No agent, representative, dealer, distributor, serviceperson, 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 without express written consent of the Alloway warrenty manager.

This Warranty is effective only if the warranty registration card is returned within ten (10) days.

Answers to any questions regarding warranty service and locations may be obtained by contacting:

ALLOWAY

WARRANTY

ALLOWAY STANDARD, d/b/a ALLOWAY, warrants this product to be free from defect in material and workmanship for a period of One (1) year, ninety (90) days for Service Parts, from 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 cover normal wear or tear, or normal maintenance items.

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

ALLOWAY'S' obligation under this Warranty is limited to, at ALLOWAY'S 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.

THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE OF THIS WARRANTY. ALLOWAY MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, AND ALLOWAY SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY AND/OR ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

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

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

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 without express written consent of the Alloway warrenty manager.

Answers to any questions regarding warranty service and locations may be obtained by contacting:

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

ALLOWAY

PN: 507-5-0022 (2025)

PART NUMBER

507-5-0022

ALLOWAY

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Toll Free: 1-877-275-8714

PN: 507-5-0022 (2025)