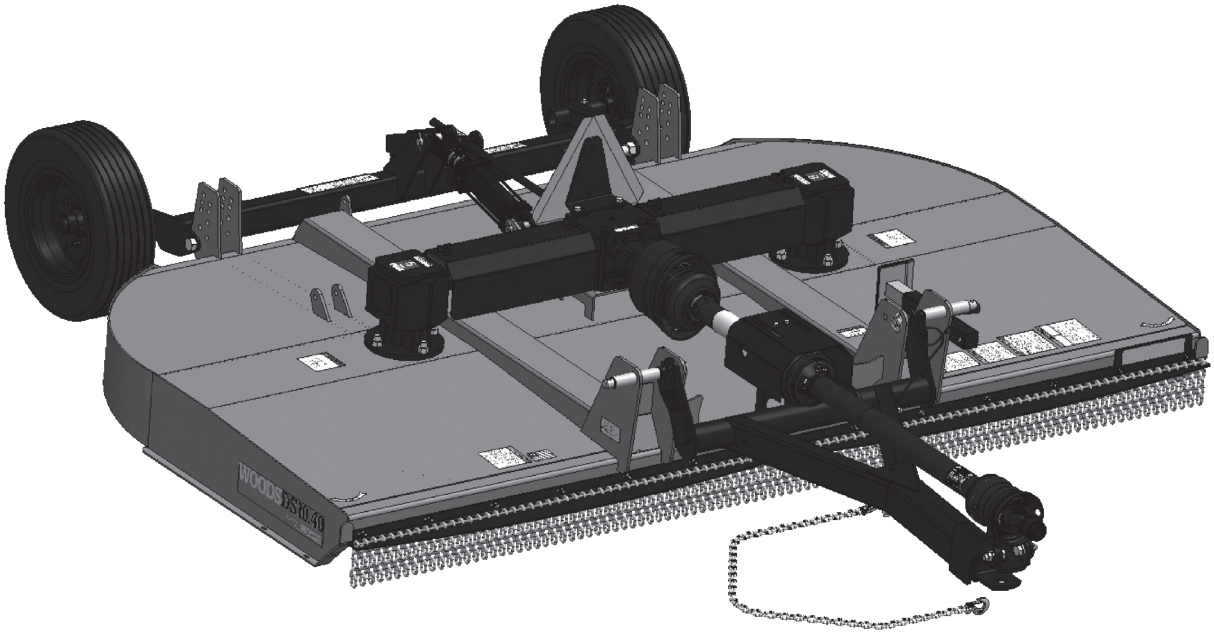
ROTARY CUTTER

DS8.30
DS10.40



OPERATOR'S MANUAL

MAN1167
(Rev 01/18/2024)

WOODS®

TO THE DEALER:

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

The dealer must complete the online Product Registration form at the Woods Dealer Website which certifies that all Dealer Checklist items have been completed. Dealers can register all Woods product at dealer.WoodsEquipment.com under Product Registration.

Failure to register the product does not diminish customer's warranty rights.

TO THE OWNER:

Read this manual before operating your Woods 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 adjustment and operating procedures before attempting to operate. Replacement manuals can be obtained from your dealer. To obtain complete warranty details, visit WoodsEquipment.com/warranty. You may also request a hard copy by calling 1-800-319-6637 or mail your request to: Woods Equipment Company, Attn: Warranty Dept. 2606 South Illinois Route 2, Oregon, IL 61061. To locate your nearest dealer, check the Dealer Locator at www.WoodsEquipment.com, or in the United States and Canada call 1-800-319-6637.

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

Use only genuine Woods 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 **NOTICE** 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 is the safety alert symbol. It is used to alert you to potential physical injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

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

WARNING Indicates a hazardous situation that, if not avoided, could result in death or serious injury.

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

IMPORTANT or *NOTICE* Is used to address practices not related to physical injury.

NOTE Indicates helpful information.

TABLE OF CONTENTS

This Operator's Manual should be regarded as part of the machine. Suppliers of both new and second-hand machines must make sure that this manual is provided with the machine.

SPECIFICATIONS

	DS8.30	DS10.40
Cutting Height	2" - 12"	
Cutting Width	96"	120"
Overall Width	100.5"	124.5"
Overall Length: Pull Type (25" Tires)	142"	155"
Overall Length: Mounted	96"	106"
Minimum Tractor HP: Pull-Type	35 HP	40 HP
Minimum Tractor HP: Mounted	45 HP	60 HP
Tractor PTO RPM	540	
Number of Blade Spindles	2	
Blade Overlap	4"	
Number of Blades	4	
Driveline w/Slip Clutch: Pull-Type	Cat 4 CV	Cat 4 CV
Driveline w/Slip Clutch: Mounted	Cat 4	Cat 5
Side Frame Thickness	7 Ga	7 Ga
Weight (w/ Belting): Pull-Type	1,440 lbs	1,820 lbs
Weight (w/ Belting): Mounted	1,215 lbs	1,575 lbs
Blade Speed (Feet per Minute)	15,200	16,700
Blade Rotation	Left Spindle: CCW; Right Spindle: CW	
Wheel Size: Pull-Type	15" Rims 21" Laminated 25" Severe Duty	15" Rims 21" Laminated 25" Severe Duty
Wheel Size: Mounted	16" Laminated	16" Laminated
Torsion Protection	Slip Clutch and Flex Couplers	

GENERAL INFORMATION

⚠ WARNING

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

The purpose of this manual is to assist you in operating and maintaining your cutter. 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.

Throughout this manual, references are made to right and left directions. These are determined by standing behind the equipment facing the direction of forward travel. Blade rotation is clockwise (left wing) and counterclockwise (right wing and center section) as viewed from the top of the cutter.

¡LEA EL INSTRUCTIVO!

Si no lee Ingles, pida ayuda a alguien que si lo lee para que le traduzca las medidas de seguridad.

NOTICE:
If you would like to receive a free Spanish language translation of the Safety Rules section of this manual, plus a set of Spanish language safety decals, please contact your local Woods dealer.

AVISO:
Si desea recibir una traducción al español gratuita de la sección de Reglas de seguridad de este manual y un juego de etiquetas de seguridad en español, por favor comuníquese con su concesionario local de Woods.

BE SAFE!

BE ALERT!

BE ALIVE!

BE TRAINED
Before Operating Mowers!

ASSOCIATION OF EQUIPMENT MANUFACTURERS

Safety Training
Does Make a Difference.

Watch a Mower Safety Video Online

The AEM (Association of Equipment Manufacturers) offers a safety training video, *Industrial and Agricultural Mower Safety Practices*. The 22-minute video can be viewed online for free at TheAEMStore,

https://youtu.be/EuktqJNAjhc

It reinforces the proper procedures to follow while operating your mowing equipment. The video does not replace the information contained in the Operator's Manual, so please review this manual thoroughly before operating your new mowing equipment.

Also, available from the Association of Equipment Manufacturers:

A large variety of training materials (ideal for groups) are available for a nominal charge from AEM. Following is a partial list:

- **Training Package for Rotary Mowers/Cutters-English**
  Contains: DVD & VHS (English)
  Guidebook for Rotary Mowers/Cutters (English)
  AEM Industrial/Agricultural Mower Safety Manual (English)
  AEM Agricultural Tractor Safety Manual (English)

- **Training Package for Rotary Mowers/Cutters-English/Spanish**
  Contains: DVD & VHS (English/Spanish)
  Guidebook for Rotary Mowers/Cutters (English/Spanish)
  AEM Industrial/Agricultural Mower Safety Manual (English/Spanish)
  AEM Agricultural Tractor Safety Manual (English/Spanish)

AEM training packages are available through:

AEM at: *www.aem.org*
or
Universal Lithographers, Inc.
Email: aem@ulilitho.com
800-369-2310 tel
866-541-1668 fax

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 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.

TRAINING

- **Safety instructions are important! Read all attachment and power unit manuals; follow all safety rules and safety decal information. (Replacement manuals and safety decals are available from your dealer. To locate your nearest dealer, check the Dealer Locator at www.WoodsEquipment.com, or in the United States and Canada call 1-800-319-6637.) 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 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.

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

PREPARATION

- **Check that all hardware is 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. When connecting equipment or hoses or performing any hydraulic maintenance, purge any air in hydraulic system by operating all hydraulic functions several times. Do this before putting into service or allowing anyone to approach the equipment.**
- **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 getting caught in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.**
- **Make sure attachment is properly secured, 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.**
- **If equipped with driveline guard tether chains, make sure they are attached to the tractor and equipment as shown in the pamphlet that accom-panies the driveline. Replace if damaged or broken. Check that driveline guards rotate freely on drive-line before putting equipment into service.**
- **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 system in "locked up" position at all times.**
- **Inspect chain or rubber belt shielding before each use. Replace if damaged.**
- **Remove accumulated debris from this equipment, power unit, and engine to avoid fire hazard.**
- **Make sure all safety decals are installed. Replace if damaged. (See Safety Decals section for location.)**

SAFETY RULES

⚠ ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED! ⚠

- **Make sure shields and guards are properly installed and in good condition. Replace if damaged.**
- **Do not put this equipment into service unless all side skids are properly installed and in good condition. Replace if damaged.**
- **A minimum 20% of tractor and equipment weight must be on the tractor front wheels when attachments are in transport position. Without this weight, front tractor wheels could raise up resulting in loss of steering. The weight may be attained with front wheel weights, ballast in tires, front tractor weights or front loader. Weigh the tractor and equipment. Do not estimate.**
- **Inspect and clear area of stones, branches, or other hard objects that might be thrown, causing injury or damage.**
- **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.**

OPERATION

- **Full chain shielding must be installed when operating in populated areas or other areas where thrown objects could injure people or damage property.**
  - **If this machine is not equipped with full chain shielding, operation must be stopped.**
  - **This shielding is designed to reduce the risk of thrown objects. The mower deck and protective devices cannot prevent all objects from escaping the blade enclosure in every mowing condition. It is possible for objects to ricochet and escape, traveling as much as 300 feet (92m).**
- **Do not allow bystanders in the area when operating, attaching, removing, assembling, or servicing equipment.**
- **Never direct discharge toward people, animals, or property.**
- **Do not operate or transport equipment while under the influence of alcohol or drugs.**
- **Operate only in daylight or good artificial light.**
- **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 system 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 540 RPM. Do not exceed.**
- **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.**
- **Leak down or failure of mechanical or hydraulic system can cause equipment to drop.**

TRANSPORTATION

- **The maximum transport speed for towed and semi-mounted machines is 20 mph (32 km/h). Regardless of the maximum speed capability of the towing tractor, do not exceed the implement's maximum transport speed. Doing so could result in:**
  - **Loss of control of the implement and tractor**
  - **Reduced or no ability to stop during braking**
  - **Implement tire failure**
  - **Damage to the implement or its components.**
- **Use additional caution and reduce speed when under adverse surface conditions, turning, or on inclines.**
- **Never tow this implement with a motor vehicle.**
- **Do not operate PTO during transport.**
- **Do not operate PTO during transport.**
- **Do not operate or transport equipment while under the influence of alcohol or drugs.**
- **Always comply with all state and local lighting and marking requirements.**
- **Never allow riders on power unit or attachment.**

SAFETY RULES

ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

MAINTENANCE

- **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 performing any service or maintenance, disconnect driveline from tractor PTO.**
- **Before working underneath, raise mower, install transport lock, and block mower securely. Hydraulic system leak down and failure of mechanical or hydraulic system can cause equipment to drop.**
- **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 getting caught 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 bystanders 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.**
- **Make sure attachment is properly secured, adjusted, and in good operating condition.**
- **Keep all persons away from operator control area while performing adjustments, service, or maintenance.**
- **Make certain all movement of equipment components has stopped before approaching for service.**
- **Frequently check blades. They should be sharp, free of nicks and cracks, and securely fastened.**
- **Do not handle blades with bare hands. Careless or improper handling may result in serious injury.**
- **Your dealer can supply genuine replacement blades. Substitute blades may not meet original equipment specifications and may be dangerous.**
- **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 putting unit into service.**
- **Make sure all safety decals are installed. Replace if damaged. (See Safety Decals section for location.)**
- **Make sure 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 valve levers.**
- **Leak down or failure of mechanical or hydraulic system can cause equipment to drop.**
- **Explosive separation of tire and rim parts can cause serious injury or death. Release all air pressure before loosening bolts on wheel.**

STORAGE

- **Keep children, bystanders and animals away from the equipment and the storage area.**
- **Follow manual instructions for storage.**

ON MOUNTED CUTTERS:

- **Disconnect cutter driveshaft and secure up off ground. Raise cutter with 3-point hitch. Place blocks under cutter side skids. Lower cutter onto blocks. Disconnect hydraulic lines to optional cylinder. Disconnect cutter from tractor 3-point hitch and carefully drive tractor away from cutter.**

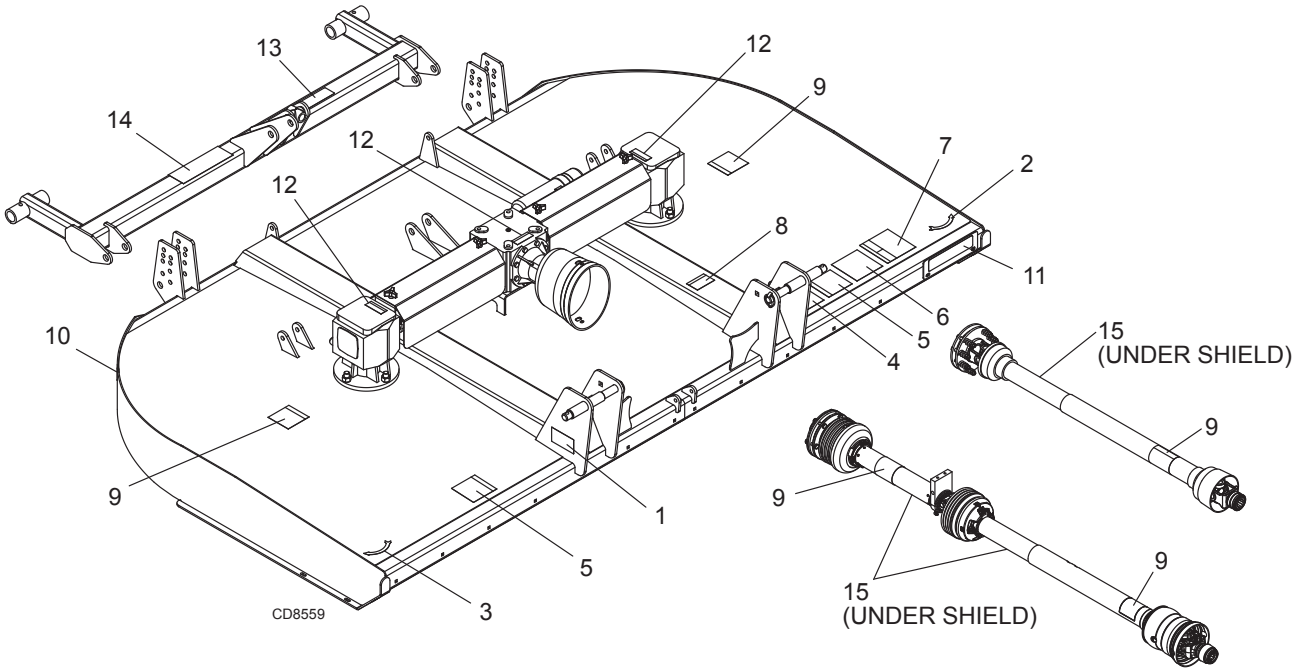
ON PULL-TYPE CUTTERS:

- **Raise cutter and block securely. Block wheels and raise tongue with jack. Disconnect hydraulic lines to optional cylinder. Disconnect driveline and secure up off the ground.**

SAFETY & INSTRUCTIONAL DECALS

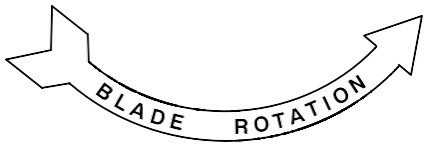
ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

Replace Immediately If Damaged!

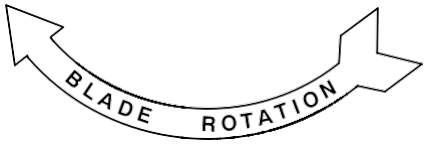


1 - SERIAL NUMBER PLATE

2 - PN 5669



3 - PN 12777



4 - PN 18877

10 - PN 57123
RED REAR REFLECTOR 9"
11 - PN 1002940
AMBER FRONT REFLECTOR 9"

BE CAREFUL!

Keep safety decals clean and visible.

Use a clean, damp cloth to clean safety decals.

Avoid spraying too close to decals when using a pressure washer; high-pressure water can enter through very small scratches or under edges of decals causing them to peel or come off.

Replace safety decals if they are missing or illegible.

Replacement safety decals can be ordered free from your Woods dealer, or in the United States and Canada call 1-800-319-6637.

SAFETY & INSTRUCTIONAL DECALS

ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

Replace Immediately If Damaged!

5 - PN 1003751

6 - PN 15503

7 - PN 18865

8 - PN 18866

9 - PN 18864

12 - PN 1004114

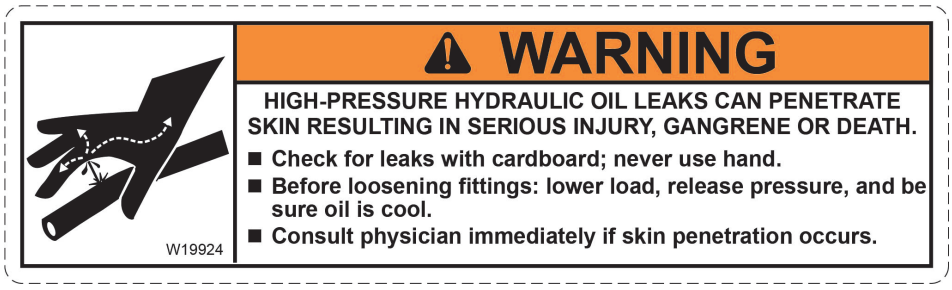
SAFETY & INSTRUCTIONAL DECALS

ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

Replace Immediately If Damaged!

14 - PN 1004991

13 - PN W19924



15 - PN 33347

PN 1006348 (LOCATED ON WHEEL RIMS)

PN 603626 (LOCATED ON A-FRAMES)

OPERATION

The operator is responsible for the safe operation of the cutter. The operator must be properly trained. Operators should be familiar with the cutter, the tractor, and all safety practices before starting operation. Read the safety rules and safety decals on pages 7 to 12.

This medium-duty cutter is designed for grass and weed mowing and shredding.

Recommended mowing speed for most conditions is from 2 to 5 mph.

⚠ DANGER

- **Full chain or rubber shielding must be installed when operating in populated areas or other areas where thrown objects could injure people or damage property.**
  - **If this machine is not equipped with full chain or rubber shielding, operation must be stopped when anyone comes within 300 feet (92 m).**
  - **This shielding is designed to reduce the risk of thrown objects. The mower deck and protective devices cannot prevent all objects from escaping the blade enclosure in every mowing condition. It is possible for objects to ricochet and escape, traveling as much as 300 feet (92 m).**

⚠ WARNING

- **Never allow riders on power unit or attachment.**
- **Make sure spring-activated locking pin or collar slides freely and is seated firmly in tractor PTO spline groove.**
- **Operate tractor PTO at 540 RPM. Do not exceed.**
- **Do not allow bystanders within 25 feet of the area when operating, attaching, removing, assembling, maintaining, or servicing equipment.**
- **Stop power unit and equipment immediately upon striking an obstruction. Turn off engine, set parking brake, remove key, inspect, and repair any damage before resuming operation.**

⚠ CAUTION

- **Always wear relatively tight and belted clothing to avoid getting caught 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.**
- **Safety tow chain must be hooked-up to both the implement and tractor during operation or transport. A loose, dragging chain could be struck by the blades causing serious injury.**

TRACTOR STABILITY

⚠ WARNING

- **A minimum 20% of tractor and equipment weight must be on the tractor front wheels when attachments are in transport position. Without this weight, tractor could tip over, causing personal injury or death. The weight may be attained with front wheel weights, ballast in tires or front tractor weights. Weigh the tractor and equipment. Do not estimate.**

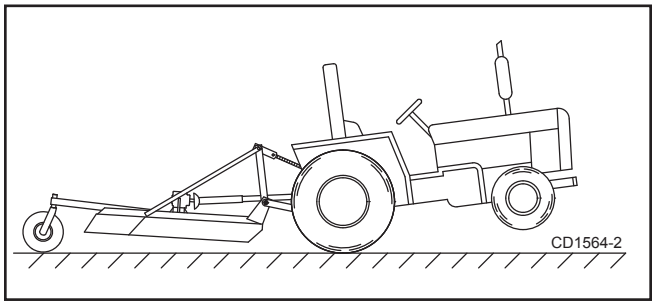


Figure 1. Tractor Stability

CONNECT CUTTER TO TRACTOR

(PULL-TYPE)

NOTICE

- **The horizontal distance between the end of the tractor PTO shaft and the drawbar hitch point should be 14" for 540 RPM cutters. This distance must not vary more than plus or minus (1") or the drive may be damaged when turning.**

1. Adjust tractor drawbar to obtain the desired drawbar hitch point distance.

   NOTE: On some tractors, a drawbar kit must be used to obtain the required dimension. Check with your tractor dealer for assistance.

2. Attach parking jack to cutter tongue. Raise tongue to tractor drawbar height.
3. Secure cutter to tractor using a 3/4" clevis pin and clip for category 1, or 1-1/8" clevis pin and clip for category 2.
4. Attach safety tow chain to drawbar support. Leave enough slack for turning.
5. Connect cutter driveline to tractor PTO shaft, making sure the spring-activated lock pin slides freely and is seated in tractor PTO splined groove.
6. Remove parking jack from the tongue and attach it to the storage post on the front of the cutter.

Hydraulic Connection

1. Inspect hydraulic hoses to ensure they are in good condition.
2. Clean the fittings before connecting them to the tractor hydraulic ports.
3. Attach the hydraulic hose to the tractor.
4. Route the hose through the hose holder at the hitch and be sure the hose can slide freely in the holder. Do not allow hose slack to drag on the ground or become caught on tractor protrusions.
5. From the operator position, start tractor and raise and lower deck several times to purge trapped air from the hydraulic cylinder.

Interference Check

1. Be sure that tractor 3-point lift links do not interfere with hydraulic hoses, cutter driveline, or cutter frame.
2. Check for straight-ahead operation and at full-turning angles. If there is any interference, remove the lower lift links.
3. Contact between tractor lift links and cutter parts can cause damage, especially when turning.

CV Driveline Turning Limits

NOTICE

- **You must not exceed a turning angle of 80 degrees at the head of the Constant Velocity driveline or damage will occur.**

To check for potential excessive turn angle:

1. Disconnect driveline from tractor, start engine and turn as far right or left as possible.
2. Shut engine off, set parking brake, remove key, and try to connect CV driveline to tractor. If it cannot be connected, the angle is too severe.
3. Restart engine and straighten angle slightly. Repeat step 2 until driveline can be connected. The point at which the driveline can be connected is the maximum turn that should be made.

CONNECT CUTTER TO TRACTOR

(MOUNTED)

⚠ WARNING

- **A minimum 20% of tractor and equipment weight must be on the tractor front wheels when attachments are in transport position. Without this weight, front tractor wheels could raise up resulting in loss of steering. The weight may be attained with front wheel weights, ballast in tires, front tractor weights or front loader. Weigh the tractor and equipment. Do not estimate.**

Tractor Adjustments

Before attaching tractor to cutter, install sway blocks or sway chains, or adjust stabilizer bars. Refer to the tractor operator's manual for instructions.

Install tractor front end weights as recommended by the tractor manufacturer to provide 20% of weight on front wheels.

DS8.30 Category 1 Standard Hitch

1. Position tractor lower lift arms between hitch mast plates.
2. Insert lower hitch pins (1) through mast plates and tractor lower lift arms. Use sleeves (2) to keep lift arms in position. Secure with 7/16" klik pins (4).
3. Connect the tractor top link to the cutter A-frame using the middle holes and 3/4" pin (5), cotter pin (6), and 1/4" klik pin (7). See Figure 2.

DS8.30 Category 2 Standard Hitch

1. Position tractor lower lift arms between hitch mast plates.
2. Insert lower hitch pins (1) and 1-1/8" OD sleeves (2) through mast plates and tractor lower lift arms. Use sleeves (3) to keep lift arms in position. Secure with 7/16" klik pin (4).
3. Connect the tractor top link to the cutter A-frame using the top holes and 1" pin supplied with tractor top link. See Figure 2.

DS8.30 Category 1 & 2 Quick Hitch

1. Insert lower hitch pins (1), 1-1/8" OD sleeves (2), and 1-7/16" OD sleeves (3) through mast plates. Secure with 7/16" klik pins (4). Note the sleeve orientation in Figure 2.
2. The upper hook on quick hitch will engage 1-1/4" sleeve (8) between break links (9).
3. Attach tractor to cutter and secure hitch according to hitch manufacturer's instructions.

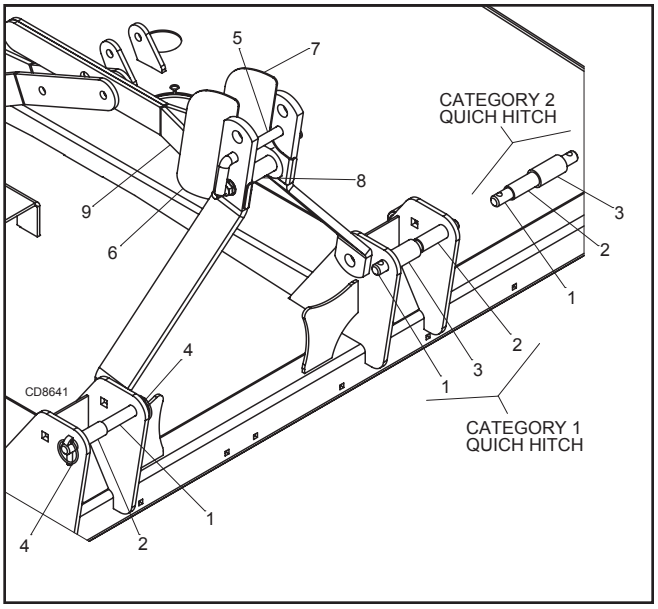


Figure 2. DS8.30 Standard and Quick Hitch Connection

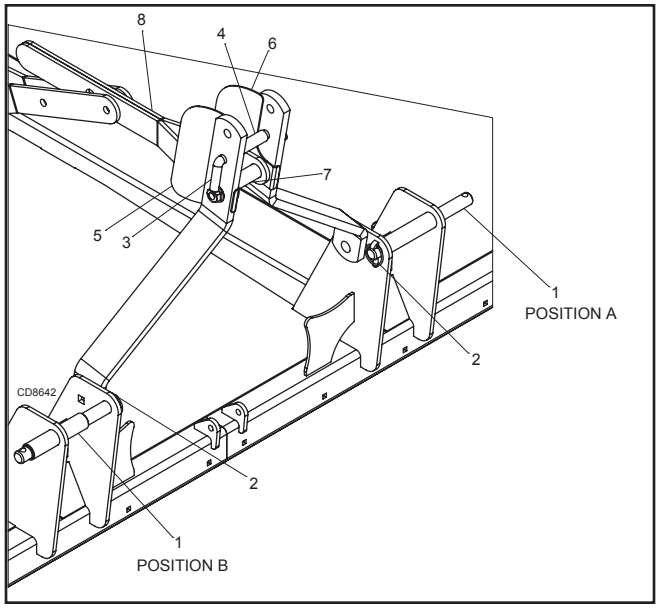


Figure 3. DS10.40 Standard and Quick Hitch Connection

DS10.40 Category 2 Standard Hitch

1. Position tractor lower lift arms between hitch mast plates.
2. Insert lower hitch pins (1) to Position B, Figure 3, through mast plates and tractor lower lift arms.
3. Secure with klik pins (2).
4. Connect the tractor top link to the cutter A-frame using the middle holes and 3/4" pin (3), 1" OD sleeve (4),cotter pin (5), and 1/4" klik pin (6).

DS10.40 Category 3 Standard Hitch

1. Position tractor lower lift arms between hitch mast plates.
2. Insert lower hitch pins (1) to Position A, Figure 3.
3. Secure with klik pins (2).
4. Connect the tractor top link to the cutter A-frame using top holes and 3/4" pin (3), 1-1/4" OD sleeve (not shown), cotter pin (5), and 1/4" klik pin (6).

DS10.40 Category 2 & 3 Quick Hitches

1. Position lower hitch pins (1) to Position A, Figure 3.
2. The upper hook on the quick hitch will engage the 1-1/4" sleeve (7) between break links (8) as shown for Category 2. Break links and sleeve will need to be moved up to the middle hole of the A-frame for Category 3.
3. Attach tractor to cutter and secure hitch according to hitch manufacturer's instructions.

DRIVELINE ADJUSTMENT

(MOUNTED DS8.30 & DS10.40)

Attach the cutter to the tractor 3-point hitch (or quick hitch if available). Do not attach driveline at this time.

NOTICE

- **If attaching cutter using a Quick Hitch the distance between the tractor PTO and the gearbox input shaft will increase. Follow steps as you would for the 3-point hitch to insure proper engagement.**

Raise and lower cutter and measure the maximum and minimum distance between the tractor PTO shaft and the gearbox input shaft. Separate the driveline into two halves and lay them side-by-side with U-joints at opposite ends.

Set the two u-joints at the maximum distance measures (this is the cutters lowest point of operation) and check the amount of overlap between the two drive halves. There must be at least 4 inches of overlap. If the driveline is too short (less than 4" overlap) contact your Woods dealer for a longer drive.

Set the two U-joints to the minimum distance measured (this is the cutters highest point) and check to see if the driveline bottoms out. If driveline is too long follow the instructions to shortening the drive.

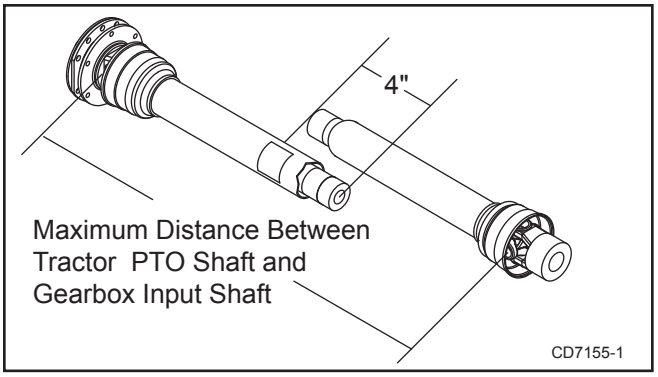


Figure 4. 4 Inch Minimum Overlap

Shortening Driveline

1. Separate driveline into two halves and connect them to the tractor PTO and gearbox.
2. Place driveline halves parallel to one another to determine how much to shorten the driveline.

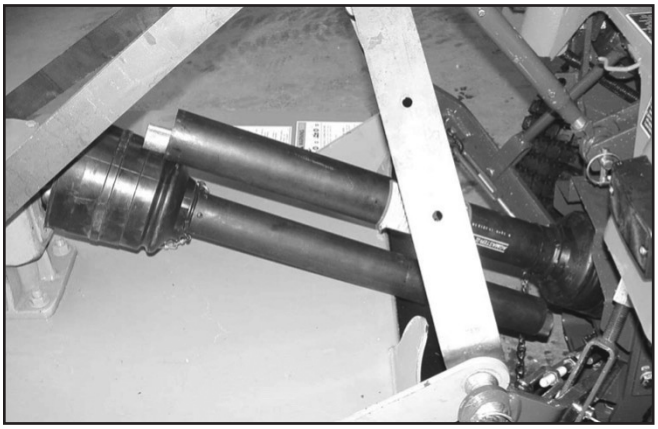


Figure 5. Drive Halves Placed Parallel

3. Measure from end of the upper shield to the base of the bell on the lower shield (A). Add 1-9/16" to dimension (A). See Figure 6.

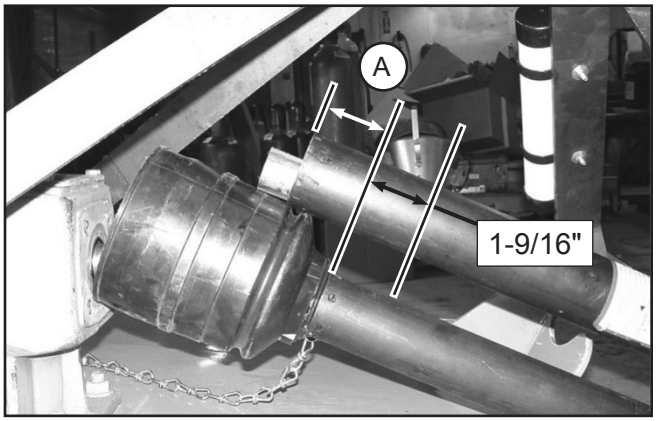


Figure 6. Determine Shield Length

4. Cut the shield to the overall dimension.

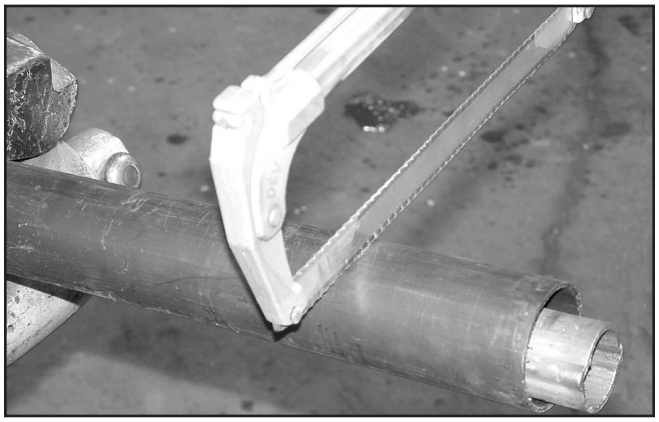


Figure 7. Cut Shield

5. Place the cutoff portion of the shield against the end of the shaft and use it as a guide. Mark and cut the shaft.

Figure 8. Cut Shaft to Length

6. Repeat step 5 for other half of drive.
7. File and clean ends of both drive halves.

Driveline Interference Check

1. Check for proper clearance between driveline and mower deck.
2. Slowly lift mower and observe driveline. If clearance between driveline and mower deck is less than 1 inch, shorten top link or limit upper travel of lower hitch arms. Refer to tractor operator's manual for instructions.

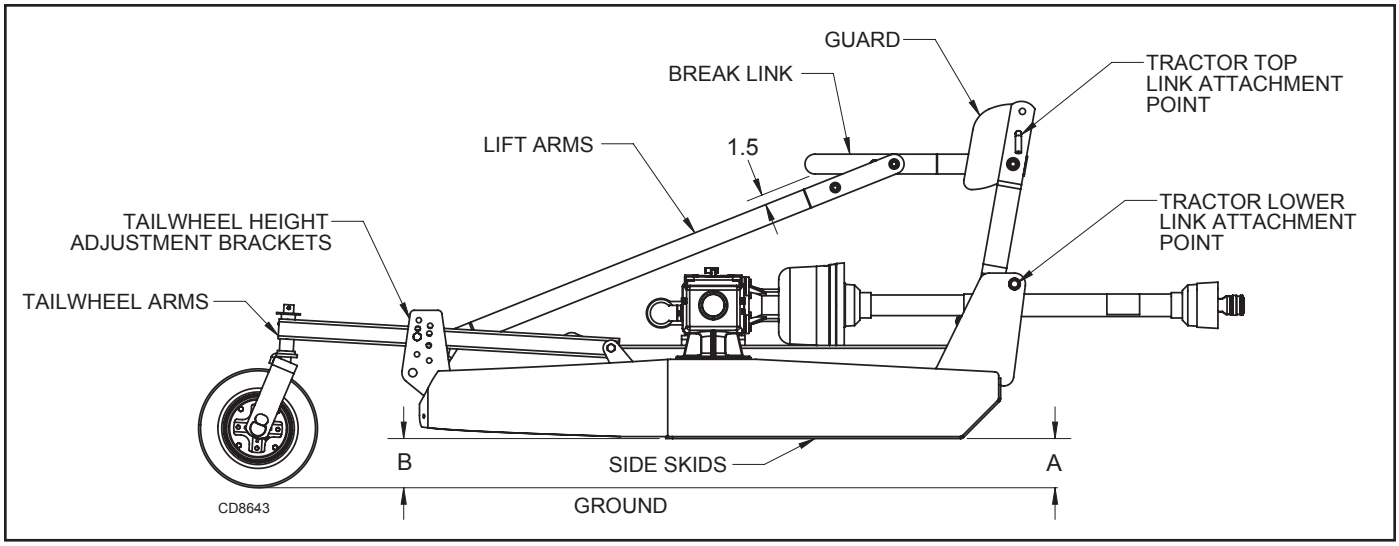


Figure 9. Cutting Height Adjustment

CUTTING HEIGHT ADJUSTMENT

NOTICE

- **Avoid ground contact with blades. Striking ground with blades produces one of the most damaging shock loads a cutter can encounter. If this occurs repeatedly, the cutter, driveline, and gearboxes will be damaged.**

Cutting height range is from 2" to 12".

When selecting a cutting height, you should consider the area of operation. If the ground is rolling and has mounds the blades could contact, set the cutting height accordingly.

Pull-Type Units

To adjust cutter for normal mowing, select a cutting height (example: 4 inches). Blades are approximately 1-3/4" above bottom of cutter. Dimension A plus 1-1/4" equals the cutting height.

Using hydraulic cylinder, raise or lower the tailwheel and set position A to 2-3/4 inches to achieve a 4" cutting height.

Loosen the jam nut on the attitude rod that runs from the tongue to the tailwheel. Adjust rod in or out until position B is approximately 1/4 to 1/2 inches more than position A. Refer to Figure 9.

Mounted Units

To adjust cutter for normal mowing, select a cutting height (example: 4"). Blades are approximately 1-1/4" above the bottom of cutter. Dimension A plus 1-1/4" equals cutting height.

Adjust tractor 3-point hitch to obtain a distance of 2-3/4 inches at position "**A**" to obtain a 4" cutting height. See Figure 9.

Adjust the position of the tailwheel arms between the tailwheel height adjustment brackets to obtain a distance greater than 2-3/4" at position "**B**"

Adjust top link to provide 1-1/2" of clearance between the break link (2) and the rear lift links. See Figure 9.

This clearance will allow the cutter to float over uneven terrain.

ATTITUDE ADJUSTMENT

(PULL-TYPE)

Normal Mowing

For the most economical power use and best cutting results, the cutter should be from 1/2" to 3/4" higher at the rear than at the front.

For grass and weed mowing, adjust cutter to run level or with the front slightly lower.

Shredding

For shredding, it is better to set rear of cutter slightly lower than the front. How much lower depends on the material to be shredded. Determine the best setting for your situation by experimenting. Use a slow ground speed for better shredding.

BLADE SELECTION

There are two blade options: standard suction blades and flat double-edge blades.

The standard suction blade is a general use, multi-purpose blade.

The double-edge blade requires less power because it does not mulch or recut material. It is designed for use

in areas where blade wear is a problem. Sandy soils are extremely hard on blades.

Blade rotation, viewed from top of cutter, is clockwise for the right crossbar, and counter-clockwise for the left crossbar.

When one cutting surface of a double-edge blade is worn, the opposite one may be used by placing the blade on a crossbar of the opposite rotation. Blades from the right may be used on the left. Blades from the left may be used on the right.

Blades must be moved in pairs. Never use one new blade and one used blade on a crossbar.

TRACTOR OPERATION

Use care when operating around tree limbs and other low objects.

Use care and reduce ground speed on rough terrain. Always watch for hidden hazards.

Being knocked off or falling off tractor can result in serious injury or death.

Only use a tractor with a Roll Over Protective Structure (ROPS) and seat belt. Securely fasten seat belt before starting tractor.

The cutter is operated with tractor controls. Engage the PTO at a low rpm to prevent excessive loads on the cutter drive system. Increase throttle to proper PTO speed (540 rpm).

Be sure operator is familiar with all controls and can stop tractor and cutter quickly in an emergency. The operator should give complete, undivided attention to operating tractor and cutter.

OPERATING TECHNIQUE

Power for operating the cutter is supplied by the tractor PTO. Operate PTO at 540 rpm. Know how to stop the tractor and cutter quickly in an emergency.

Engage PTO at a low engine rpm to minimize stress on the drive system and gearbox. With PTO engaged, raise PTO speed to 540 rpm and maintain throughout cutting operation.

Gearbox protection is provided by a slip clutch with replacement fiber disc. The slip clutch is designed to slip when excessive torsional loads occur.

Move slowly into material. Adjust tractor ground speed to provide a clean cut without lugging the tractor engine. Use a slow ground speed for better shredding.

Proper ground speed will depend on the terrain and the material's height, type, and density.

Normally, ground speed will range from 2 to 5 mph. Tall, dense material should be cut at a low speed; thin, medium-height material can be cut at a faster ground speed.

Always operate tractor PTO at 540 rpm to maintain blade speed and to produce a clean cut.

Under certain conditions tractor tires may roll down some grass and prevent cutting at the same height as the surrounding area. When this occurs, reduce your ground speed but maintain PTO at 540 rpm. The lower ground speed will permit grass to rebound partially.

Cutter Operation

When beginning operation of the cutter, make sure that all persons are in a safe location. Slowly move into the material with the tractor PTO set at 540 rpm.

Mowing Tips

⚠ WARNING

- **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.**

⚠ CAUTION

- **Stop power unit and equipment immediately upon striking an obstruction. Turn off engine, remove key, inspect, and repair any damage before resuming operation.**

Maximum recommended ground speed for cutting or shredding is 6 miles per hour. Adjust tractor ground speed by using higher or lower gears to provide a clean cut without lugging tractor engine.

Tall material should be cut twice. Cut material higher the first pass. Cut at desired height at 90 degrees the second pass.

Remember, sharp blades produce cleaner cuts and use less power.

Before entering an area, analyze it to determine the best procedure. Consider the height and type of material to be cut and the terrain type (hilly, level or rough, etc.).

TRANSPORTING

⚠ WARNING

- **The maximum transport speed for towed and semi-mounted machines is 20 mph (32 km/h). Regardless of the maximum speed capability of the towing tractor, do not exceed the implement's maximum transport speed. Doing so could result in:**
  - **Loss of control of the implement and tractor**
  - **Reduced or no ability to stop during braking**
  - **Implement tire failure**
  - **Damage to the implement or its components.**
- **Use additional caution and reduce speed when under adverse surface conditions, turning, or on inclines.**
- **Never tow this implement with a motor vehicle.**

1. Always transport with cutter in raised, locked position.
2. Raise cutter with hydraulic cylinder.
3. Rotate transport lock over cylinder rod.
4. Lower cylinder against transport lock.
5. To lower cutter for operation, extend hydraulic cylinder. Rotate transport lock back away from cylinder rod. Lower to desired cutting height.

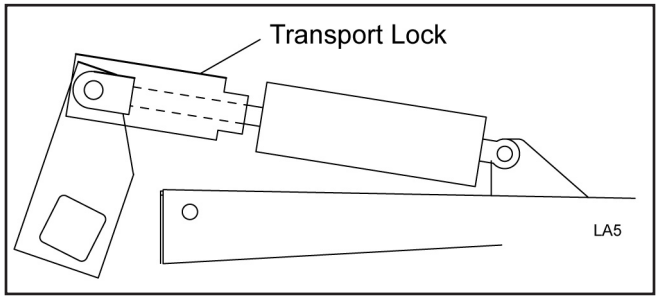


Figure 10. Transport Lock Operation

STORAGE

⚠ WARNING

- **Keep children, bystanders and animals away from the equipment and the storage area.**

ON MOUNTED CUTTERS:

- **Disconnect cutter driveshaft and secure up off ground. Raise cutter with 3-point hitch. Place blocks under cutter side skids. Lower cutter onto blocks. Disconnect hydraulic lines to optional cylinder. Disconnect cutter from tractor 3-point hitch and carefully drive tractor away from cutter.**

ON PULL-TYPE CUTTERS:

- **Raise cutter and block securely. Block wheels and raise tongue with jack. Disconnect hydraulic lines to optional cylinder. Disconnect driveline and secure up off the ground.**

PRE-OPERATION CHECKLIST

(OWNER'S RESPONSIBILITY)

_____ Review and follow all safety rules and safety decal instructions on pages 7 through 12.

_____ Check that all safety decals are installed and in good condition. Replace if damaged.

_____ Check that equipment is properly and securely attached to tractor.

_____ Make sure driveline spring-activated locking pin or collar slides freely and is seated firmly in tractor PTO spline groove.

_____ Set tractor PTO at correct rpm for your equipment.

_____ Lubricate all grease fitting locations. Make sure PTO shaft slip joint is lubricated.

_____ Check that all hydraulic hoses and fittings are in good condition and not leaking before starting tractor. Check that hoses are not twisted, bent sharply, kinked, frayed, or pulled tight. Replace any damaged hoses immediately.

_____ Raise and lower equipment to make sure air is purged from hydraulic cylinders and hoses.

_____ Check that all hardware is properly installed and secured.

_____ Check to ensure blades are sharp, in good condition, and installed correctly. Replace if damaged.

_____ Make sure tractor ROPS or ROPS cab and seat belt are in good condition. Keep seat belt securely fastened during operation.

_____ Check that shields and guards are properly installed and in good condition. Replace if damaged.

_____ Check cutting height, front-to-rear attitude, and top link adjustment.

_____ Before starting engine, operator must be in tractor seat with seat belt fastened. Place transmission in neutral or park, engage brake and disengage tractor PTO.

_____ Inspect area to be cut and remove stones, branches, or other hard objects that might be thrown and cause injury or damage.

_____ Check that belt or chain shielding is in good condition and replace any damaged parts.

_____ Make sure tractor 3-point lift links do not interfere with hydraulic hoses or driveline throughout full turning range.

OWNER SERVICE

The information in this section is written for operators who possess basic mechanical skills. If you need help, your dealer has trained service technicians available. For your protection, read and follow the safety information in this manual.

⚠ WARNING

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

⚠ CAUTION

- **If you do not understand any part of this manual and need assistance, see your dealer.**
- **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.**

BLOCKING METHOD

⚠ WARNING

- **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.**

To minimize the potential hazards or working underneath the cutter, follow these procedures:

1. Jackstands with a load rating of 1000 lbs. or more are the only approved blocking device for this cutter. Install jackstands (shown by **X**s in Figure 11) under the cutter before working underneath unit.

   Do not position jackstands under wheels, axles, or wheel supports. Components can rotate and cause cutter to fall.

2. Consider the overall stability of the blocked unit. Just placing jackstands underneath will not ensure your safety.

   The working surface must be level and solid to support the weight on the jackstands. Make sure jackstands are stable, both top and bottom. Make sure cutter is approximately level.

3. With full cutter weight lowered onto jackstands, test blocking stability before working underneath.
4. If cutter is attached to tractor when blocking, set the brakes, remove key, and block cutter before working underneath.
5. Securely block rear tractor wheels, in front and behind. Tighten tractor lower 3-point arm anti-sway mechanism to prevent side-to-side movement.

LUBRICATION

Do not let excess grease collect on or around parts, particularly when operating in sandy areas.

See Figure 11 for lubrication points and frequency or lubrication based on normal operating conditions. Severe or unusual conditions may require more frequent lubrication.

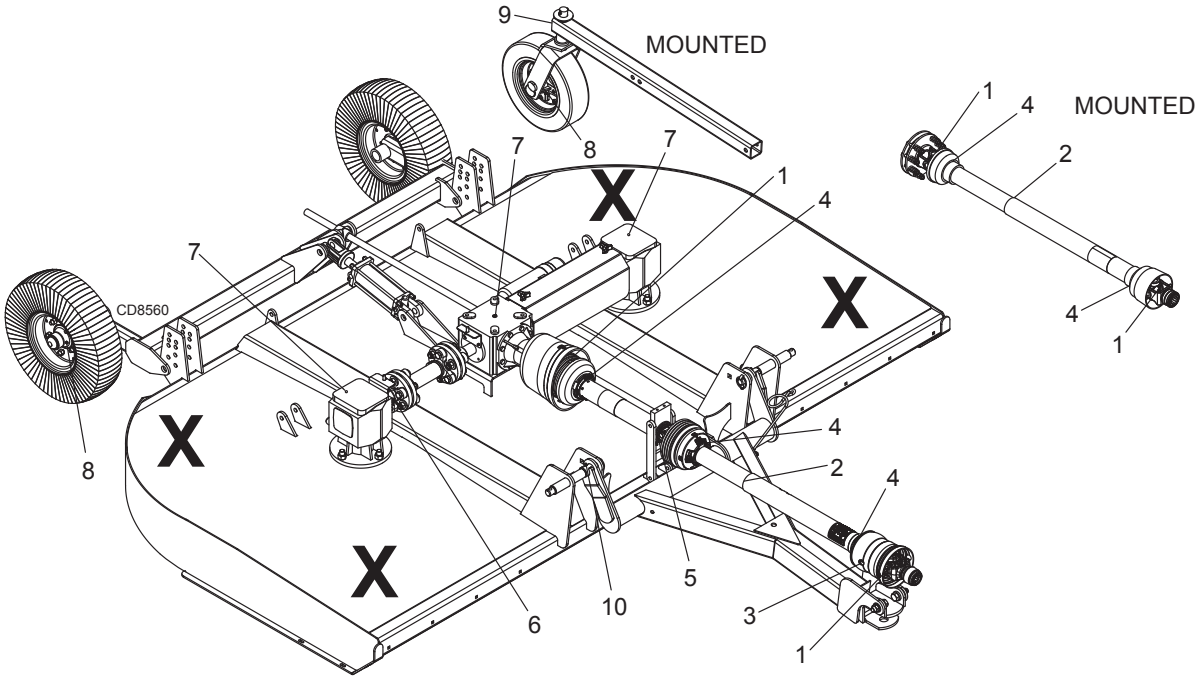
Use a lithium grease of #2 consistency with a MOLY (molybdenum disulfide) additive for all locations unless otherwise noted. Be sure to clean fittings thoroughly before attaching grease gun. One good pump of most guns is sufficient when the lubrication schedule is followed.

Gearbox Lubrication

1. For gearbox, use a high quality gear oil with a viscosity index of 80W or 90W and an API service rating of GL–4 or –5 in gearboxes.
2. Fill gearbox until oil is above lower line on dipstick. Check gearbox daily for evidence of leakage, and contact your dealer if leakage occurs.

Driveline Lubrication

1. Lubricate the driveline slip joint every ten operating hours. Failure to maintain proper lubrication could result in damage to U-joints, gearbox, and driveline.
2. Lower cutter to ground, disconnect driveline from tractor PTO shaft, and slide halves apart but do not disconnect from each other.
3. Apply a bead of grease completely around male half where it meets female half. Slide drive halves over each other several times to distribute grease.
4. Grease side drive yoke where yoke attaches to side gearbox.



REF	DESCRIPTION	FREQUENCY	REF	DESCRIPTION	FREQUENCY
1.	Driveline U-Joint	10 hrs.	6.	Side Drive Yoke	40 hrs.
2.	Telescoping Shaft	10 hrs.	7.	Gearbox (Check Oil Level)	Daily
3.	CV Body Assembly (10 pumps minimum)	10 hrs.	8.	Tailwheel Spindle	20 hrs.
4.	Driveline Shield	10 hrs.	9.	Caster Wheel Swivel	40 hrs.
5.	Carrier Bearing (DS10.40 Only)	40 hrs.	10.	Tongue Pivot	40 hrs.

Figure 11. Jackstand Placement and Lubrication Points

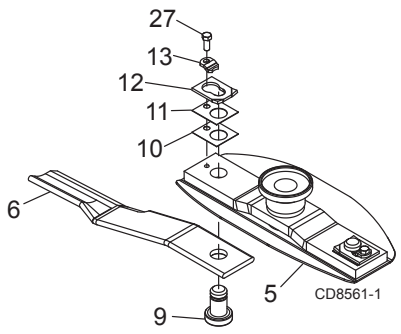
BLADE SERVICING

Removing Blades

(Figure 12)

NOTICE

- **If blade pin (9) is seized in crossbar and extreme force will be needed to remove it, support crossbar from below to prevent gearbox damage.**



5. Crossbar
6. Blade
9. Blade pin
10. Shim
11. Shim
12. Keyhole plate
13. Blade pin lock clip

Figure 12. Blade Assembly

1. Disconnect driveline from tractor PTO.
2. Raise cutter and block securely. (See Figure 11).
3. Align crossbar (5) with blade access hole in the cutter frame. Remove cap screw (27), blade pin lock clip (13), keyhole plate (12), and shims (10 & 11). Carefully drive blade pin (9) out of crossbar.
4. Rotate crossbar (5) and repeat for opposite blade.

Installing Blades

⚠ CAUTION

- **Your dealer can supply genuine replacement blades. Substitute blades may not meet original equipment specifications and may be dangerous.**

NOTICE

- **Crossbar rotation has counterclockwise rotation on left gearbox and clockwise rotation on the right gearbox when looking down on cutter. Be sure to install blade cutting edge to lead in correct rotation.**

NOTE: Always replace or sharpen both blades at the same time.

1. Inspect blade pin (9) for nicks or gouges, and if you find any, replace the blade pin.
2. Insert blade pin through the blade (6). Blade should swivel on blade pin; if it doesn't, determine the cause and correct.
3. Align crossbar (5) with blade access hole in cutter frame. Apply a liberal coating of Never Seez or equivalent to blade pin and crossbar hole. Make sure blade offset is away from cutter. Push blade pin through crossbar. Pin should rotate freely prior to installing blade clip (13).
4. Install shims (10 & 11) over blade pin.

   NOTE: Only use enough shims to allow keyhole plate (12) to slide into blade pin groove.
5. Install blade clip (13) over keyhole plate and into blade pin groove.
6. Secure into position with cap screw (27). Torque cap screw to 85 lbs-ft.
7. Repeat steps for opposite side.

   NOTE: Blade should be snug but should swivel on pin without having to exert excessive force. Keep any spacers not used in the installation as replacements or for future installation.

Sharpening Blades

NOTICE

- **When sharpening blades, grind the same amount on each blade to maintain balance. Replace blades in pairs. Unbalanced blades will cause excessive vibration, which can damage gearbox bearings. Vibration may also cause structural cracks to cutter.**

1. Sharpen both blades at the same time to maintain balance. Follow original sharpening pattern.
2. Do not sharpen blade to a razor edge—leave at least a 1/16" blunt edge.
3. Do not sharpen back side of blade.

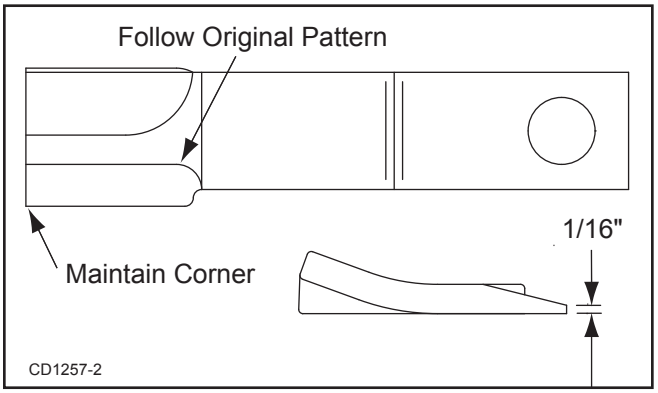


Figure 13. Sharpen Blade Cutting Edge

SLIP CLUTCH ADJUSTMENT

The slip clutch is designed to slip so that the gearbox and driveline are protected if the cutter strikes an obstruction. A new slip clutch or one that has been in storage over the winter may seize. Before operating the cutter, make sure it will slip by performing the following operation:

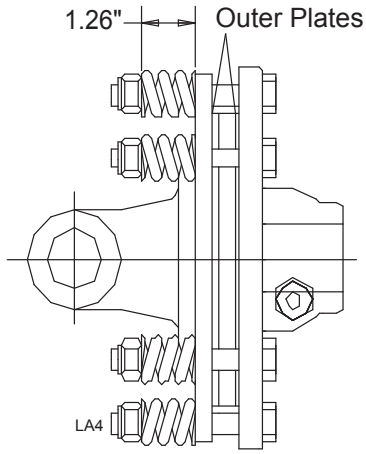
DS8.30 - 3-Point Mounted

1. Turn off tractor engine and remove key.
2. Loosen nuts on springs until the springs can rotate freely, yet remain secure on the bolts.
3. Mark outer plates of slip-disc clutch as shown in Figure 14.
4. Securely attach implement to the tractor and start the tractor.
5. Engage PTO for several seconds then quickly disengage it.
6. Turn tractor off and remove key.
7. The friction lining plates should have "slipped". Check the marks placed on the outer plates of the slip-disc clutch in step 3 to make sure this is the case.
8. If clutch does not slip, check assembly for oil grease and debris. Clean if necessary.
9. Reassemble clutch and tighten bolts no more than 1/8 of a turn at a time until desired setting of 1.26" is achieved.
10. If excessive slippage continues, check lining plates for excessive wear. They are 1/8" thick when new and should be replaced after 1/32" of wear to ensure proper operation.

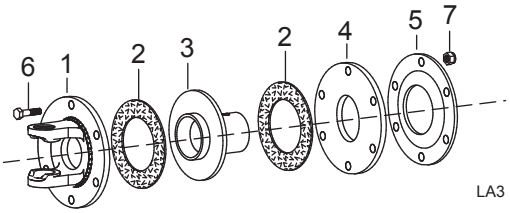
DS8.30 Pull-Type
DS10.40 Pull-Type
DS10.40 3-Point Mounted

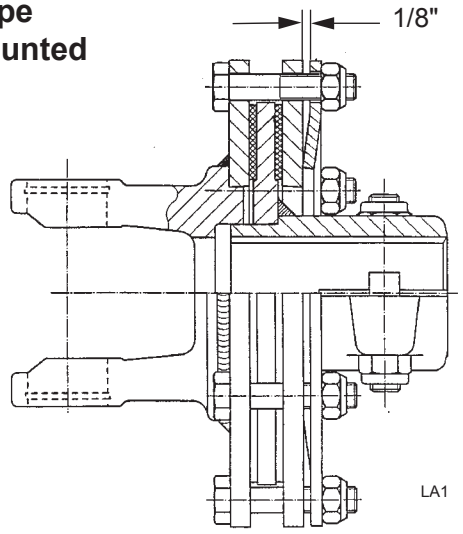
1. Turn off tractor engine and remove key.
2. Remove driveline from tractor PTO.
3. Loosen six 10 mm cap screws (6) to remove all tension from Belleville spring plate (5).
4. Hold clutch hub (3) solid and turn shaft to make sure clutch slips.
5. If clutch does not slip freely, disassemble and clean the thrust plate faces (4), flange yoke (1), and clutch hub (3).
6. Reassemble clutch. Tighten Belleville spring (5) until it is against the thrust plate (4) of the clutch, and then back off each of the six nuts by two full revolutions. The gap between Belleville spring and thrust plate should be 1/8" as shown in Figure 14.
7. If a clutch continues to slip when the spring is compressed to 1/8", check friction discs (2) for excessive wear. Discs are 1/8" when new. Replace discs after 1/16" wear. Minimum disc thickness is 1/16".

DS8.30 3-Point Mounted



DS8.30 Pull-Type
DS10.40 Pull-Type
DS10.40 3-Point Mounted





1. Flange yoke
2. Friction disc
3. Hub, 1-3/8" round bore
4. Thrust plate
5. Belleville spring plate
6. 10 mm x 1.5P x 55 mm Cap screw
7. 10 mm x 1.5P Hex nut

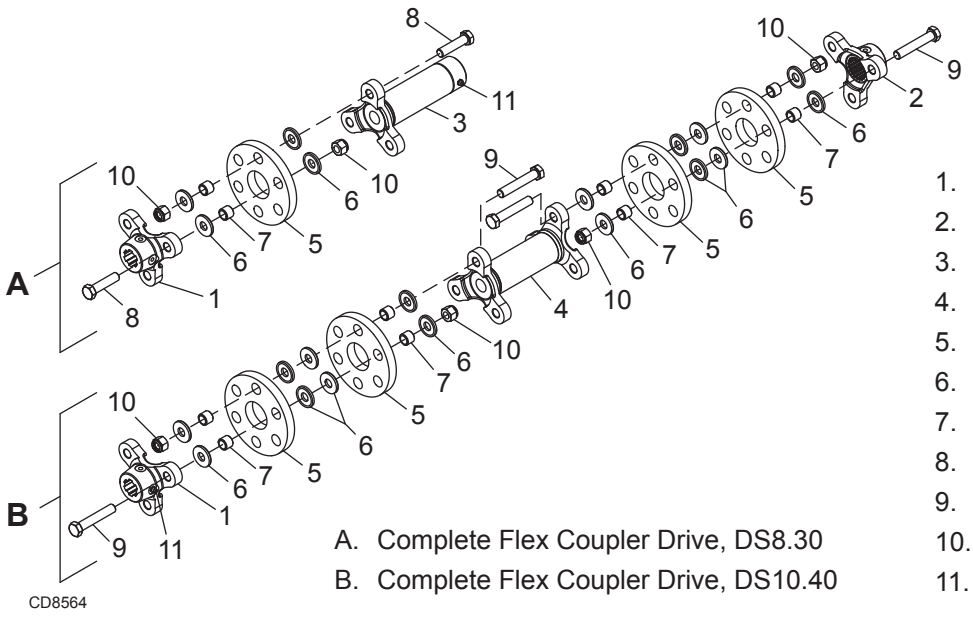
Figure 14. Slip Clutch Assembly

RUBBER DISK REPLACEMENT

The flexible coupler side drive is designed to flex when striking heavy objects or during start-up to protect gearboxes. The rubber disks will wear out over time and require replacement much like slip clutch disks. To maximize rubber disk life, lower tractor engine speed to an idle when engaging the PTO and avoid striking the ground with cutter blades.

Periodically inspect the disks for signs of cracking. A disk may run for some time after a crack starts but this is the first sign that disk replacement is required in the future.

To replace the disks, remove hardware items (6, 7, 8 or 9 and 10). Remove sleeves (7) from old disk and install in new disk. Reassemble and torque bolts to 85 lbs-ft. See Figure 15. Take special care not to rotate gearbox shaft and throw blades out of time. If rubber disks have failed and blades are hitting, you will need to re-time the blades per instructions on page 36.



A. Complete Flex Coupler Drive, DS8.30
B. Complete Flex Coupler Drive, DS10.40

1. Yoke, 1-3/8 6 spline
2. Yoke, 1-3/4 20 spline
3. Single yoke & tube asy
4. Double yoke & tube asy
5. Rubber disc
6. Shaped washer
7. Bushing
8. M16-2.0P x 65 mm HHCS
9. M16-2.0P x 90 mm HHCS
10. M16-2.0P Lock nut
11. M8 x 1.0P Grease fitting

Figure 15. Flexible Coupler

SHIELDING REPAIR

⚠ DANGER

- **Full chain or rubber shielding is required for all non-agricultural mowing. Full shielding is also recommended for all agricultural use to further reduce the risk of thrown objects.**

Repairing Rubber Shielding

Inspect rubber shielding each day of operation and replace if cracked, broken or excessively worn.

Repairing Optional Chain Shielding

Inspect chain shielding each day of operation and replace any broken or missing chains as required.

SERVICING TIRES SAFELY

Used Aircraft Tires (Figure 16)

⚠ WARNING

- **Explosive separation of tire and rim parts can cause serious injury or death. Release all air pressure before loosening bolts.**

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

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

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

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

Never remove split rim assembly hardware (A) with the tire inflated.

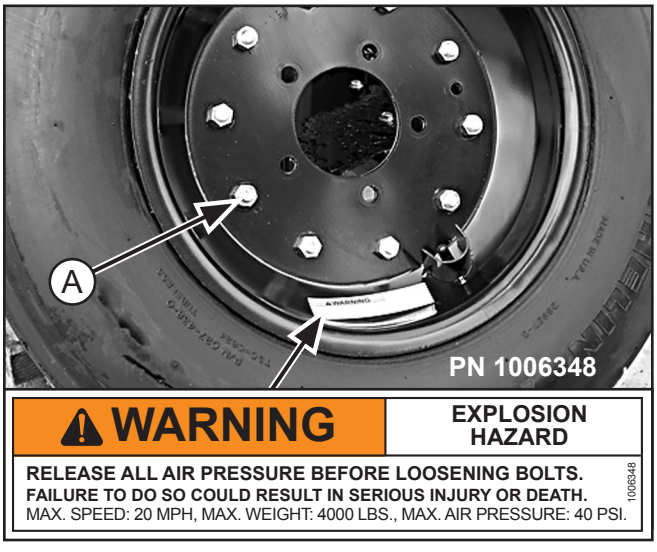


Figure 16. Split Rim Tire Servicing

CLEANING CUTTER

After Each Use

- **Remove large debris such as clumps of dirt, grass, crop residue, etc. from machine.**
- **Inspect machine and replace worn or damaged parts.**
- **Replace any safety decals that are missing or not readable.**

Periodically or Before Extended Storage

- **Clean large debris such as clumps of dirt, grass, crop residue, etc. from machine.**
- **Remove the remainder using a low-pressure water spray.**

1. Be careful when spraying near scratched or torn safety decals or near edges of decals as water spray can peel decal off surface.
2. Be careful when spraying near chipped or scratched paint as water spray can lift paint.
3. If a pressure washer is used, follow the advice of the pressure washer manufacturer.

- **Inspect machine and replace worn or damaged parts.**
- **Sand down scratches and the edges of areas of missing paint and coat with Woods spray paint of matching color (purchase from your Woods dealer).**
- **Replace any safety decals that are missing or not readable (supplied free by your Woods dealer).**
- **See Safety Decals section for location drawing.**

TROUBLESHOOTING

MOWING CONDITIONS

PROBLEM	POSSIBLE CAUSE	SOLUTION
Does not cut	Dull blades	Sharpen blades.
	Worn or broken blades	Replace blades. (Replace in pairs only.)
	Incorrect PTO speed	Set at rated PTO speed.
	Ground speed too fast	Reduce ground speed.
	Drive not functioning (blades do not turn when PTO is running)	Check drive shaft connection. Check gearbox.
	Gearbox malfunction	Repair gearbox.
	Excessive clutch slippage	Adjust clutch.
	Incorrect blade direction	Check to be sure blade edge is correct for direction of rotation.
Streaks or ragged cut	Broken or worn blades	Replace or sharpen blades.
	Attitude incorrect	Level machine.
	Ground speed too fast	Reduce ground speed.
	Excessive cutting height	Lower cutting height. (Note: Set height so blades do not frequently hit ground.)
	Excessive lush and tall vegetation	Recut at 90° to first pass.
Excessive side skid wear	Running with skids continuously on ground	Raise cutting height or adjust.
Excessive clutch slippage	Clutch out of adjustment	Adjust clutch.
	Clutch discs worn; wear stops contacting opposite plate	Replace discs.
	Blades hitting ground	Raise cutting height.
Vibration	Broken blade	Replace blades in pairs.
	Bearing failure	Check gearbox shafts for side play.
	Hitch length incorrect	Reset hitch length.
	Universal drive	Adjust pedestal bearing height to be parallel to ground.
	Flexible coupler is binding	Lubricate grease fitting on spline yoke.
Blades hitting deck	Bent blades or crossbar	Replace bent blades or crossbar.
Blades hitting each other	Side drive failure	Retime blades or replace rubber coupler disks. See page 36.

Unit will not raise	Low oil	Add hydraulic oil.

DEALER SERVICE

The information in this section is written for dealer service personnel. The repair described here requires special skills and tools. If your shop is not properly equipped or your mechanics are not properly trained in this type of repair, you may be time and money ahead to replace complete assemblies.

⚠ WARNING

- **Before working underneath, disconnect driveline, raise cutter, lock in transport position, and block cutter securely. Hydraulic system leak down and failure of mechanical or hydraulic system can cause equipment to drop.**
- **Keep all persons away from operator control area while performing adjustments, service, or maintenance.**

⚠ CAUTION

- **Always wear relatively tight and belted clothing to avoid getting caught 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.**

GEARBOX MAINTENANCE

NOTE: Read this entire section before starting any repair. Many steps are dependent on each other.

1. Fill gearbox with SAE 80W or 90W gear lube until it runs out the side level plug.

   NOTE: Repair to this gearbox is limited to replacing bearings, seals, and gaskets. Replacing gears, shafts, and a housing is not cost effective. Purchasing a complete gearbox is more economical.

2. Inspect gearbox for leakage and bad bearings. Leakage is a very serious problem and must be corrected immediately. Bearing failure is indicated by excessive noise and side-to-side or end-play in gear shafts.

Seal Replacement

Recommended sealant for gearbox repair is Permatex® Aviation 3D Form-A-Gasket or equivalent.

Leakage can occur at the vertical or horizontal gaskets and shaft seals.

Leakage at the horizontal gasket or seal can be repaired without removing the gearbox from the cutter.

Seal Installation

NOTE: Proper seal installation is important. An improperly installed seal will leak.

1. Clean area in housing where seal outer diameter (OD) seats. Apply a thin coat of Permatex.
2. Inspect area of shaft where seal seats. Remove any burrs or nicks with an emery cloth.
3. Lubricate gear shaft and seal lips.
4. Place seal squarely on housing, spring-loaded lip toward housing. Select a piece of pipe or tubing with an OD that will sit on the outside edge of the seal but will clear the housing. Tubing with an OD that is too small will bow seal cage and ruin seal.
5. Carefully press seal into housing, avoiding distortion to the metal seal cage.

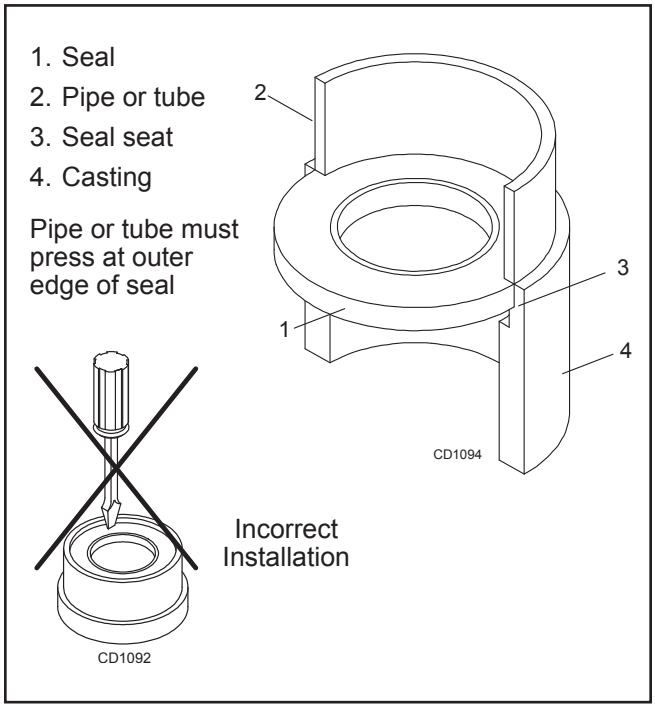


Figure 18. Seal Installation

GEARBOX REPAIR - DS8.30

(Figure 19)

NOTE: Repair to this gearbox is limited to replacing bearings, seals, and gaskets. Replacing gears, shafts, and a housing is not cost effective. Purchasing a complete gearbox is more economical.

Gearbox is heavy: do not attempt to move without mechanical assistance.)

Remove Gearbox from Cutter

1. Disconnect and remove the rear driveline from the gearbox.
2. Remove vent plug (9) and siphon gear lube from housing through this opening.
3. Remove cotter pin or wire, washer, and nut from vertical shaft and remove crossbar (see Crossbar Removal, page 35).
4. Remove the four bolts that attach gearbox to cutter and remove gearbox.

Disassemble Gearbox

1. Remove plug from side of gearbox and pour out remaining gear oil.
2. Support housing in vise in a vertical position.
3. Remove input seal (4) (to be replaced).
4. Remove retaining rings (6) and (8).
5. Remove the six cap screws (24), washers (23) and top cover (2) from housing.
6. Remove retaining ring (6) behind gear (3).
7. Support gearbox in hand press and pull input shaft (5) through gear (3). Remove ball bearing (21).
8. Remove ball bearing (20) and gear spacer (7) from input shaft (5).
9. Support housing in vise in a horizontal position.
10. With the hub/stump jumper/crossbar, castle nut, cotter pin, wire and washer already removed, remove the four cap screws (13), lock washers (12) and output cap (17).
11. Remove output gaskets (11) and (10).
12. Push output shaft and pinion (19) down and remove ball bearing (20) or tapered roller bearings (25), output bearing spacer (18), and retaining ring (6). Remove output shaft and pinion (19).

    NOTE: On gearboxes with tapered roller bearings, it will be necessary to use a punch to drive out bearing cups.

13. Inspect gears for broken teeth and wear. Some wear is normal and will show on loaded side.

    Forged gear surfaces are rough when new. Check that wear pattern is smooth.

14. Inspect vertical and horizontal shafts for grooves, nicks, or bumps in the areas where the seals seat. Resurface any damage with emery cloth.
15. Inspect housing and caps for cracks or other damage.

SEAL REPAIR - DS8.30

(Figure 19)

Vertical Shaft Seal Repair

1. Disconnect and remove the rear driveline from the gearbox.
2. Remove vent plug (9) and siphon gear lube from housing through this opening.
3. Remove crossbar (see Crossbar Removal, page 35).
4. Remove output cap (17) and output seal (16) by removing four cap screws (13) and washers (12). Replace with new seal (see Seal Installation, page 27).

   Vertical seal should be recessed in output cap.

   NOTE: Distortion to seal cage or damage to seal lip will cause seal to leak.

5. Secure output cap (17) on to bottom of gearbox using four cap screws (13) and lock washers (12).

   NOTE: Make sure output gasket (10) and (11) are in place.

6. Fill gearbox with SAE 80W or 90W gear lube until it runs out the side level plug.
7. Remove and replace any seal damaged in installation.

Horizontal Seal Leak Repair

1. Disconnect and remove the rear driveline from the gearbox.
2. Remove vent plug (9) and siphon gear lube from housing through this opening.
3. Remove input seal (4). Replace with new one (refer to Seal Installation, page 27).

Fill gearbox with SAE 80W or 90W gear lube until it runs out the side level plug.

Reassemble Gearbox - DS8.30

1. Clean housing, paying specific attention to areas where gaskets will be installed.
2. Wash housing and all components thoroughly. Select a clean area for gearbox assembly. Replace all seals, bearings, and gaskets. All parts must be clean and lightly oiled before reassembling.
3. Insert upper output bearing cups (25) in the housing and press using a round tube with the correct diameter.

4. Slide shims (26) over output shaft (16). Use the same thickness as removed as a starting point.

5. Push bearing cone (25) onto output shaft (16). Shims maybe required between cone (25) and retaining ring (6) to eliminate any space.

   NOTE: Make sure there is no endplay or gaps in this assembly.

6. Insert output bearing spacer (18) and bearing cone (25) over output shaft until seats against upper bearing (25). Press lower bearing cup into position as shown.

7. Secure output cap (17) with new output seal (16) installed to bottom of gearbox housing using the four 10mm x 1.5 x 25 cap screws (13) and lock washers (12). Use shim gaskets (10) and (11) to adjust output bearings to a rolling torque of 9 to 12 In-lbs.

   NOTE: Be sure output gaskets (10 and 11) are in place. Apply grease to output seal (16) lip for easy installation.

8. Place ball bearing (21) at back of housing and press in socket using a round tube of the correct diameter and a hand press until fully seated.

9. Insert input shaft (5) part way through housing and slide gear (3) and retaining ring (6) over input shaft (5). Keep gear (3) and retaining ring (6) loose.

10. Insert input shaft (5) into roller bearing (21) until seated against each other.

11. Slide gear (3) forward and attach retaining ring (6) in groove closest to front of input shaft (5). Slide gear (3) back against retaining ring (6).

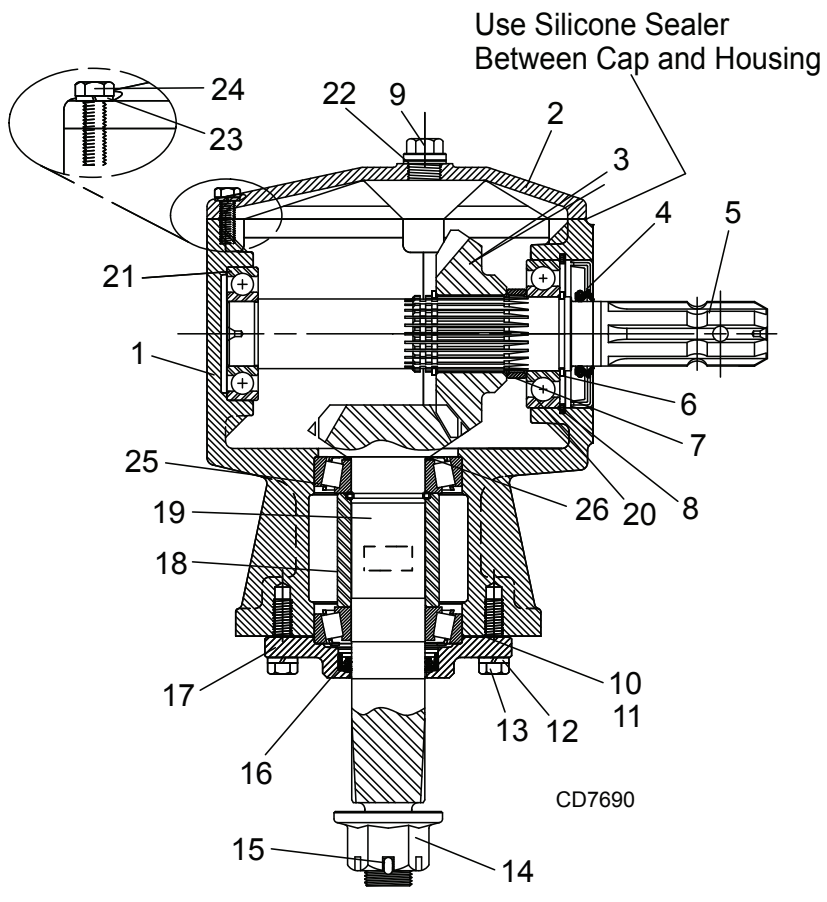
12. Check that the gear backlash is between 0.006" and 0.016". You should not have to adjust the backlash.

13. Slide gear spacer (7) and ball bearing (20) on input shaft (5) and secure with retaining rings (6) and (8).

14. Slide input seal (4) onto input shaft (5) and press into housing flush with front using a tube of correct diameter. Be careful not to damage seal lip.

15. Check gearbox housing for leaks by plugging all holes except one. Apply 4 psi compressed air and immerse the gearbox in water to verify that there are no leaks.

Remove gearbox from water and dry off with compressed air. Add SAE 80W or 90W EP oil until it runs out of side level hole. Tighten all plugs.



1. Housing
2. Inspection cover
3. 22 Tooth gear
4. Input seal
5. Input shaft
6. Retaining ring
7. Gear spacer
8. Retaining ring
9. Vent Plug and Washer
10. Output gasket (0.30)
11. Output gasket (0.13)
12. Lock washer
13. M10 x 1.5 x 25 Cap screw
14. 1" - 14 Slotted flange nut
15. Cotter pin
16. Output seal
17. Output cap
18. Output bearing spacer
19. Output shaft & pinion
20. Ball bearing
21. Ball bearing
22. Sealing washer
23. M8 Lock washer
24. M8 x 1.5 x 25 Cap screw
25. Bearing Cup and Cone
26. Shim Kit

Figure 19. DS8.30 Gearbox Assembly

SPINDLE GEARBOX REPAIR - DS10.40

(Figure 20)

NOTE: Replacing gears, shafts, bearings, and seals may not be cost effective. Purchasing a complete gearbox may be more economical.

Remove Gearbox From Cutter

1. Disconnect and remove the driveline from the gearbox.
2. Remove vent plug (3) and siphon gear lube from housing through this opening.
3. Remove cotter pin, washer, and nut from vertical shaft and remove crossbar (see Hydraulic jack will not operate if tipped more than 90-degrees. Use care to prevent bending crossbar during removal., page 35).
4. Remove the four bolts that attach gearbox to cutter and remove gearbox. Gearbox is heavy; do not attempt to move without mechanical assistance.

Disassemble Gearbox

1. Remove 3/8" plug from side of gearbox and pour out gear oil.
2. Remove oil cap (24) (to be replaced).
3. Remove snap ring (9) and shim (5) from input shaft (11).
4. Support gearbox in hand press and push on input shaft (11) to remove bearing (23).
5. Remove top cover (4) from housing. Remove gear (6) from inside housing.
6. Remove oil seal (10) from front of housing (to be replaced).
7. Remove snap ring (9) and shim (5) from front of housing (1).
8. Remove input bearing (7) by using a punch and hammer from outside of housing.
9. Support housing in vise in a horizontal position.
10. The castle nut (21), cotter pin (8), and washer (20) are already removed with the stump jumper/crossbar. Remove the protective screen (17) and seal (16).
11. Remove cotter pin (18), castle nut (12), and washer (25) from output shaft (19).
12. Remove output shaft (19) by using a punch and hammer and tap on top to drive down.
13. Remove gear (5) and shim (15) from inside housing.
14. Remove bearing (15) by using a punch and hammer from the top, outside the housing.
15. Support housing upside down (top cover surface) and remove bearing (15) by using a punch and hammer from the bottom side of the housing.
16. Inspect gears for broken teeth and wear. Some wear is normal and will show on loaded side. Forged gear surfaces are rough when new. Check that wear pattern is smooth.
17. Inspect vertical and horizontal shafts for grooves, nicks, or bumps in the areas where the seals seat. Resurface any damage with emery cloth.
18. Inspect housing and caps for cracks or other damage.

SEAL REPAIR - DS10.40

(Figure 20)

Vertical Shaft Seal Repair - DS10.40

1. Disconnect and remove the driveline from the gearbox.
2. Remove vent plug (3) and siphon gear lube from housing through this opening.
3. Remove crossbar (see Hydraulic jack will not operate if tipped more than 90-degrees. Use care to prevent bending crossbar during removal. on page 35).
4. Remove vertical shaft seal (16). Replace with new seal (see Seal Installation on page 27).

   Vertical seal should be recessed in housing. Horizontal seal should be pressed flush with outside of housing.

   NOTE: Distortion to seal cage or damage to seal lip will cause seal to leak.
5. Fill gearbox with SAE 80W or 90W gear lube until it runs out the level plug.
6. Remove and replace any seal damaged in installation.

Horizontal Shaft Seal Repair - DS10.40

1. Disconnect and remove the driveline from the gearbox.
2. Remove vent plug (3) and siphon gear lube from housing through this opening.
3. If the leak occurred at either end of horizontal shaft (spindle gearbox), remove oil cap (24) and/or oil seal (10). For splitter gearbox (Figure 21) use oil seals (11) and (17). Replace with new one (refer to Seal Installation, page 27).
4. Fill gearbox with SAE 80W or 90W gear lube until it runs out the level plug.

1. Gearbox housing
2. Cap screw 8 mm x 14 (8.8)
3. Vent plug
4. Top cover
5. Shim kit
6. Crown gear
7. Bearing cup & cone
8. Cotter pin B6 x 60 mm
9. Snap ring
10. Seal
11. Input shaft
12. Castle nut, metric M30 x 1.5
13. Pinion gear
14. Shim kit
15. Bearing cup & cone
16. Seal 50 x 90 x 10
17. Protective screen
18. Cotter pin
19. Output shaft
20. Flat washer
21. Castle nut, metric M3 x 2.0
22. Plug, 3/8 NPT
23. Ball bearing
24. Oil cap
25. Shim, 44 x 30.3 x 1

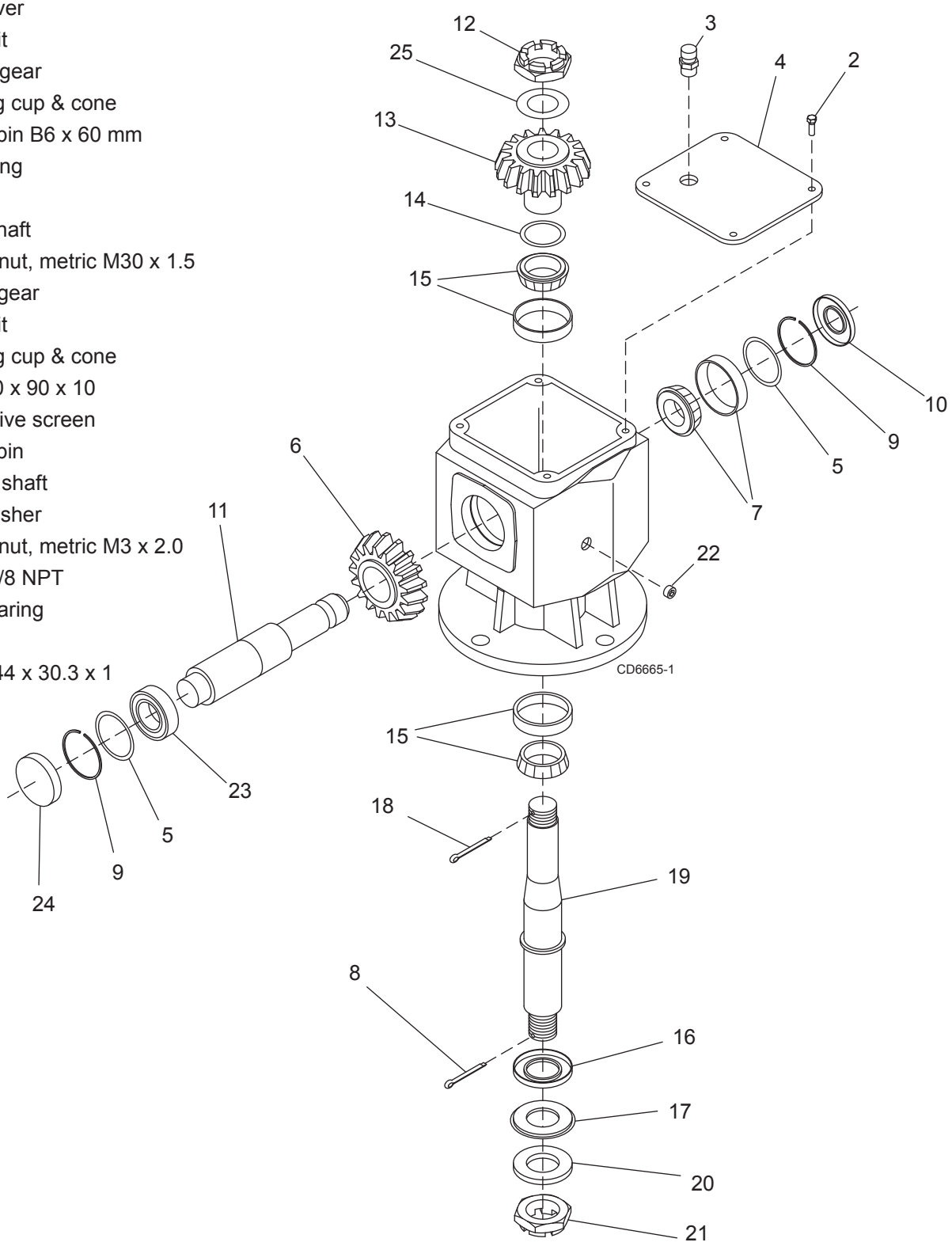


Figure 20. DS10.40 Gearbox Assembly

Assemble Gearbox - DS10.40

1. Clean housing, paying specific attention to areas where gaskets will be installed.
2. Wash housing and all components thoroughly. Select a clean area for gearbox assembly. Replace all seals, bearings, and gaskets. All parts must be clean and lightly oiled before reassembling.
3. Insert output bearings (15) in the housing, using a round tube of the correct diameter and a hand press.
4. Slide output shaft (19) through both bearings (15) until it rests against bearing (6).
5. Slide shim (5) over output shaft (19).
6. Press gear (13) onto output shaft (19) and secure with washer (25), castle nut (12), and cotter pin (18).
7. Apply grease to lower seal lips (16) and press seal (16) over output shaft (19), using a tube of the correct diameter. Be sure not to damage the seal lip.

   Press in housing so that seal is recessed. Install protective screen (17) and position it together with dual lip seal (16) by pressing it into position. Verify that snap ring is seated correctly.
8. Press bearing (7) into the housing, using a round tube of the correct diameter and a hand press. Secure with shim (5) and snap ring (9).
9. Secure snap ring (9) on input shaft (11) if not already secure.
10. Place gear (6) through top of housing and align gear (6) and gear (13) so that gear teeth are a match.
11. While holding gear (6) in place, slide input shaft (11) through gear (6) and bearing (7). Align splines on shaft (11) and gear (6).
12. Slide spacer (7) over input shaft (11) and press bearing onto input shaft (11), using a round tube of the correct diameter and a hand press.
13. Slide shim (5) over input shaft (11) and secure with snap ring (9).
14. Check input shaft end float by moving the input shaft (11) by hand. If end float is higher than 0.012", insert shim between input shaft (11) and rear bearing (7). Repeat until end float is less than 0.012". Check rotational torque by hand. The torque should be less than 2.2 lbs-inch.
15. Check that the gear backlash is between 0.006" and 0.016". You should not have to adjust the backlash.
16. Press in input oil seal (10), using tube of correct diameter. Be careful not to damage seal lip.
17. Press oil cap (24) on to cover the rear of housing, using a tube of the correct diameter.
18. Check gearbox housing for leaks by plugging all holes except one. Apply 4 psi compressed air and immerse the gearbox in water to verify that there are no leaks.
19. Remove gearbox from water and dry off with compressed air. Add SAE 80W or 90W EP oil until it runs out of side level hole. Tighten all plugs.

Reinstall Gearbox - DS10.40

NOTE: Gearbox is heavy: do not attempt to move without mechanical assistance.

1. Set gearbox on cutter and fasten with bolts and nuts. Torque bolts to 300 lbs-ft.
2. Attach crossbar (see Hydraulic jack will not operate if tipped more than 90-degrees. Use care to prevent bending crossbar during removal. on page 35).

SPLITTER GEARBOX REPAIR

NOTE: Replacing gears, shafts, bearings, and seals may not be cost effective. Purchasing a complete gearbox may be more economical.

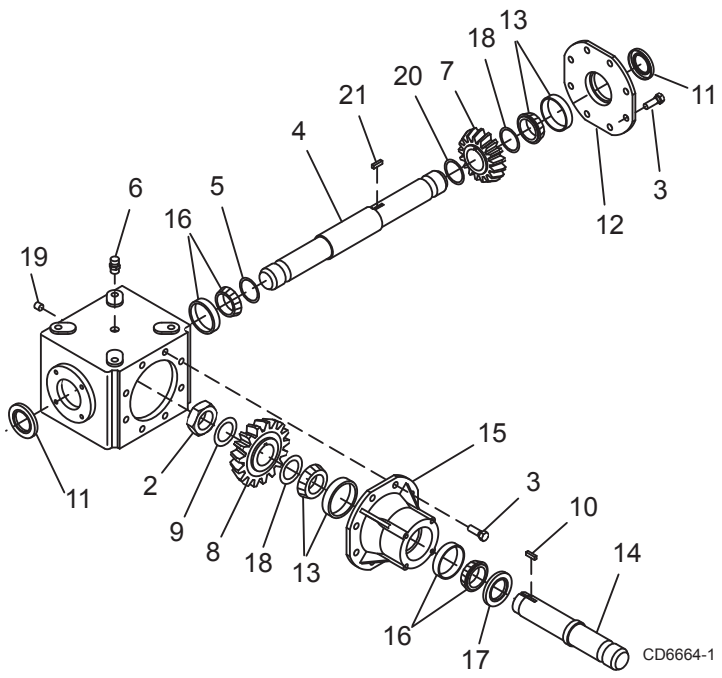
Remove Gearbox From Cutter

1. Disconnect driveline from the tractor PTO and remove it from center gearbox.
2. Remove vent plug (6) and siphon gear lube from housing through this opening.
3. Disconnect and remove flex coupler drivelines from side of gearbox by:

   a. Removing cap screws and hex nuts from driveline.

   b. Loosen set screws from flex coupler yoke.

   c. Slide flex coupler yoke from gearbox shaft.
4. Remove the four bolts that attach gearbox to cutter and remove gearbox. Gearbox is heavy; do not attempt to move without mechanical assistance.



1. Gearbox
2. Lock nut
3. M10 x 1.5 x 22 Cap screw
4. Cross shaft
5. Shim, 45.3 x 65.3 x 2.5
6. Vent plug
7. Crown gear
8. Pinion gear
9. Shim, 45.3 x 65.3 x 1
10. Key, 14 x 9 x 40
11. Seal
12. Cover
13. Bearing cup & cone
14. Input shaft
15. Housing, input
16. Bearing cup & cone
17. Seal
18. Shim kit
19. Plug, 3/8 NPT
20. Spacer
21. Key

Figure 21. Center Gearbox Assembly

Disassemble Splitter Gearbox

(Figure 21)

1. Remove breather plug from top of gearbox.

2. Remove plug (19) from side of input housing (1) and pour out gear oil.

3. Remove eight cap screws (3) from around input housing (15). Remove input shaft assembly and housing.

4. Remove oil seals (11) (to be replaced) from both sides of cross shaft (4).

5. Remove eight cap screws (3) from around gearbox cover (12) and remove cross shaft (4) from gearbox.

6. Disassemble shims (5 & 18), spacer (20), bearings

7. Support housing in a vise and remove bearing cones (16) by using a punch and hammer to drive bearing cone out.

8. Support cover (12) in a vise and remove bearing cups (13) by using a punch and hammer to drive bearing cone out.

9. Remove lock nut (2) from end of input shaft (14).

10. Support input housing in a handpress and push input shaft (14) out of housing.

11. Support housing in a vise and remove bearing cups (13 & 16) by using a punch and hammer to drive bearing cones out.

12. Inspect gears for broken teeth and wear. Some wear is normal and will show on loaded side. Forged gear surfaces are rough when new. Check that wear pattern is smooth.

13. Inspect input and cross shafts for grooves, nicks, or bumps in the areas where the seals seat. Resurface any damage with emery cloth.

14. Inspect housing and caps for cracks or damage.

Assemble Gearbox

(Figure 21)

1. Clean housing, paying specific attention to areas where gaskets will be installed.

2. Wash housing and all components thoroughly. Select a clean area for gearbox assembly. Replace all seals, bearings, and gaskets. All parts must be clean and lightly oiled before reassembling.

3. Install new bearing cup (16) in gearbox housing and bearing cup (13) in cover if these parts were previously removed.

4. Place bearing (16) and shim (5) on end of cross shaft (4), and insert shaft into housing.

5. Install spacer (20), key (21), crown gear (7), shim (18), and bearing (13) on opposite end of cross shaft.

6. Place cover (12) over bearings (13) and secure into position using eight cap screws (3). Torque cap screws to 29 lbs-ft.
7. Place seal (11) over cross shaft and press into housing. Use a round tube the same diameter of the seal and a handpress. Repeat process on opposite side of gearbox.
8. Install new bearing cup (16 & 13) into input housing if these parts were previously removed.
9. Place bearing (16) over end of input shaft (14) and insert shaft into front of input housing.
10. Place seal (17) over shaft and press into housing. Use a round tube the same diameter of the seal and a handpress.
11. Install bearing (13), shim (18), pinion gear (8), key (10), shim (9) over opposite end of input shaft (14).
12. Secure parts together using lock nut (2). Tighten lock nut (2) until shaft rolling torque is 3 to 9 lbs- inch.
13. Insert input housing assembly into front of gearbox housing and align teeth of the two gears. Secure with cap screws (3). Torque cap screws to 29 lbs-ft.
14. Check gear backlash; it should be .006" to .017" at outer tooth.
15. Check gearbox housing for leaks by plugging all holes except one. Apply 4 psi compressed air and immerse the gearbox in water to verify that there are no leaks.
16. Remove gearbox from water and dry off with compressed air. Add SAE 80W or 90W EP oil until it runs out of the lower level hole in front cover. Tighten all plugs.

Reinstall Gearbox

NOTE: Gearbox is heavy: do not attempt to move without mechanical assistance.

1. Install flex coupler driveline between side gearboxes and center gearbox.
2. Set gearbox on cutter and fasten with bolts and nuts. Torque bolts to 300 lbs-ft.

SIDE DRIVE SERVICE

The drives between the center and side gearboxes contain rubber shock-absorbing discs. To service or remove the side drives or remove a gearbox, the flexible coupling must be disassembled.

Remove end yokes by removing nuts (10) and sliding bolt (8 or 9) inward to clear yoke. Do not remove bolt unless rubber discs (5) are to be serviced. Remove complete center section by lifting straight up on center shaft (4). The outer yoke can be slid off gearbox shaft. The inner yoke is held by two set screws.

Reassemble shaft as shown in Figure 22. End yokes (1 & 2) do not bolt directly to center shaft (4). Use the special formed washer (6) and bushings (7) between the rubber discs (5) and under bolt head or nut near rubber disc. Tighten the nuts (10) evenly until the formed washers (6) are slightly embedded into the rubber discs. Rubber discs (5) will warp and twist if bolts are overtightened. Tighten set screws on center gearbox shaft only. Grease opposite end of side drive through grease fitting (11) located on end yoke.

NOTE: Crossbar must be re-timed anytime a crossbar or a side drive is disconnected.

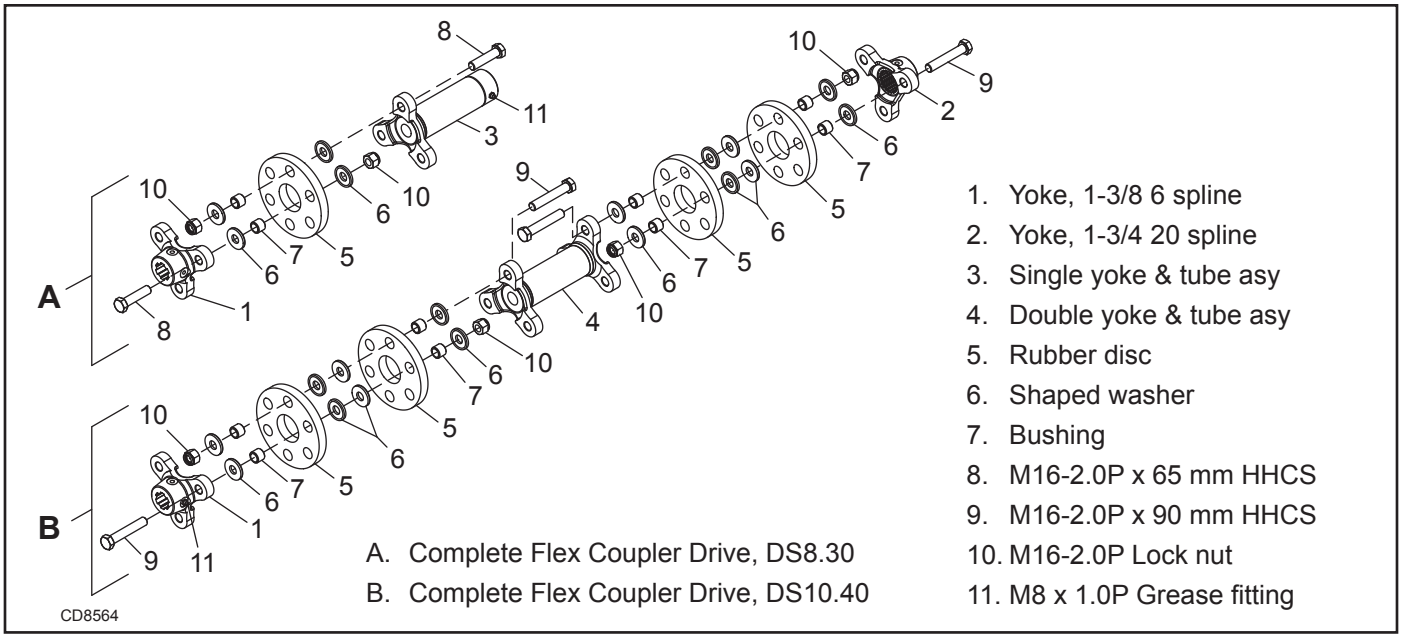


Figure 22. Side Drive Assembly

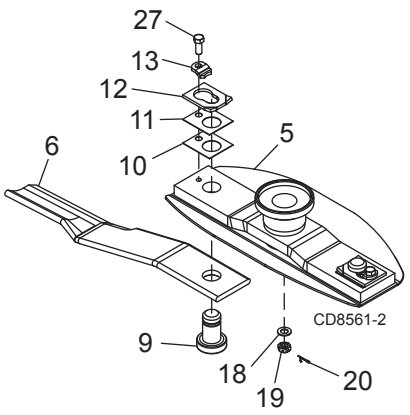
CROSSBAR

Crossbar Removal

1. It is necessary to gain access to bottom side of cutter for crossbar removal. See BLOCKING METHOD, page 20.

   NOTE: You will need to use either the puller screw (Item 6, Figure 23) or a small hydraulic jack to remove the crossbar.

2. To make crossbar removal easier, remove blades as shown in Figure 23.

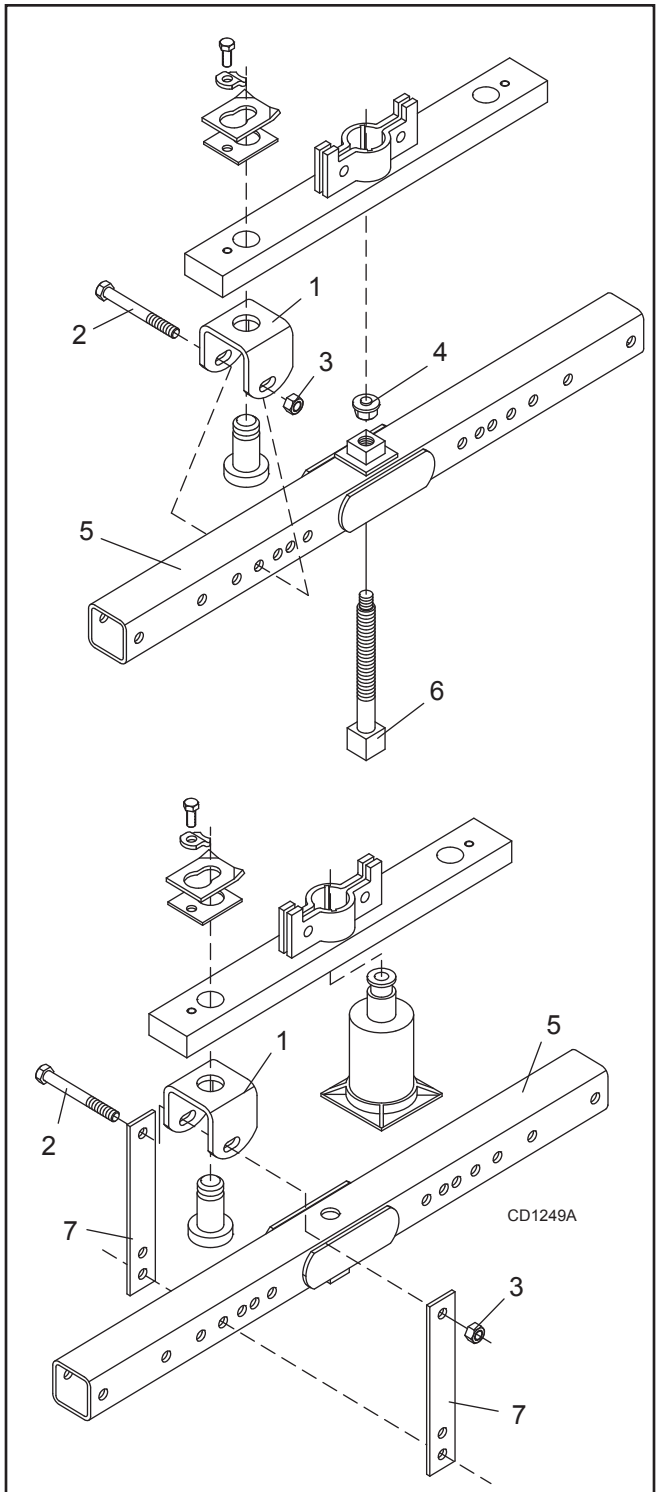


5. Crossbar
6. Blade
9. Blade pin
10. Shim
11. Shim
12. Keyhole plate
13. Blade pin lock
18. Washer
19. Castle nut
20. Cotter pin
27. Cap screw

Figure 23. Blade Removal

3. Remove cotter pin (20) and castle nut (19) from bottom of crossbar.
4. Refer to Figure 24. Attach a clevis (1) to each end of crossbar, using blade pins, spacers, keyhole plates, and blade pin clips.
5. Position tube assembly (5) with threaded nut toward crossbar for puller screw removal or down for hydraulic jack removal.
6. For removal with puller screw, attach tube (5) to each clevis with screws (2) and nuts (3). Place pad (4) in nut and thread puller screw (6) into nut from bottom. Tighten until pad is solid against gearbox shaft. For best results, strike head of puller screw with a hammer while tightening with a wrench.
7. For removal with a jack, attach tube to each clevis with puller links (7), screws (2), and nuts (3). Place jack on tube with end of jack pressing against gearbox shaft. Slowly apply force with jack.

   NOTE: Hydraulic jack will not operate if tipped more than 90-degrees. Use care to prevent bending crossbar during removal.



1. Clevis
2. 5/8 NC x 4 Cap screw
3. 5/8 NC Hex nut
4. Pad assembly
5. Tube assembly
6. Screw assembly
7. Puller link

Figure 24. Crossbar Removal

Crossbar Installation

1. Using emery cloth (220 or finer), remove surface rust, and foreign material from hub, splined gearbox vertical shaft, and crossbar. See Figure 25.

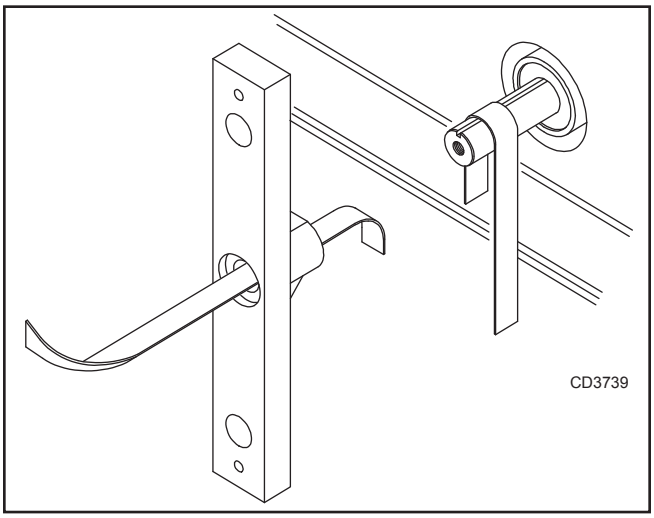


Figure 25. Example of Crossbar and Gearbox Shaft

2. Install crossbar (5) on splined shaft. Install washer (18), castle nut (19), and cotter pin (20). Torque nut to 450 lbs-ft.
3. Install blades, reinstall them using existing hardware. Torque cap screws to 85 lbs-ft.

Crossbar Timing

Crossbar must be re-timed anytime a crossbar or a side drive is disconnected.

1. To re-time crossbars, position bars as shown in Figure 26.
2. The right crossbar will be at right angles to the front of the cutter.
3. Measure from the front of the cutter to the blade pin on each side crossbar.
4. Hold crossbars in position while connecting the side drivelines.

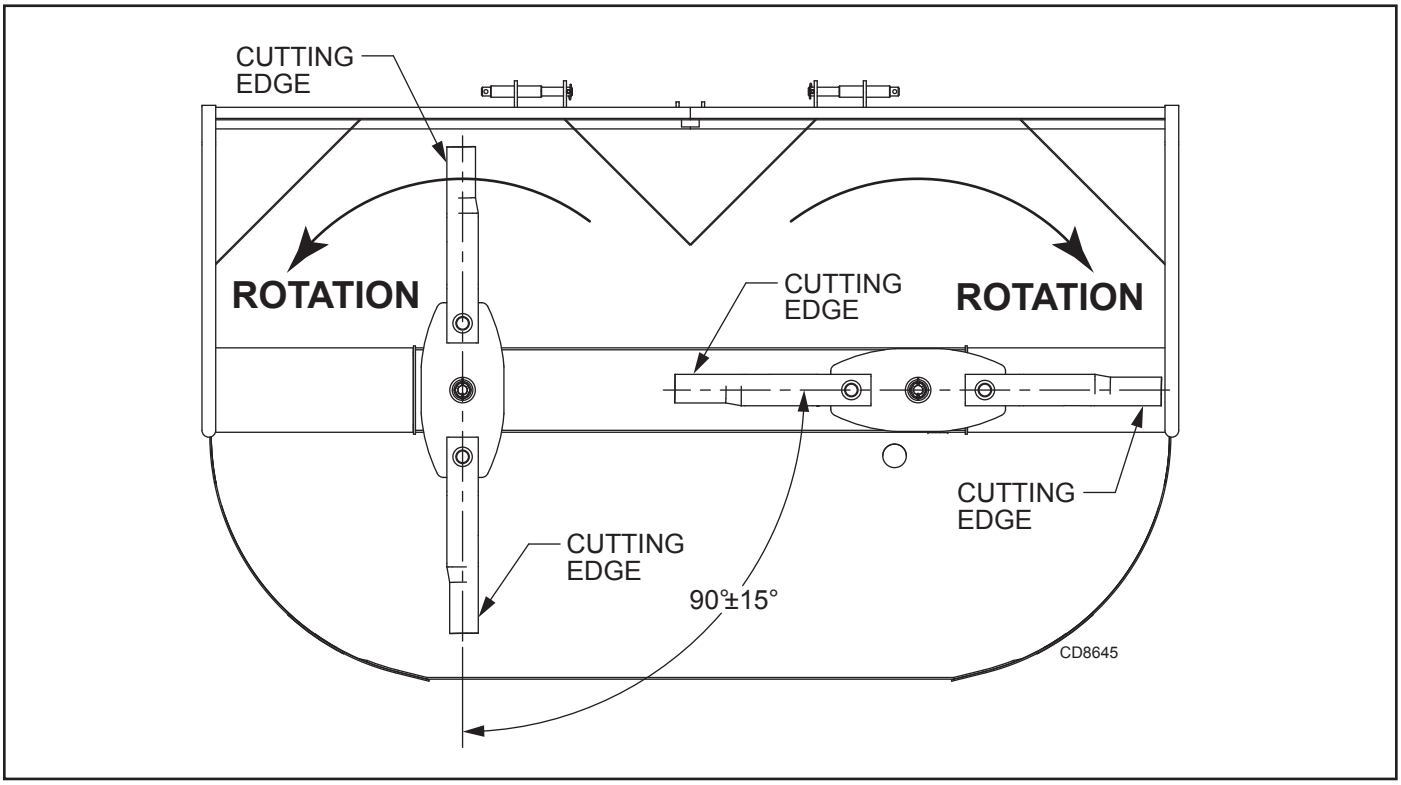


Figure 26. Crossbar Timing - Bottom View

UNIVERSAL JOINT REPAIR

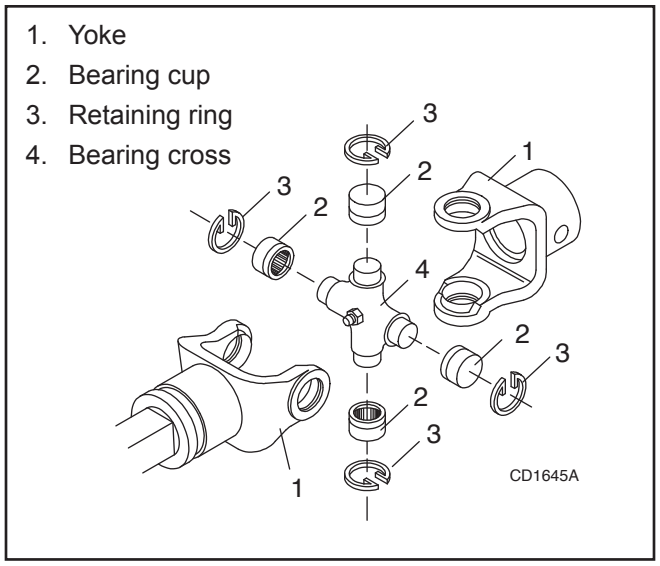


Figure 27. Universal Joint Parts Breakdown

U-Joint Disassembly

1. Remove external snap rings from yokes in four locations as shown in Figure 28.

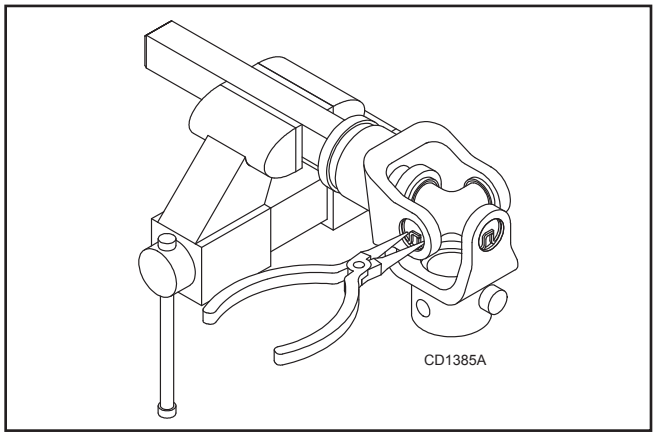


Figure 28. Remove Snap Ring

2. With snap rings removed, support drive in vise, hold yoke in hand and tap on yoke to drive cup up out of yoke. See Figure 29.

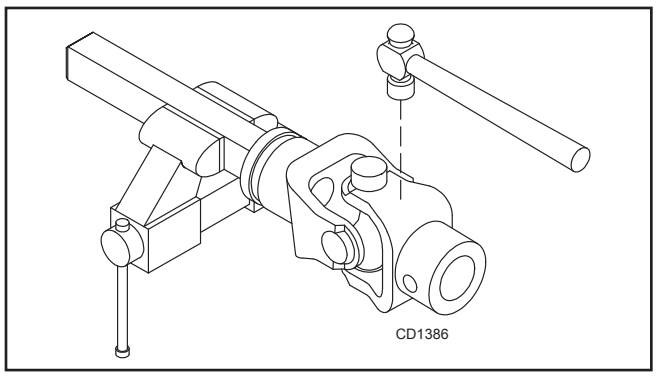


Figure 29. Remove Cups

3. Clamp cup in vise as shown in Figure 30 and tap on yoke to completely remove cup from yoke. Repeat Step 2 and Step 3 for opposite cup.

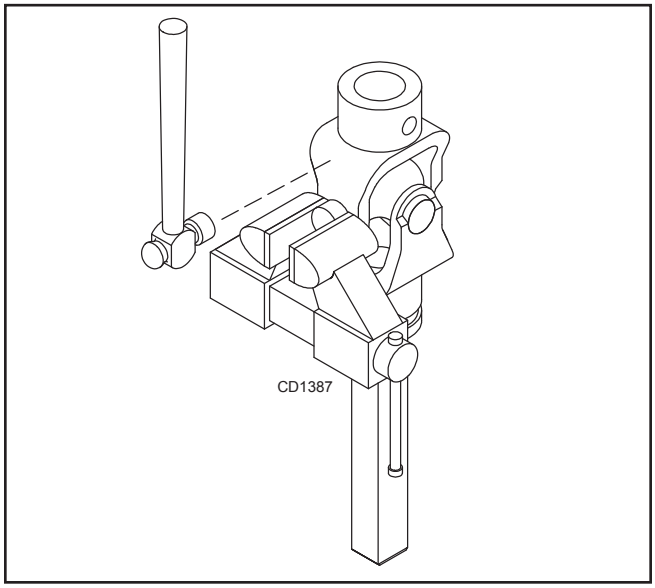


Figure 30. Remove Cups

4. Place universal cross in vise as shown in Figure 31 and tap on yoke to remove cup. Repeat Step 3 for final removal. Drive remaining cup out with a drift and hammer.

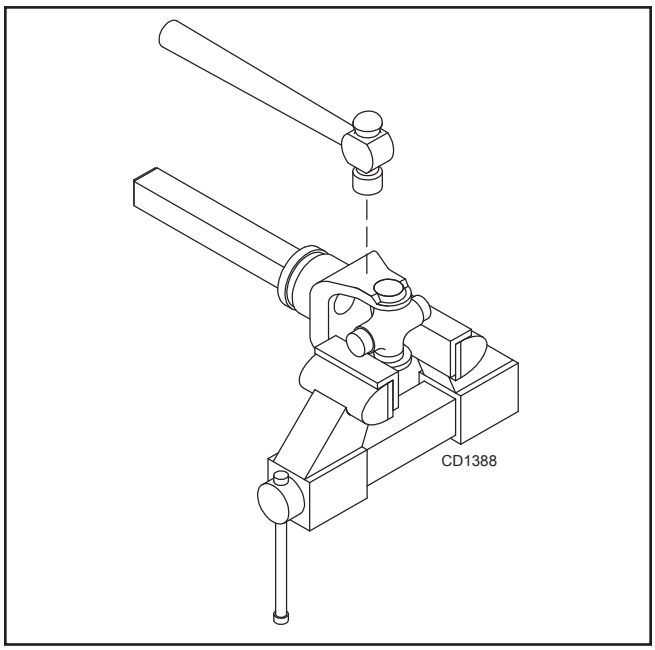


Figure 31. Remove Cups

U-Joint Assembly

1. Place seals securely on bearing cups. Insert cup into yoke from outside and press in with hand pressure as far as possible. Insert journal cross into bearing cup with grease fitting away from shaft. Be careful not to disturb needle bearings. Insert another bearing cup directly across from first cup and press in as far as possible with hand pressure.
2. Trap cups in vise and apply pressure. Be sure journal cross is started into bearings and continue pressure with vise, squeezing in as far as possible. Tapping the yoke will help.
3. Seat cups by placing a drift or socket (slightly smaller than the cup) on cup and rap with a hammer. See Figure 32. Install snap ring and repeat on opposite cup
4. Repeat Step 1 and Step 2 to install remaining cups in remaining yoke.
5. Move both yokes in all directions to check for free movement. If movement is restricted, rap on yokes sharply with a hammer to relieve any tension. Repeat until both yokes move in all directions without restriction.

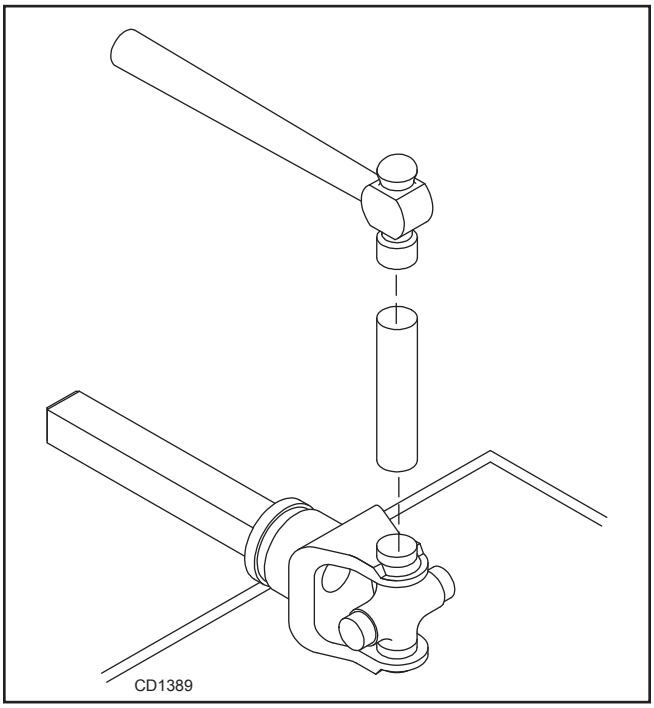


Figure 32. Install Cups

SERVICING TIRES SAFELY

Used Aircraft Tires (Figure 33)

⚠ WARNING

- **Explosive separation of tire and rim parts can cause serious injury or death. Release all air pressure before loosening bolts.**

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

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

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

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

Never remove split rim assembly hardware (A) with the tire inflated.

Figure 33. Split Rim Tire Servicing

ASSEMBLY

DEALER SET-UP INSTRUCTIONS

These instructions are for the assembly of the DS8.30 and DS10.40 mounted and pull-type cutters. Many of the procedures apply to all units. When an instruction applies to a specific unit, the section heading will indicate which unit. Assembly of options may not apply to all units.

Assembly of this cutter is the responsibility of the Woods dealer. It should be delivered to the owner completely assembled, lubricated, and adjusted for normal cutting conditions.

The cutter is shipped partially assembled. Assembly will be easier if aligned and loosely assembled before tightening hardware. Recommended torque values for hardware are located in the Bolt Torque Chart, page 67.

Select a suitable working area. A smooth hard surface, such as concrete, will make assembly much quicker. Open parts boxes and lay out parts and hardware to make location easy. Refer to illustrations, accompanying text, parts lists and exploded view drawings.

Complete checklists on page 44 when you have completed the assembly.

ASSEMBLE - DS8.30 & DS10.40 PULL-TYPE CUTTER

(Figure 34)

Place jackstands under cutter to raise it off the ground to provide clearance when assembling cutter. See “BLOCKING METHOD” on page 20 for jackstand placement.

Install Rear Tailwheel

1. Attach tailwheel (6) to the rear of the cutter using cap screws (34) and lock nuts (35).
2. Attach wheel hubs to tailwheel (6) using cap screws (27) and flanged lock nuts (29). Wheel hubs should be positioned to the outside of the cutter.
3. Attach tires to wheel hubs using five lug nuts (supplied with hub). Install the flat side of the nut toward the rim for laminated, severe duty Ag, and airplane tires. Torque to 75 lbs-ft.

   NOTE: Install the chamfered side of the nut toward the inside for steel rims for pneumatic tires.

Install Tongue

1. Remove lower hitch pins (2) and klik pins (4) from mast plates.
2. Align tongue assembly (1) between mast plates and reinstall lower hitch pins (2). Use sleeve (3) between tongue pivot and outer mast plate on DS8.30. Secure with klik pins (4).

Install Attitude Rod

1. Slide attitude rod (5) under left spindle coupler and through pivot block on the tailwheel.
2. Loosely install washer (32) and two hex nuts (33) to rear of attitude rod.
3. Attach front of attitude rod to the lug on the tongue using clevis pin (25), washer (32), and cotter pin (26).
4. Raise front of cutter and install parking jack (14) vertically to tongue.

Install Hydraulic Cylinder and Hose

1. Attach base end of hydraulic cylinder (15) to lugs on deck using pin (23) and cotter pins (26).
2. Extend cylinder rod, place transport lock bracket (16) over cylinder rod end and between lugs on tailwheel. Secure assembly using pin (24) and cotter pins (26).
3. Install vent plug (19) in port on the rod end of the cylinder.
4. Install adapter (20) and hose assembly (18) to port on base end of cylinder. Position elbow to point toward front of cutter.
5. Route hose on top of deck, under left spindle coupler, and through hose holder on tongue.
6. Install adapter restricter (21) and hydraulic coupler (22) to end of hose (18).
7. Install stroke control kit (17) to cylinder rod. Stroke control kit is used to set cut height.

Install H-Frame and CV Driveline

DS8.30

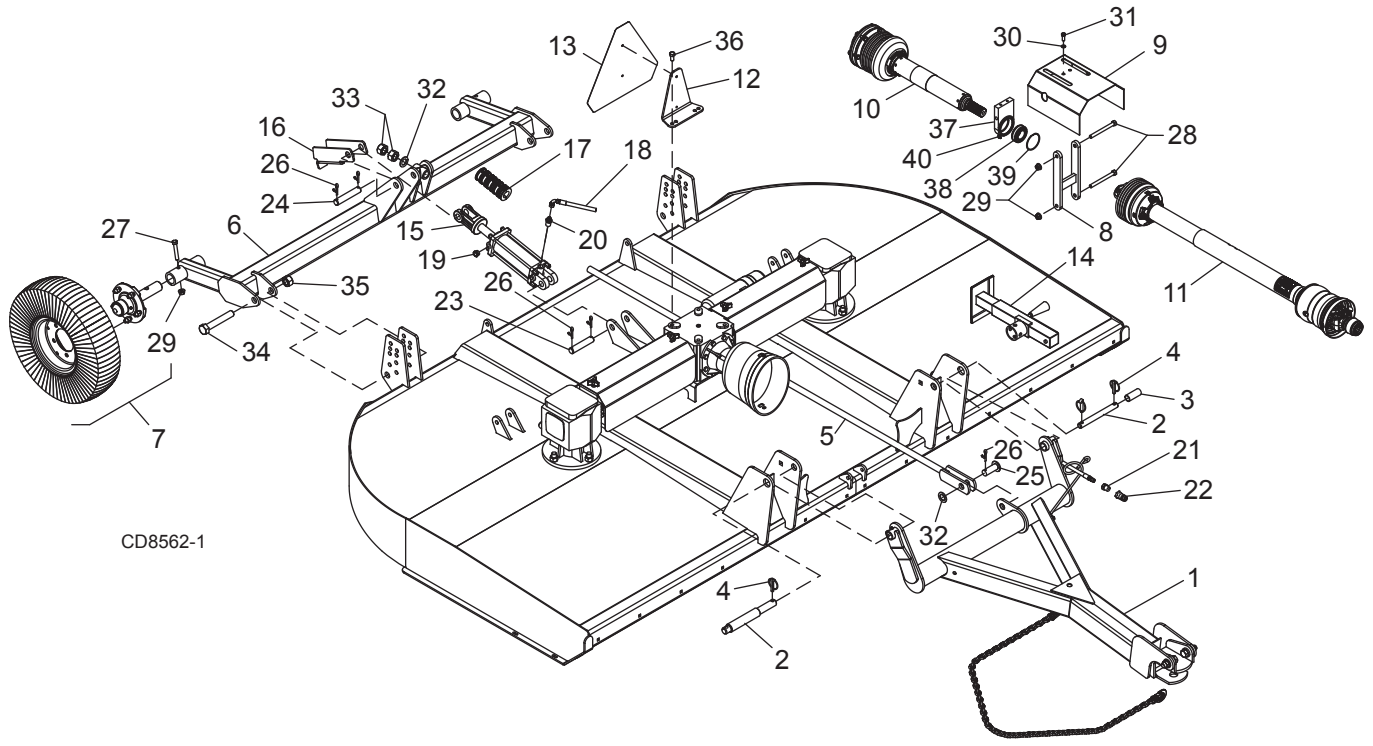
1. Lightly coat splitter gearbox shaft with grease.
2. Attach clutch end off CV driveline (11) directly to input shaft of gearbox.

DS10.40

1. Attach H-frame (8) to lugs on front of deck using cap screw (28) and flanged lock nut (29).
2. Lightly coat splitter gearbox input shaft with grease.
3. Remove cap screws and lock nuts from yoke on slip clutch end of driveline (10). Attach driveline to input shaft of gearbox.
4. Align driveline bearing carrier between H-frame (8) and secure with cap screw (28) and flanged lock nut (29).
5. Remove cap screw and lock nut from rear yoke of CV driveline (11).
6. Slide rear yoke of CV driveline (11) over shaft of driveline (10). Reinstall cap screw and lock nut through yoke and groove in rear driveline shaft.
7. Attach drive shield (9) to bearing carrier using two lock washers (30) and cap screws (31).

Install SMV Emblem

1. Align holes of SMV bracket (12) with top of splitter gearbox. Secure with cap screws (36).



1. Tongue
2. Headless pin, .875 x 6.94
3. Sleeve, .885 x 1.125 x 2.62
4. 7/16 x 11/32 Klik pin
5. Attitude rod
6. Wheel yoke
7. Tire & hub
8. H-Frame (DS10.40 only)
9. Shield (DS10.40 only)
10. Stub shaft (DS10.40 only)
11. CV Drive
12. SMV Bracket
13. SMV Emblem
14. Parking jack
15. Hydraulic cylinder
16. Transport lock-up
17. 1-1/4" Stroke control kit
18. Hydraulic hose, 154"
19. Cylinder vent plug
20. Hydraulic adapter
21. Hydraulic restricter
22. Male quick coupler
23. Headless pin, 1 x 4
24. Headless pin 1 x 4-1/2
25. Pin, 1.00 x 4.08
26. 1/4 x 1-1/2 Cotter pin
27. 1/2 NC x 3 HHCS
28. 1/2 NC x 5-1/4 HHCS
29. 1/2 NC Flanged lock nut
30. 3/8 Std flat washer
31. 3/8 NC x 1 HHCS
32. 1" Std flat washer
33. 1 NC Hex nut
34. 1 NC x 6 HHCS
35. 1 NC Hex lock nut
36. M12-1.75P x 30 mm HHCS
37. Bearing block (DS10.40 only)
38. Bearing (DS10.40 only)
39. Snap ring (DS10.40 only)
40. Grease fitting (DS10.40 only)

Figure 34. DS8.30 & DS10.40 Pull-Type Assembly

ASSEMBLE DS8.30 & DS10.40 3-POINT MOUNTED CUTTER

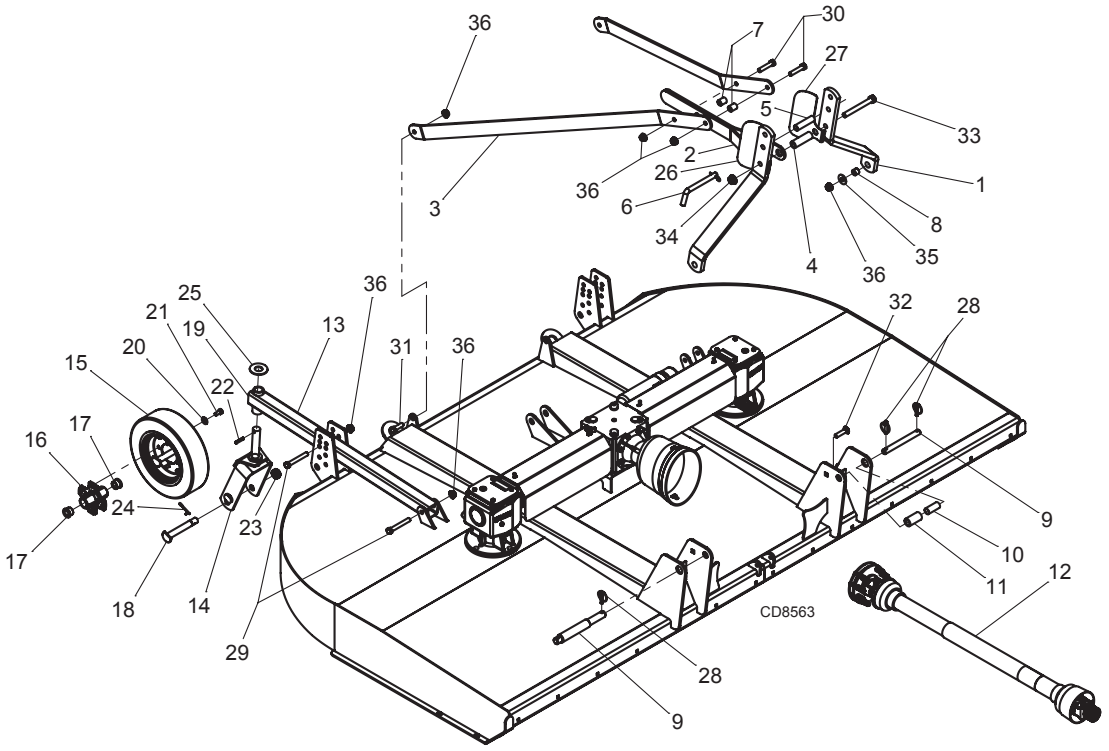
(Figure 35)

Place jackstands under cutter to raise it off the ground to provide clearance when assembling cutter. See “BLOCKING METHOD” on page 20 for jackstand placement.

Install Rear Tailwheel

1. Place assembled tailwheel arms (13 thru 25) between lugs on deck.
2. Attach end of tailwheel arm to deck using cap screw (29) and flanged lock nut (36).
3. Align holes in middle of tailwheel arm with holes in lugs on rear of deck. Secure with cap screw (29) and flanged lock nut (36).

NOTE: Hole positions in lugs determine cut height. Final adjustment will be necessary when cutter is mounted to tractor.



1. A-Frame bar
2. Break link
3. Lift arm
4. Sleeve, .66 x 1.25 x 4.00
5. Sleeve, 3/4 x 1 x 4
6. Headless pin, .75 x 5.63
7. Sleeve, 5/8 x 1 x 1-1/4
8. Sleeve, 5/8 x 1 x 11/16 (DS8.30 only)
8. Sleeve, 5/8 x 1 x 13/16 (DS10.40 only)
9. Headless pin 7/8 x 6-15/16
10. Sleeve, 7/8 x 1-1/8 x 2-5/8
11. Sleeve, 15/16 x 1-7/16 x 2-3/4
12. Driveline
13. Tailwheel arm
14. Tailwheel clevis
15. 4 x 8 Rim & laminated tire
16. Hub, 4-bolt
17. Bushing, .990 x 1.394 x .98
18. M24 x 2.0 Axle bolt
19. 1/4-28 Straight grease fitting
20. 1/2 Flat washer
21. 1/2 NC x 1 HHCS
22. Spirol pin, 10 mm x65 mm
23. M24 x 2.0 Slotted nut
24. Cotter pin
25. 1-1/4 Std flat washer
26. Guard, RH
27. Guard, LH
28. 7/16 x 11/32 Klik pin
29. 5/8 NC x 4-1/2 HHCS
30. 5/8 NC x 3 HHCS
31. 5/8 NC x 2 HHCS
32. 5/8 NC x 2 Carriage bolt (DS8.30 only)
32. 5/8 NC x 2-1/2 Carriage bolt (DS10.40 only)
33. 5/8 NC x 7 HHCS (DS8.30 only)
33. 3/4 NC x 6-1/2 HHCS (DS10.40 only)
34. 5/8 NC Flanged lock nut (DS8.30 only)
34. 3/4 NC Lock nut (DS10.40 only)
35. /8 Std flat washer

Figure 35. DS8.30 & DS10.40 Mounted Assembly

Install A-Frame

1. Attach front A-frame bars (1) to square holes on inner mast plates using carriage bolts (32), bushing sleeves (8), flat washers (35) and flanged lock nuts (36).
2. Install break links (2) and sleeve (4) between lower holes on A-frame bars. Secure with cap screw (33) and lock nut (34).
3. Attach lift arms (3) to lugs on rear of deck using cap screws (31) and flanged lock nuts (36).
4. Attach the two lift arms (3) together at the top rear hole using cap screw (30), spacer sleeve (7), and flanged lock nut (36).
5. Place both break links (2) together and position between front holes of lift arms. Secure with cap screw (30), spacer sleeve (7), and flanged lock nut (36).

   NOTE: Break links must rest on top of rear spacer sleeve (7).
6. Install top link pin (6) and sleeve (5) into middle hole in top of A-frame arms. Secure with cotter pin (26) and klik pin (27). Refer to CONNECT CUTTER TO TRACTOR (MOUNTED) on page 14 for hitch pin configurations.

Install Driveline

1. Lightly coat splitter gearbox shaft with grease.
2. Remove cap screw and lock nut from yoke on slip clutch end of driveline (12). Attach driveline to input shaft of gearbox. Reinstall cap screw and lock nut through driveline yoke and groove on input shaft.

FILL GEARBOXES

NOTICE

- **Gearbox is not filled at the factory. Prior to delivery to customer, make sure gearbox is filled only half-full with 80W or 90W API GL-4 or GL-5 gear lube. Use side plug to remove any excess oil.**

1. Make sure vent plug hole is clear (installed by dealer).
2. Remove plug on side of gearbox.
3. Fill gearbox until oil runs out the side plug on gearbox. Use a high quality gear oil with a viscosity index of 80W or 90W and an API service rating of GL-4 or GL-5.
4. Install side plug and vent plug.

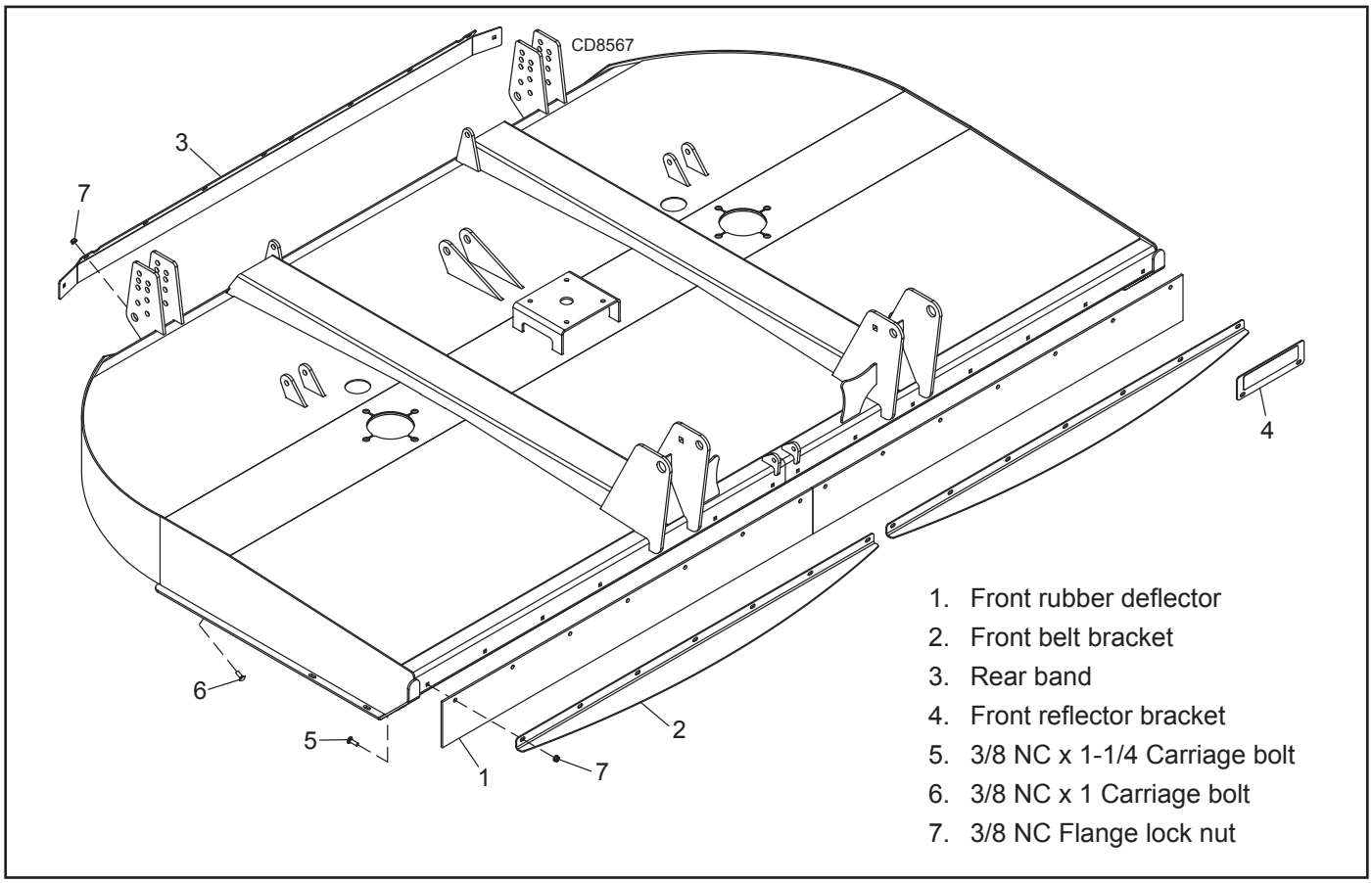


Figure 36. DS8.30 & DS10.40 Rubber Shield Installation

INSTALL CHAIN OR RUBBER SHIELDING

⚠ DANGER

- **Full chain or rubber shielding must be installed when operating in populated areas or other areas where thrown objects could injure people or damage property.**
  - **If this machine is not equipped with full chain or rubber shielding, operation must be stopped when anyone comes within 300 feet (92 m).**
  - **This shielding is designed to reduce the risk of thrown objects. The mower deck and protective devices cannot prevent all objects from escaping the blade enclosure in every mowing condition. It is possible for objects to ricochet and escape, traveling as much as 300 feet (92 m).**

Rubber Shielding

(Figure 36)

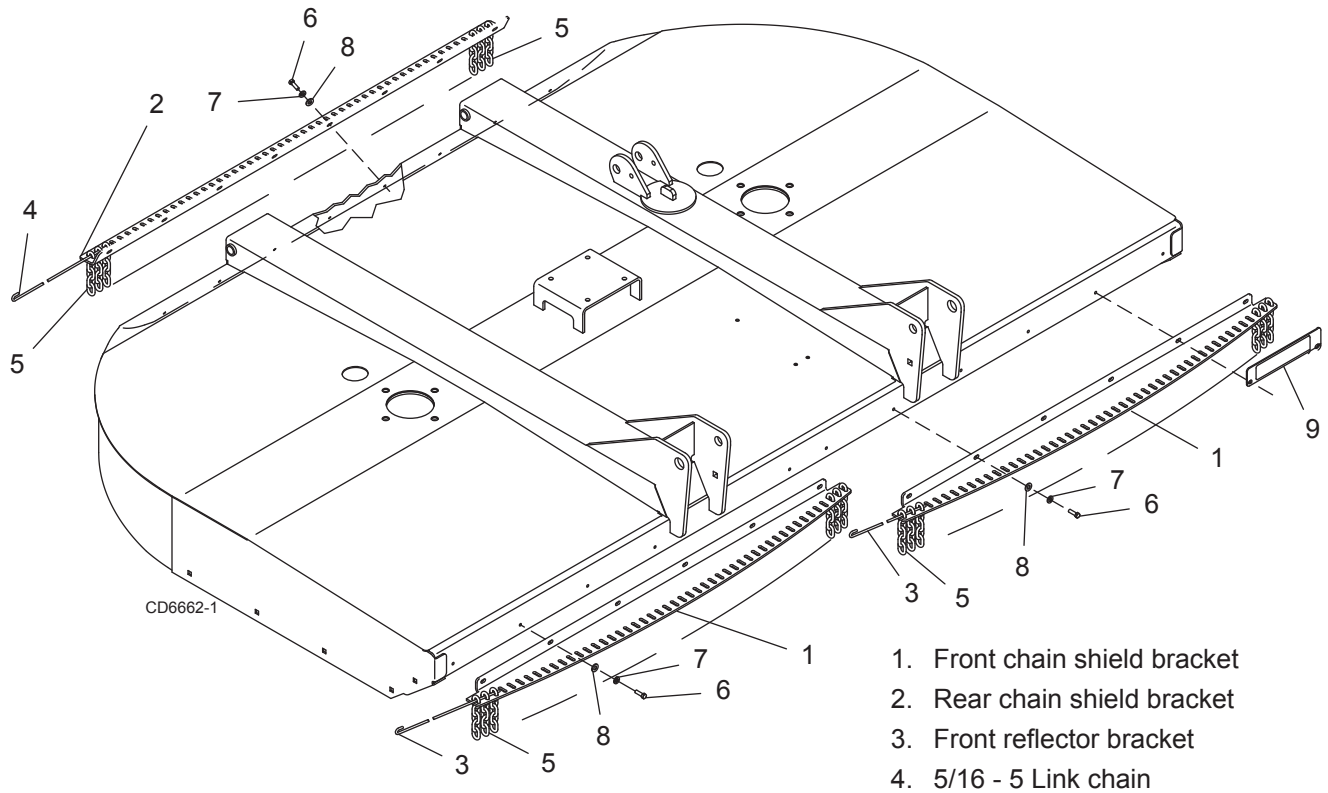
1. Attach rubber belting (1) and defector brackets (2) to the front of the cutter frame using carriage bolts (5) and flanged lock nuts (7).
2. Attach front reflector bracket (4) over left front shield.
3. Attach rear band (3) to the rear of the cutter frame using carriage bolts (6) and flanged lock nuts (7).

Optional Chain Shielding

(Figure 37)

The optional chain shielding assemblies are ready for installation when you receive them.

1. Install front and rear chain shielding as shown using carriage bolts (8) and flanged lock nuts (9).
2. Attach front reflector bracket (3) over left front shield.



1. Front chain shield bracket
2. Rear chain shield bracket
3. Front reflector bracket
4. 5/16 - 5 Link chain
5. 5/16 - 4 link chain
6. .243 Dia bent pin
7. .243 Dia bent pin
8. 3/8 NC x 1 Carriage bolt
9. 3/8 NC Flange lock nut

Figure 37. DS8.30 & DS10.40 Optional Chain Shielding Installation

DEALER CHECKLISTS

DEALER PRE-DELIVERY CHECKLIST

(DEALER'S RESPONSIBILITY)

Inspect cutter thoroughly after assembly to make sure it is set up properly before delivering it to the customer. The following checklist is a reminder of points to inspect. Check off each item as it is found satisfactory, corrections are made, or services are performed.

IMPORTANT

- **Gearbox was not filled at the factory. It must be serviced before operating cutter. (See LUBRICATION, page 20). Failure to service will result in damage to gearbox.**

_____ Check that gearbox is properly serviced and seals are not leaking.

_____ Check and grease all lubrication points as identified in Owner Service, LUBRICATION, page 20.

_____ Check that blades have been properly installed

_____ Check all bolts to be sure they are properly torqued.

_____ Check that all cotter pins are properly installed and secured.

_____ Check that PTO shaft is properly installed.

DELIVERY CHECKLIST

(DEALER'S RESPONSIBILITY)

_____ Show customer how to make adjustments. Describe the options available for this cutter and explain their purpose.

_____ Explain importance of lubrication to customer and point out lubrication points on cutter.

_____ Point out all guards and shielding. Explain their importance and the safety hazards that exist when not kept in place and in good condition.

_____ For mounted units, add wheel weights, ballast in front tires, and/or front tractor weight to enhance front end stability. A minimum 20% of tractor and equipment gross weight must be on front tractor wheels. WheShow customer how to make adjustments. Describe the options available for this cutter and explain their purpose.

_____ For mounted units, add wheel weights, ballast in front tires, and/or front tractor weight to enhance front end stability. A minimum 20% of tractor and equipment gross weight must be on front tractor wheels. When adding weight to attain 20% of tractor and equipment weight on front tractor wheels, you must not exceed the ROPS weight certification. Weigh the tractor and equipment. Do not estimate

_____ 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.

_____ 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.

WOODS®

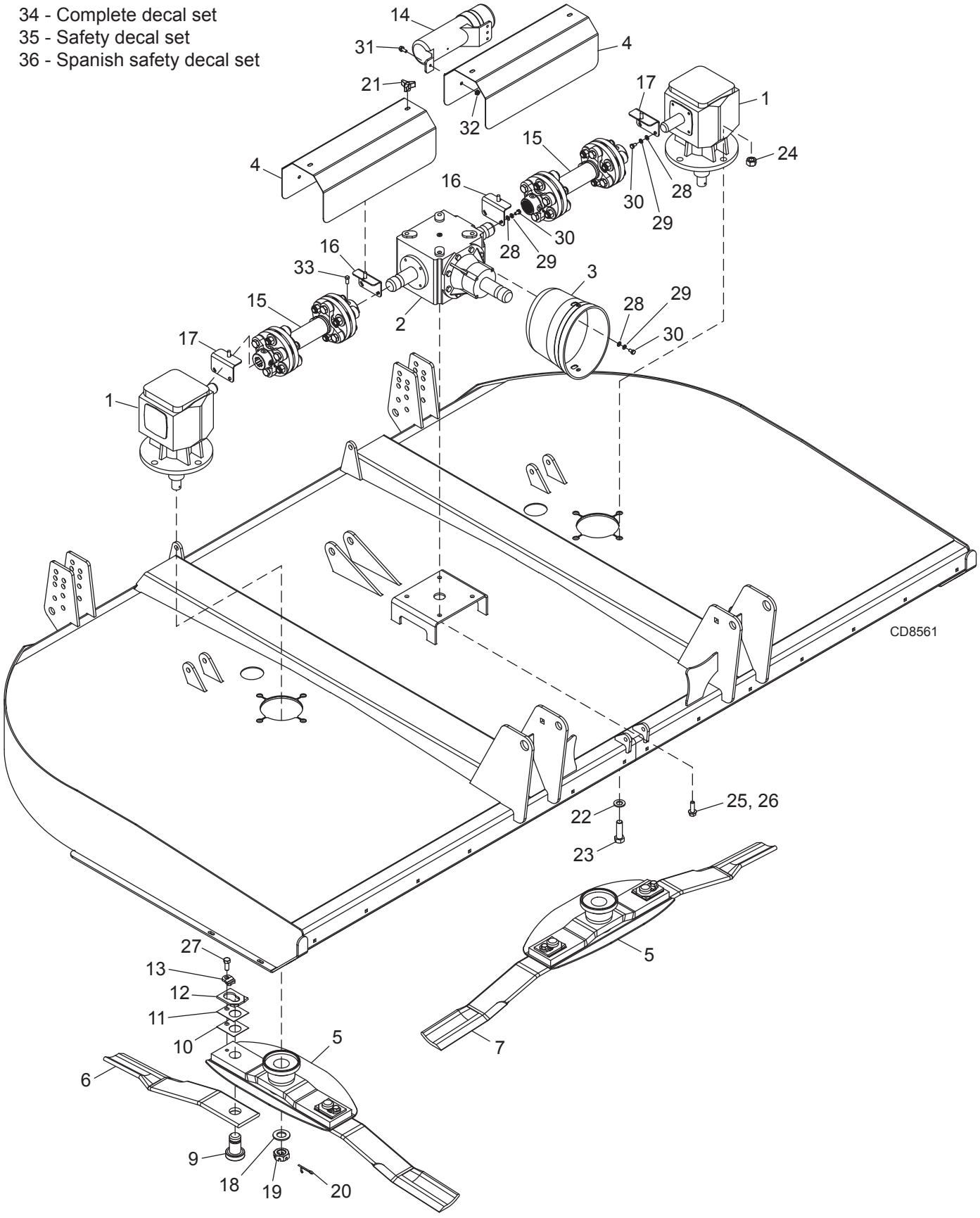
PARTS INDEX

Rotary Cutters

DS8.30 & DS10.40

DS8.30 / DS10.40 MAIN FRAME ASSEMBLY

34 - Complete decal set
35 - Safety decal set
36 - Spanish safety decal set

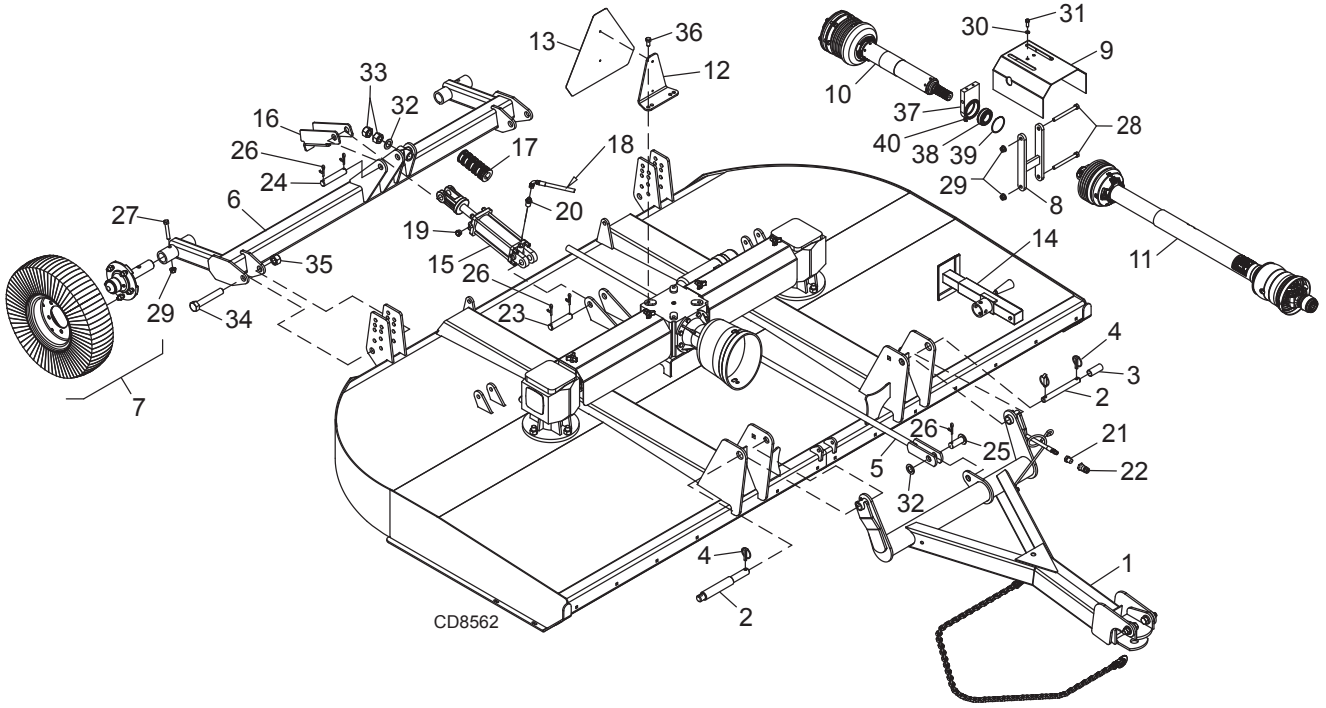


DS8.30 / DS10.40 MAIN FRAME PARTS LIST

REF	PART	QTY	DESCRIPTION
1	1032585RP	2	Spindle gearbox (DS8.30) (See page 56) **-or-**
1	58803	2	Spindle gearbox (DS10.40) (See page 57)
2	1043025	1	Splitter gearbox (DS8.30) (See page 54) **-or-**
3	1002048RP	1	Clutch shield
4	1013377RP	2	Coupler shield (DS8.30) **-or-**
4	1009202RP	2	Coupler shield (DS10.40)
5	1043030	2	Crossbar (DS8.30) **-or-**
5	1043031	2	Crossbar (DS10.40)
6	57099KT	1	Right blade, CW (DS8.30) **-or-**
6	19161KT	1	Right blade, CW (DS10.40)
7	1003490KT	1	Left blade, CCW (DS8.30) **-or-**
7	19160KTRP	1	Left blade, CCW (DS10.40)
8	1003675KT	2	Double edge blade (DS8.30) **-or-**
8	19162KT	2	Double edge blade (DS10.40)
9	1009199	4	Blade pin
10	10520RP	4	Shim, 18 ga
11	13946RP	4	Shim, 20 ga
12	32603RP	4	Keyhole plate
13	32604RP	4	Blade pin lock clip
14	1003828RP	1	Manual tube
15	1040670	2	Flex coupler (DS8.30) **-or-**
15	1009207	2	Flex coupler (DS10.40)
16	1043032	2	Shield hold down, inside (DS8.30) **-or-**
16	1009203RP	2	Shield hold down, inside (DS10.40)
17	1043032	2	Shield hold down, outside (DS8.30) **-or-**
17	1009204RP	2	Shield hold down, outside (DS10.40)
18	39322		Washer, 31 x 56 x 4 mm (DS10.40)
19	20892RP		M24-2.0P Castle nut (DS8.30) **-or-**
19	39323		M30-2.0P Castle nut (DS10.40)
20	64803RP *		3/16 x 2 Cotter pin
21	66840RP		3/8 NC Knob
22	57798RP		3/4 Hardened flat washer (DS10.40)
23	1038890		5/8 NC x 2 FHCS, GR8 (DS8.30) **-or-**
23	30068RP *		3/4 NC x 2-1/2 HHCS, GR5 (DS10.40)
24	19025RP *		5/8 NC Flanged lock nut (DS8.30) **-or-**
24	2371RP *		3/4 NC Lock nut (DS10.40)
25	57816		1/2 Hardened flat washer (DS8.30)
26	62542		M12-1.75P x 30 mm HHCS (DS8.30) **-or-**
26	1039944		1/2 NC x 1-1/2 FHCS, GR8 (DS10.40)
27	6100RP *		/2 NC x 1-1/4 HHCS, GR5
28	35155RP *		/16 SAE Flat washer
29	2472RP *		5/16 Lock washer
30	24801RP		M8-1.25P x 20 mm HHCS (DS8.30) **-or-**
30	39254		M8-1.25P x 16 mm HHCS (DS10.40)
31	71851		5/16 NC x 3/4 FHCS
32	73163 *		5/16 NC Flanged whiz nut
33	90016031 *		3/8 NC x 3/4 Square head set screw
34	1042780		Complete decal set
35	1042781	1	Safety decal set
36	1042782	1	Spanish safety decal set

*	Standard hardware, obtain locally
HHCS	Hex Head Cap Screw
FHCS	Flanged Head Cap Screw

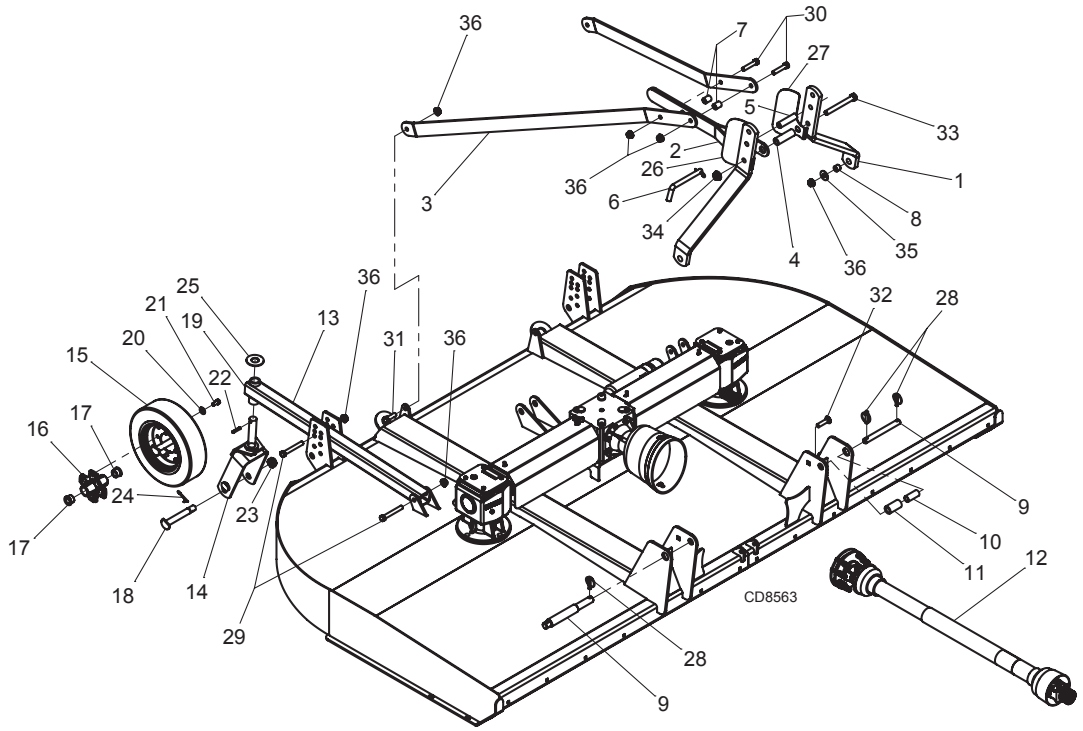
DS8.30 / DS10.40 PULL-TYPE ASSEMBLY



REF	PART	QTY	DESCRIPTION
1	1040725	1	Tongue assembly (DS8.30) (See page 64) **-or-**
1	1040724	1	Tongue assembly (DS10.40)
2	HBL233	2	.875 x 6.94 Headless pin (DS8.30) **-or-**
2	39064	2	Lower hitch pin (DS10.40)
3	56598	2	Sleeve, .885 x 1.125 x 2.62
4	27542RP *		7/16 x 11/32 Klik pin
5	1013388	1	Attitude rod (DS8.30) **-or-**
5	1042765	1	Attitude rod (DS10.40)
6	1040735	1	Wheel yoke (DS8.30) **-or-**
6	1040747	1	Wheel yoke (DS10.40)
7	-------	2	Tire & hub (See page 65)
8	1042234RP	1	H-Frame (DS10.40)
9	1011761RP	1	Shield (DS10.40)
10	1041677	1	Stub shaft (DS10.40)
11	1041676	1	CV Drive (DS8.30) (See page 59)
11	1040720	1	CV Drive (DS10.40) (See page 60)
12	1009234RP	1	SMV Bracket
13	24611	1	SMV Emblem
14	23790	1	Parking jack
15	1035089	1	3 x 6 Hydraulic cylinder
15A	1038883	1	Seal kit for 1035089 cylinder
16	1038065RP	1	Transport lock-up
17	24098	1	1-1/4 Stroke control kit
18	1038123	1	Hose, 154" x 1/4NPT x 9/16JICF 90°
19	11975	1	1/2 NPT Vent plug

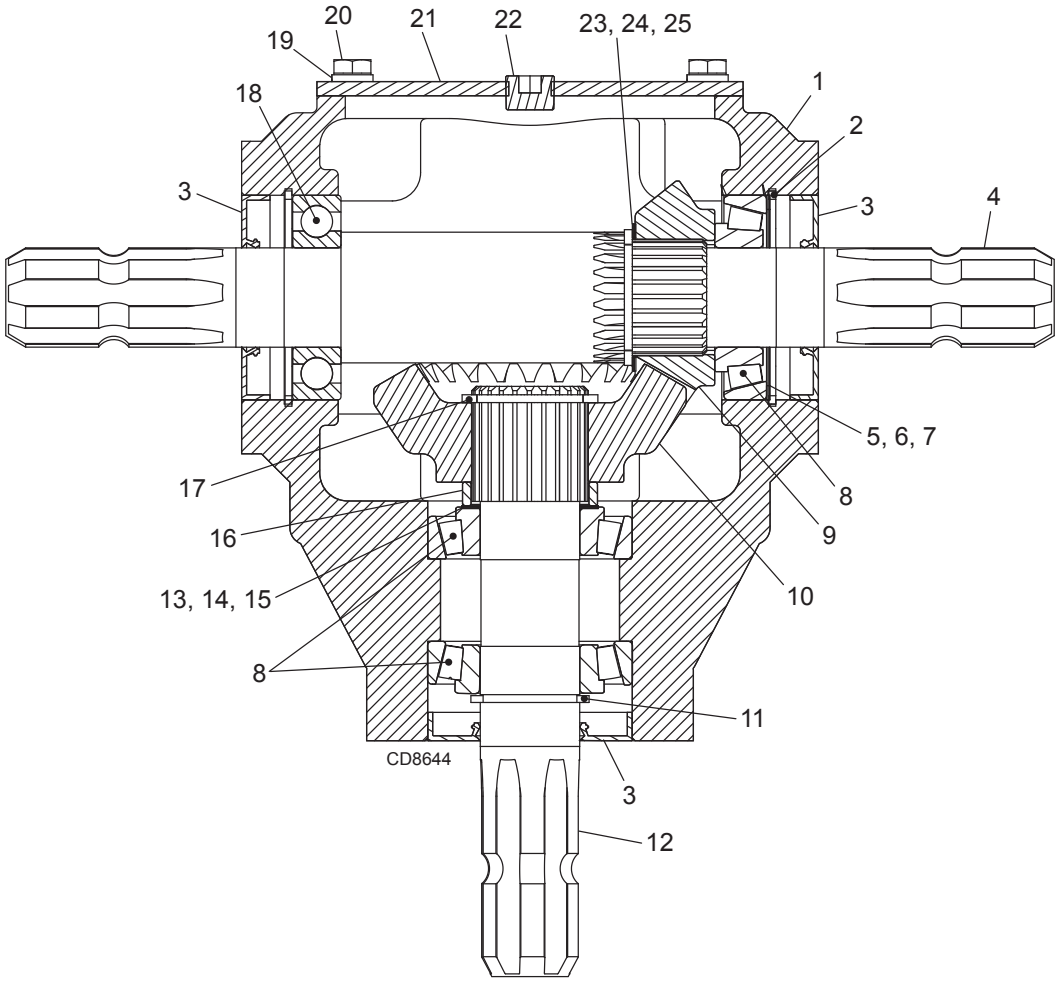
REF	PART	QTY	DESCRIPTION
20	54315	1	1/2 NPTM x 9/16 JICM Adapter
21	1038891	1	1/4 NPTF x 1/2 NPTM Adapter restricter .06
22	66511RP	1	1/2 NPT Male coupler
23	8345	1	1 x 4 Headless pin
24	8346	1	1 x 4-1/2 headless pin
25	46605RP	1	1.00 x 4.08 Pin
26	1285RP *		1/4 x 1-1/2 Cotter pin
27	3489 *		1/2 NC x 3 HHCS, GR5
28	65575 *		1/2 NC x 5-1/4 HHCS, GR5
29	11900RP *		1/2 NC Flanged lock nut
30	838RP *		3/8 Lock washer
31	839 *		3/8 NC x 1 HHCS, GR5
32	1863RP *		1" Standard flat washer
33	3132RP *	1	NC Hex nut
34	1003606RP	1	NC x 6 HHCS, GR5
35	34279RP	1	NC Hex lock nut
36	62542		M12-1.75P x 30 mm HHCS (DS8.30) **-or-**
36	25475RP *		1/2 NC x 1 HHCS, GR5 (DS10.40)
37	32347	1	Bearing block (includes 38, 39, 40) (DS10.40)
38	13133	1	Bearing (DS10.40)
39	12128	1	Snap ring (DS10.40)
40	2985 *		1/4-28 x 90° Grease fitting
	*		Standard hardware, obtain locally
	HHCS		Hex Head Cap Screw

DS8.30 & DS10.40 MOUNTED ASSEMBLY



REF	PART	QTY	DESCRIPTION
1	57134RP	2	A-Frame bar (DS8.30) **-or-**
1	1040701RP	2	A-Frame bar (DS10.40)
2	1040654RP	2	Break link
3	1040655RP	2	Lift arm (DS8.30) **-or-**
3	1040702RP	2	Lift arm (DS10.40)
4	1040653	1	Sleeve, .66 x 1.25 x 4.00 (DS8.30) **-or-**
4	1040703	1	Sleeve, 3/4 x 1-1/4 x 4 (DS10.40)
5	1000662RP	1	Sleeve, 3/4 x 1 x 4
6	1035646	1	Pin bent .75 X 6.25 w/ clip
7	66661RP	2	Sleeve, 5/8 x 1 x 1-1/4
8	67222RP	2	Sleeve, 5/8 x 1 x 11/16 (DS8.30) **-or-**
8	12313	2	Sleeve, 5/8 x 1 x 13/16 (DS10.40)
9	HBL233	2	7/8 x 6-15/16 Headless pin (DS8.30) **-or-**
9	39064	2	Lower hitch pin (DS10.40)
10	56598	2	Sleeve, 7/8 x 1-1/8 x 2-5/8 (DS8.30)
11	1002012	2	Sleeve, 15/16 x 1-7/16 x 2-3/4 (DS8.30)
12	1040710	1	Driveline (DS8.30) (See page 62) **-or-**
12	57413RP	1	Driveline (DS10.40) (See page 63)
13	1040650RP	2	Tailwheel arm
14	1036880RP	2	Tailwheel clevis
15	1019636	2	4 X 8 Rim & laminated tire
16	1030522	2	Hub, 4-bolt
17	1030524RP	4	Bushing, flange .990 x 1.394 x .98
18	1030523	2	M24-2.0P Axle bolt
19	12296 *		1/4-28 Straight grease fitting
20	----- *		1/2 Flat washer
21	300300 *		1/2 NC x 1 HHCS, GR5
22	40775	2	Spirol pin, 10 mm x 65 mm
23	1032105	2	M24-2.0P Slotted nut
24	----- *		Cotter pin
25	7163 *		1-1/4 Std flat washer
26	640402RP	1	Guard, RH
27	640401RP	1	Guard, LH
28	27542 *		7/16 x 11/32 Klik pin
29	3097 *		5/8 NC x 4-1/2 HHCS, GR5
30	34473 *		5/8 NC x 3 HHCS, GR5
31	902 *		5/8 NC x 2 HHCS, GR5
32	2855 *		5/8 NC x 2 Crg bolt, GR5 (DS8.30) **-or-**
32	5836 *		5/8 NC x 2-1/2 Crg bolt, GR5 (DS10.40)
33	23638 *		5/8 NC x 7 HHCS, GR5 (DS8.30) **-or-**
33	W29489		3/4 NC x 6-1/2 HHCS, GR5 (DS10.40)
34	19025 *		5/8 NC Flanged lock nut (DS8.30) **-or-**
34	1045611		3/4 NC Flange lock nut (DS10.40)
35	692RP *		5/8 Std flat washer
	*		Standard hardware, obtain locally
	HHCS		Hex Head Cap Screw

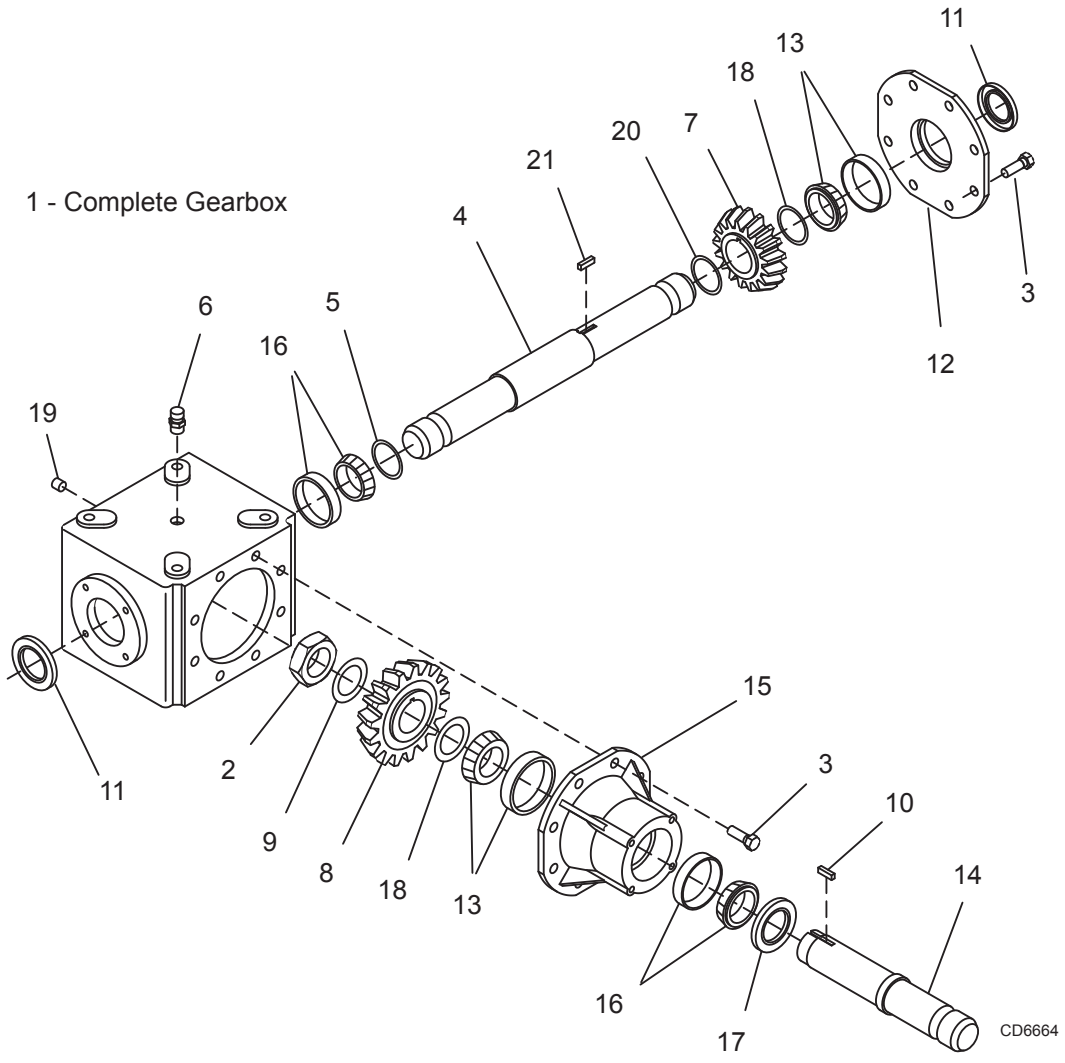
DS8.30 SPLITTER GEARBOX ASSEMBLY



REF	PART	QTY	DESCRIPTION
A	1043025	1	Complete gearbox
1	NSS	1	Gearbox housing
2	NSS	2	Retaining ring
3	1032401	3	Seal, 35 x 72 x 10
4	NSS	1	Through shaft
5	NSS	A/R	Shim, 62 x 72 x .25
6	NSS	A/R	Shim, 62 x 72 x .5
7	NSS	A/R	Shim, 62 x 72 x 1.0
8	1032448	3	Tapered roller bearing, 30207
9	NSS	1	15T Gear
10	NSS	1	22T Gear
11	NSS	1	Snap ring, 35 x 2.5
12	NSS	1	Input shaft
13	NSS	A/R	Shim, 35.25 x 48 x .25
14	NSS	A/R	Shim, 35.25 x 48 x .5
15	NSS	A/R	Shim, 35.25 x 48 x 1.0

REF	PART	QTY	DESCRIPTION
16	NSS	1	Spacer, 41.5 x 47.5 x 8.3
17	NSS	2	Snap ring, 40 x 2.5
18	20890	1	Ball bearing, 6207
19	NSS	4	M8 Lock washer
20	NSS	4	M8-1.25P x 16mm HHCS
21	NSS	1	Cover
22	27326	1	3/8 NPT Solid plug
23	NSS	A/R	Shim, 42.25 x 51.75 x .25
24	NSS	A/R	Shim, 42.25 x 51.75 x .5
25	NSS	A/R	Shim, 42.25 x 51.75 x 1
26	39325	1	3/8 Vent plug (Not shown)
	NSS		Not Serviced Separately
	A/R		As Required
	HHCS		Hex Head Cap Screw

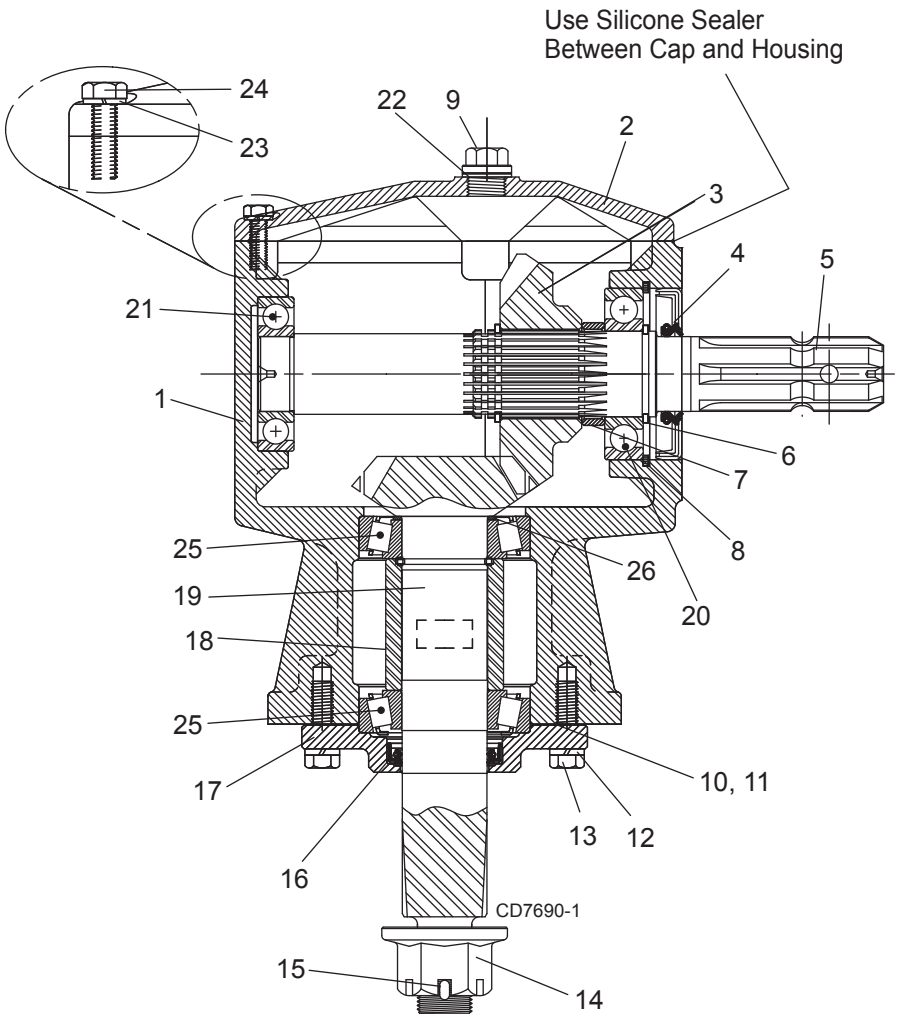
DS10.40 SPLITTER GEARBOX ASSEMBLY



REF	PART	QTY	DESCRIPTION
1	1008192	--	Complete gearbox
2	1008130	1	Lock nut
3	39274 *	16	M10 x 1.5 x 22 mm Cap screw
4	1008131	1	Through shaft 1-3/4 20 spline
5	57456	1	Shim 45.3 x 65.3 x 2.5
6	39325	1	3/8 Vent plug
7	1008132	1	Crown gear, 27 teeth
8	1008133	1	Pinion gear, 18 teeth
9	1008134	1	Shim 45.3 x 65.3 x 1
10	39402	1	Key, 14 x 9 x 40
11	1008135	2	Seal, 45 x 72 x 8
12	1008136	1	Cover

REF	PART	QTY	DESCRIPTION
13	1008148	2	Bearing cup and cone
14	1008149	1	Input shaft 1-3/4 20 spline
15	1008151	1	Housing extension
16	39408	2	Bearing cup and cone
17	39412	1	Seal 52 x 85 x 10
18	58751	3	Shim kit 45.3 x 65.3
19	27326 *	4	3/8 NPT Solid plug
20	1008154	1	Spacer 45.3 x 60.3 x 5
21	1008155	1	Key, 14 x 9 x 35
		*	Standard hardware, obtain locally

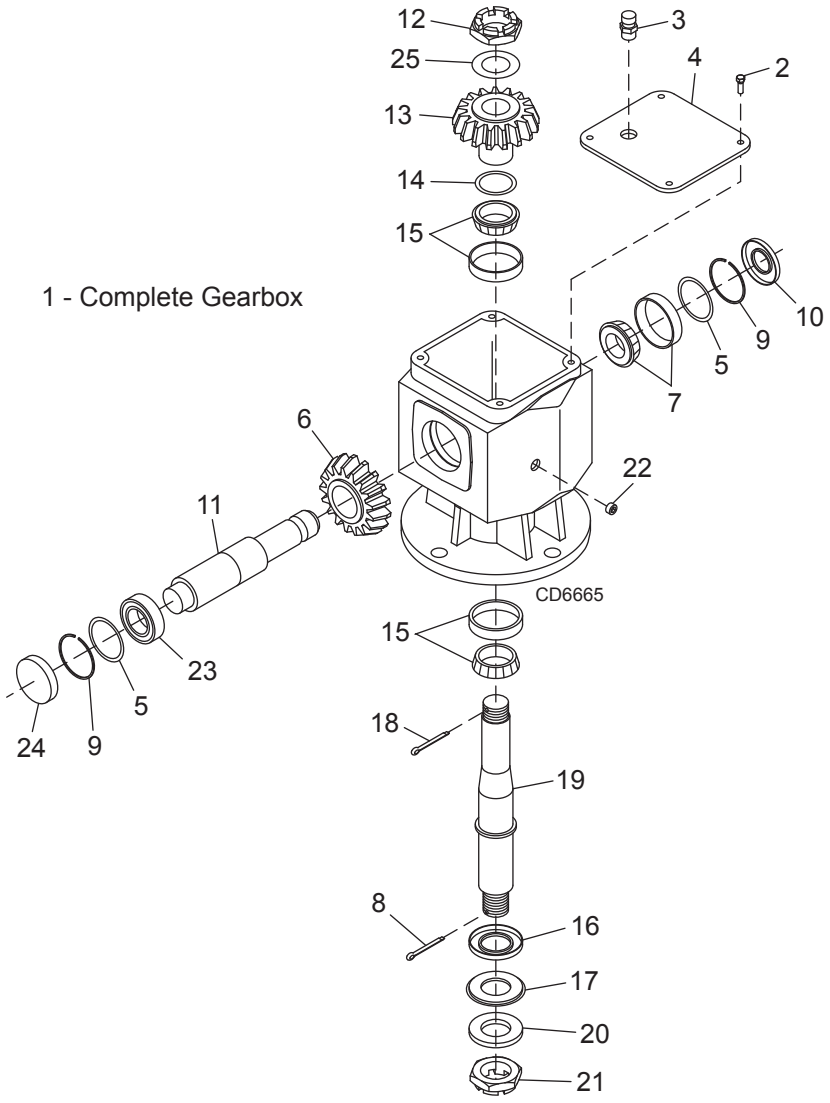
DS8.30 SPINDLE GEARBOX ASSEMBLY



REF	PART	QTY	DESCRIPTION
A	1032585RP	1	Gearbox repair assembly
1	NSS	1	Housing
2	1019632	1	Inspection cover
3	NSS	1	22 Tooth gear
4	1018327RP	1	Input seal
5	NSS	1	Input shaft
6	NSS	1	Retaining ring
7	NSS	1	Gear spacer
8	NSS	1	Retaining ring
9	1011780RP	1	Vent plug and washer
10	1018329	A/R	Output gasket (0.30)
11	1018330	A/R	Output gasket (0.13)
12	NSS	4	Lock washer
13	NSS	4	M10-1.5P x 25 HHCS
14	1018331	1	1" - 14 Slotted flange nut
15	NSS	1	Cotter pin

REF	PART	QTY	DESCRIPTION
16	1018328RP	1	Output seal
17	1038357	1	Output cap
18	NSS	1	Output bearing spacer
19	NSS	1	Output shaft and pinion
20	1018326RP	1	Ball bearing
21	1018325RP	1	Ball bearing
22	NSS	2	Sealing washer w/plug
23	NSS	6	Lock washer
24	NSS	6	M8-1.5P x 25 HHCS
25	57478	2	Bearing cup and cone
26	1032963	1	Shim Kit
	NSS		Not Serviced Separately
	A/R		As Required
	HHCS		Hex Head Cap Screw

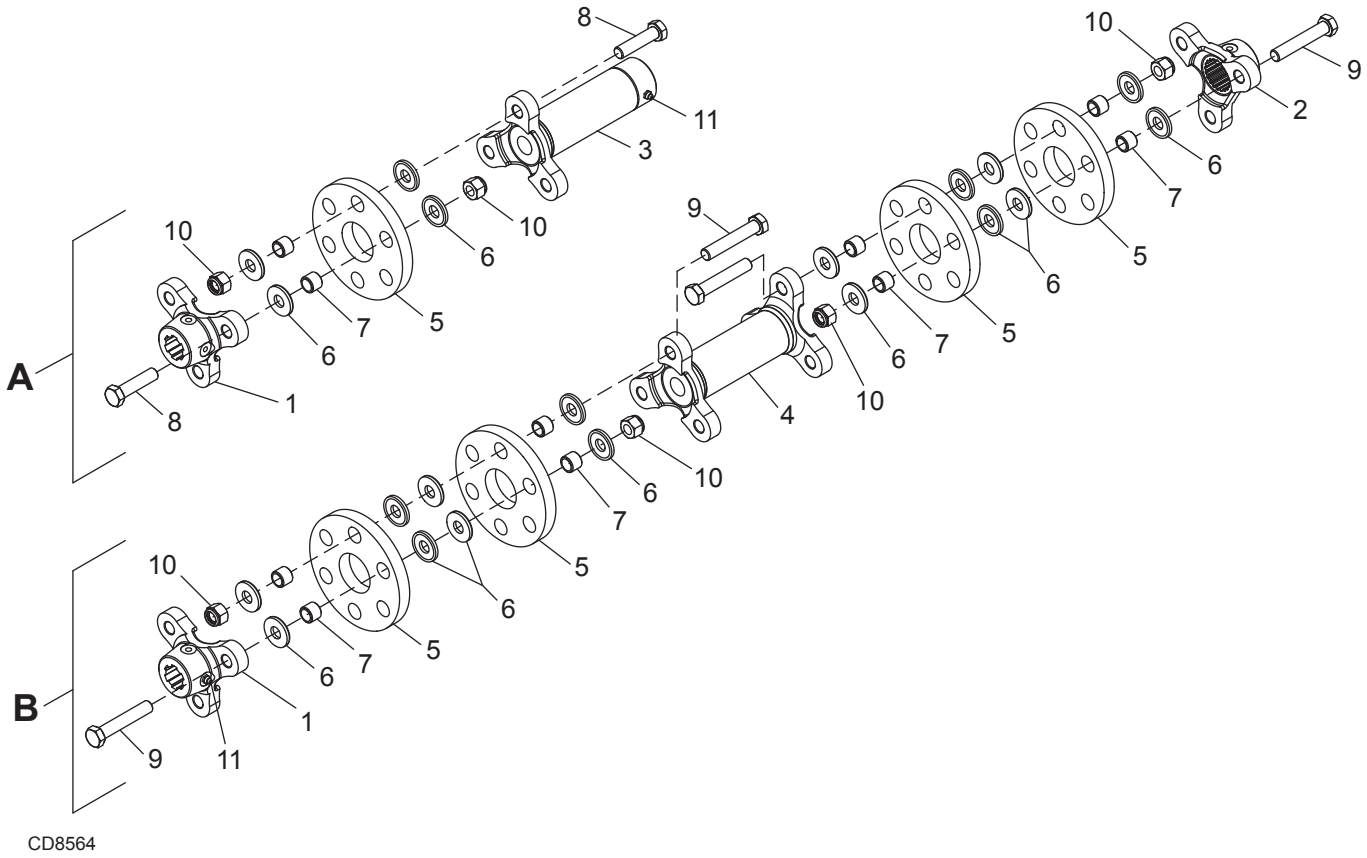
DS10.40 SPINDLE GEARBOX ASSEMBLY



REF	PART	QTY	DESCRIPTION
1	58803	1	Complete gearbox
2	57150 *	6	M8-1.25P x 14 mm HHCS
3	57076	1	1/2 Vent plug
4	57139	1	Cover
5	57328	1	Shim kit, 60.3 x 71.7
6	39424	1	Crown gear
7	57462	1	Bearing, cup & cone
8	NSS *	1	Cotter pin, B6 x 60 mm
9	57466	2	Snap ring
10	57463	1	Seal, 35 x 72 x 10
11	57147	1	Input shaft, 1-3/8 6 spline
12	39261	1	M30-1.5P Castle nut
13	39418	1	Pinion gear
14	57471	1	Shim kit, 50.3 x 70.3

REF	PART	QTY	DESCRIPTION
15	39263	2	Bearing, cup & cone
16	39289RP	1	Seal, 50 x 90 x 10
17	57338	1	Screen protection
18	NSS *	1	Cotter pin, B4 x 55 mm
19	57191	1	Output shaft
20	39322	1	Flat washer, 31 x 56 x 4
21	39323	1	M30-2.0P castle nut
22	27326	1	3/8 NPT Solid plug
23	20890	1	Ball bearing
24	57374	1	Seal, 72 x 10
25	57094	1	Shim, 44 x 30.3 x 1
	NSS		Not Serviced Separately
	HHCS		Hex Head Cap Screw

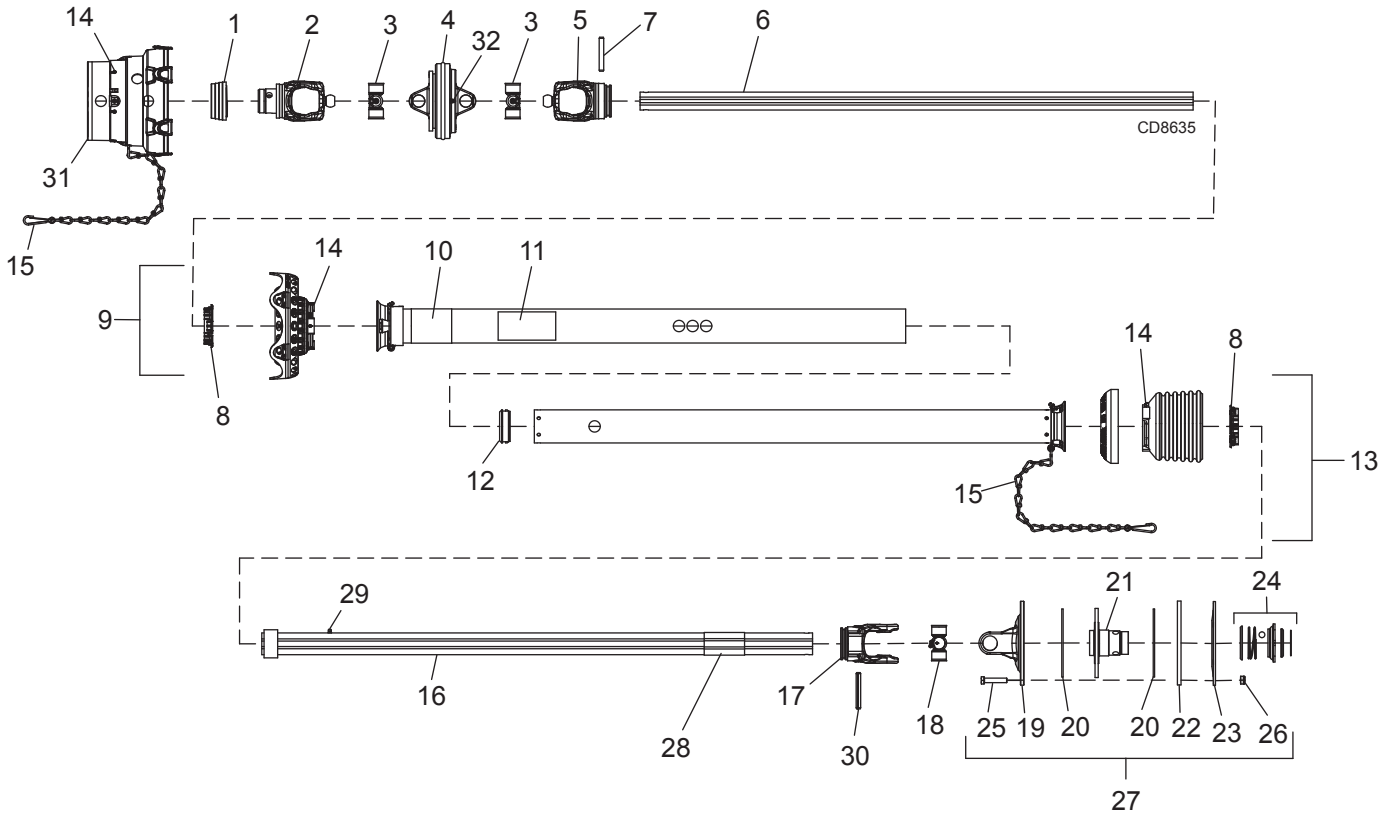
DS8.30 / DS10.40 FLEXIBLE COUPLER ASSEMBLY



REF	PART	DS8.30 QTY	DS10.40 QTY	DESCRIPTION
A	1040670	2	-----	Complete flex coupler drive (DS8.30)
B	1009207	-----	2	Complete flex coupler drive (DS10.40)
1	1008143	1	1	Yoke, 1-3/8 6-spline
2	1008147	-----	1	Yoke, 1-3/4 20 spline
3	NSS	1	-----	Single yoke & tube assembly
4	NSS	-----	1	Double yoke & tube assembly
5	1008140	1	4	Rubber disc
6	1008141	12	48	Shaped washer
7	1008142	6	24	Bushing
8	1042998	6	-----	M16 x 2.0P x 65 mm HHCS
9	1001042	-----	12	M16 x 2.0P x 90 mm HHCS
10	1008146	6	12	M16 x 2.0P Lock nut
11	----- *	1	1	M8 x 1.0P Grease fitting
9	----- *	1	1	M8 x 1.0P Grease fitting

NSS	Not Serviced Separately
*	Standard Hardware, obtain locally

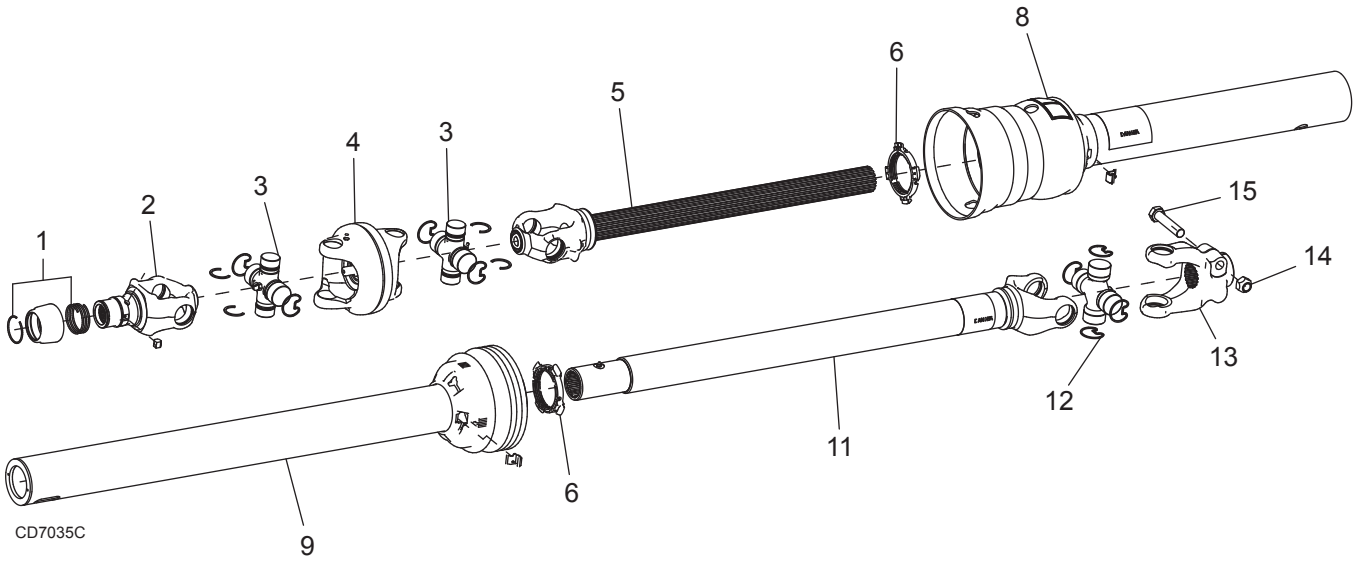
DS8.30 CV DRIVE ASSEMBLY



REF	PART	QTY	DESCRIPTION
A	1041676	1	Complete CV drive
1	40589	1	Slide lock repair kit
2	44671	1	Yoke, QD CV 1-3/8 - 6 spline
3	1041684	2	CV U-Joint repair kit
4	44672	1	CV Body (includes fitting item 33)
5	1041685	1	Yoke, inner profile
6	1041686	1	Drive tube, inner profile
7	415146	1	Spring pin, 10 x 75 (package of 10)
8	40766	2	Drive shield bearing kit
9	1041691	1	Outer shield half
10	18864RP	1	Decal, danger, rotating driveline
11	1041690	1	Decal, lubrication
12	40767	1	Support bearing
13	1041692	1	Inner shield half
14	40778	1	Screw, (package of 10)
15	40777	2	Anti-rotation chain
16	1041687	1	Drive tube, outer profile

REF	PART	QTY	DESCRIPTION
17	38353	1	Yoke, outer profile
18	38352	1	U-Joint repair kit
19	1027217	1	Flange yoke
20	57432RP	2	Friction disc
21	1041696	1	Hub, 1-3/8 - 6 spline
22	57434	1	Thrust plate
23	57439	1	Belleville spring plate
24	57437	1	QD Flange repair kit
25	57259	6	M10-1.5P x 55 mm HHCS
26	57260	6	M10-1.5P Hex lock nut
27	1041688	1	Friction clutch, 1-3/8 - 6 spline
28	33347RP	1	Decal, danger, guard missing
29	40779	1	Grease fitting (package of 10)
30	40764	1	Spring pin, 10 x 80 (package of 10)
31	1041689	1	CV Guard
32	1037779	1	M8-1.0P Straight grease fitting

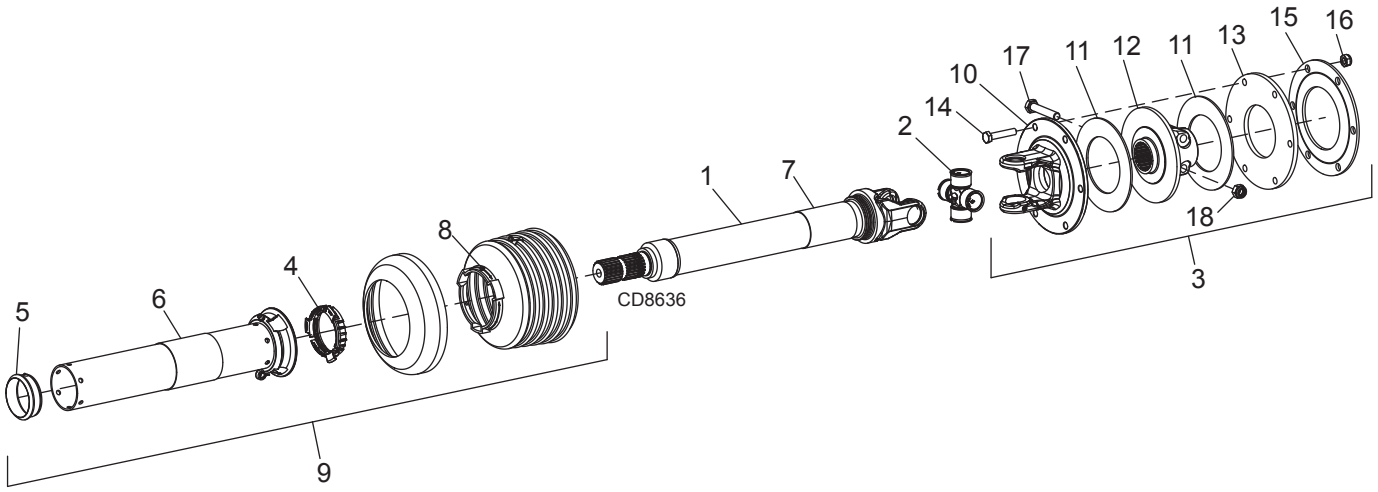
DS10.40 CV DRIVE ASSEMBLY



REF	PART	QTY	DESCRIPTION
A	1040720	1	Complete CV drive
1	19851	1	Slide lock repair kit
2	1032289	1	Yoke QD CV 1-3/8 - 6
3	1032290	2	CV U-Joint repair kit Cat 4 35E
4	1032291	1	CV Body with fitting
5	1032292	1	Yoke and shaft CV 1.31-20 spline
6	1024636	2	Drive shield bearing kit
7	18864RP †	1	Decal, danger rotating driveline
8	1032293	1	CV shield outer
9	1032294	1	CV shield inner
10	33347RP †	1	Decal, danger guard missing
11	1032295	1	Yoke, tube and slip sleeve
12	1032296	1	U-Joint cross and bearing kit
13	1043026	1	Yoke, 35R x 3.88 x SP 1.50 - 23
14	6239RP *	1	5/8 NC Lock nut
15	34473 *	1	5/8 NC x 3 HHCS GR5

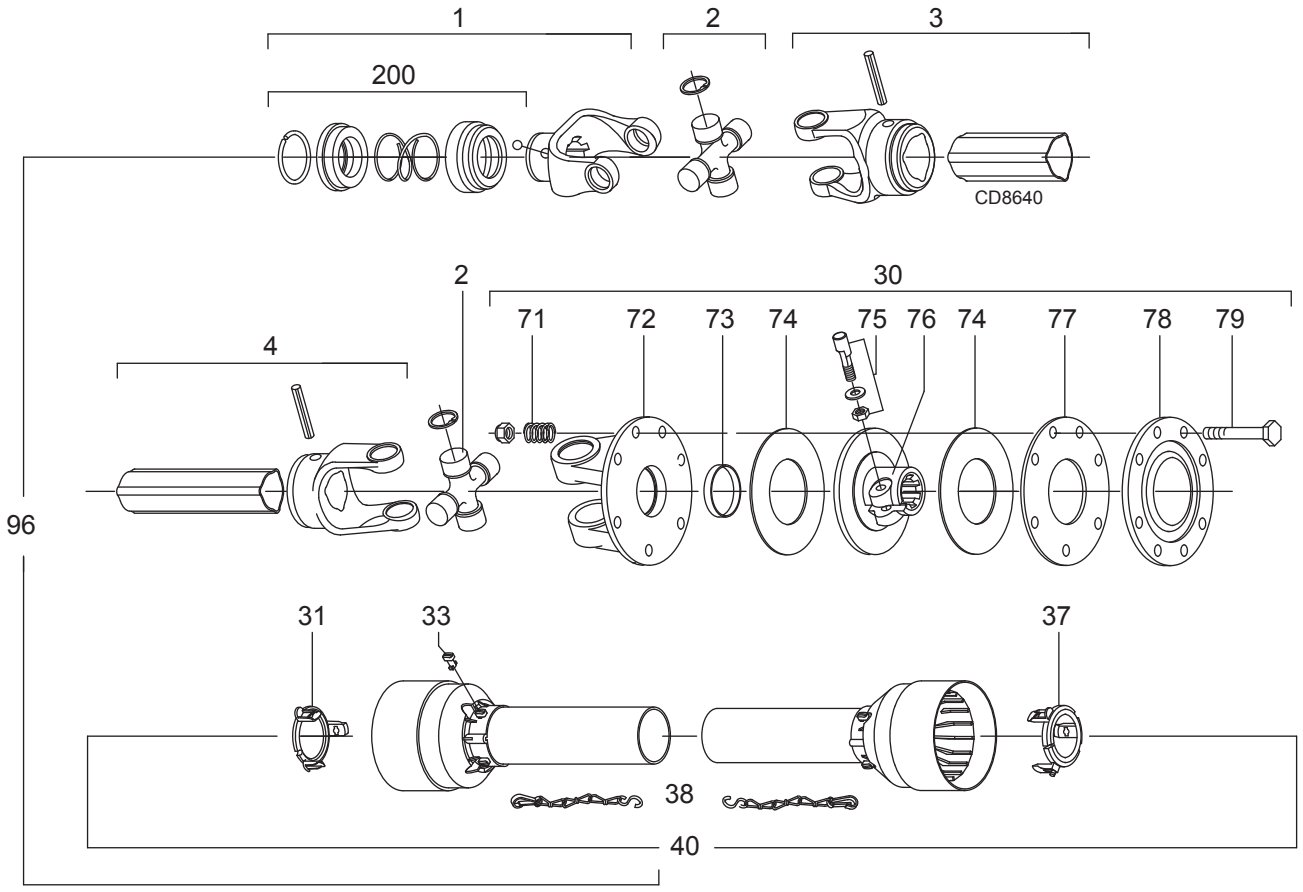
†	Not shown
HHCS	Hex head cap screw
*	Standard hardware, obtain locally

DS10.40 REAR FIXED LENGTH DRIVE ASSEMBLY



REF	PART	QTY	DESCRIPTION
A	1041677	1	Drive assembly complete
1	1041682	1	Drive without shield
2	38352	1	U-Joint cross & bearing kit
3	1019114	1	Friction clutch
4	40766	1	Bearing ring
5	40767	1	Support bearing
6	18864RP	1	Decal, danger, rotating driveline
7	33347RP	1	Decal, danger, guard missing
8	40778	1	Screw, (package of 10)
9	1041683	1	Shield assembly, complete
10	1027217	1	Flange yoke
11	57432RP	2	Friction disc
12	57440	1	Hub, 1-3/4 - 20 spline
13	57434	1	Thrust plate
14	57529	6	M10-1.5P x 5 mm HHCS, CL8.8
15	57439	1	Belleville spring
16	57260	6	M10-1.5P Hex lock nut
17	57262	2	M12-1.75P x 65 mm HHCS, CL8.8
18	57261	2	M12-1.75P Hex lock nut
	HHCS		Hex head cap screw

DS8.30 SLIP CLUTCH DRIVE ASSEMBLY

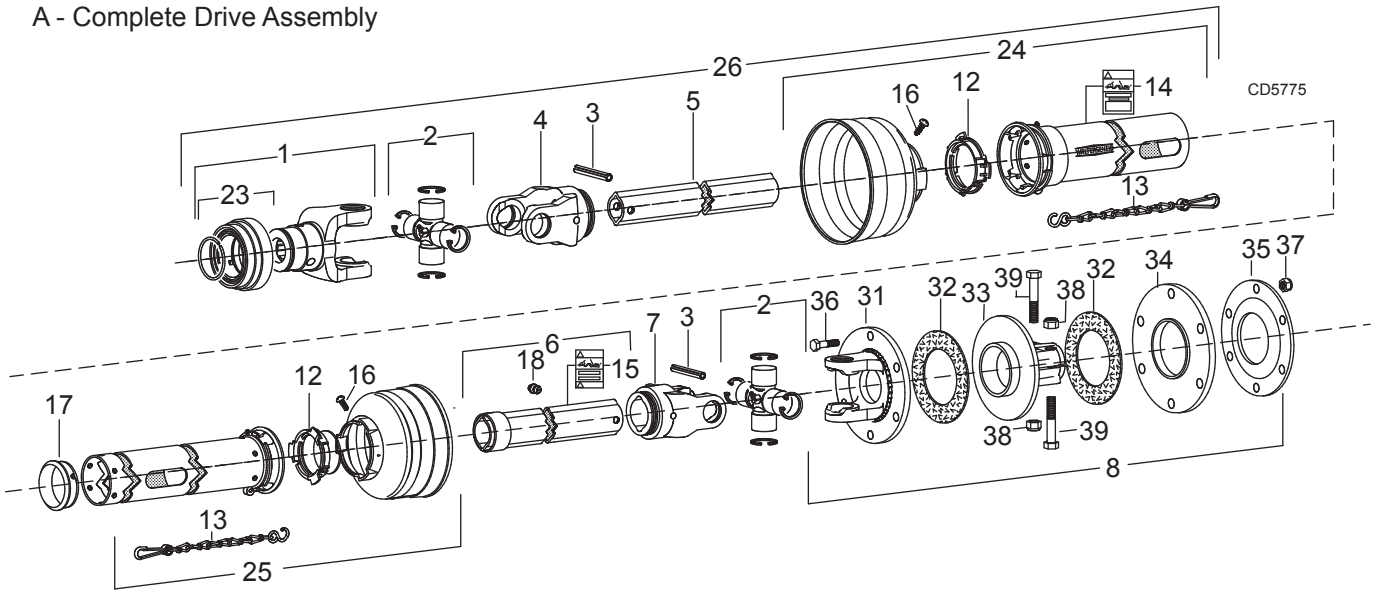


REF	PART	QTY	DESCRIPTION
A	1040710	1	**Complete drive assembly**
1	1028775	1	Complete collar yoke, 1-3/8 - 6 spline
2	36990	2	**U-Joint cross & bearing kit**
3	53464	1	Yoke & profile tube, outer
4	53466	1	Yoke & profile tube, inner
30	1043040	1	Complete slip clutch assembly
31	1028776	1	Outer shield bearing kit
33	30922	6	Shield retaining clip
37	1028777	1	Inner shield bearing kit
38	30917	2	Shield tether chain
40	1043041	1	Shield, complete, inner & outer

REF	PART	QTY	DESCRIPTION
71	1043042	8	Clutch spring
72	1028779	1	Flanged yoke
73	1028780	1	Bushing
74	1028781	2	Clutch lining ring
75	1001274	1	Tapered pin set, 1-3/8
76	1043043	1	Clutch support
77	1028783	1	Inner clutch plate
78	1028785	1	Pressure plate
79	1028786	8	Bolt & nut, M10 x 85 mm
96	1043044	1	Half shaft asy, female, with shield
200	1001340	1	Lock collar repair kit

DS10.40 SLIP CLUTCH DRIVE ASSEMBLY

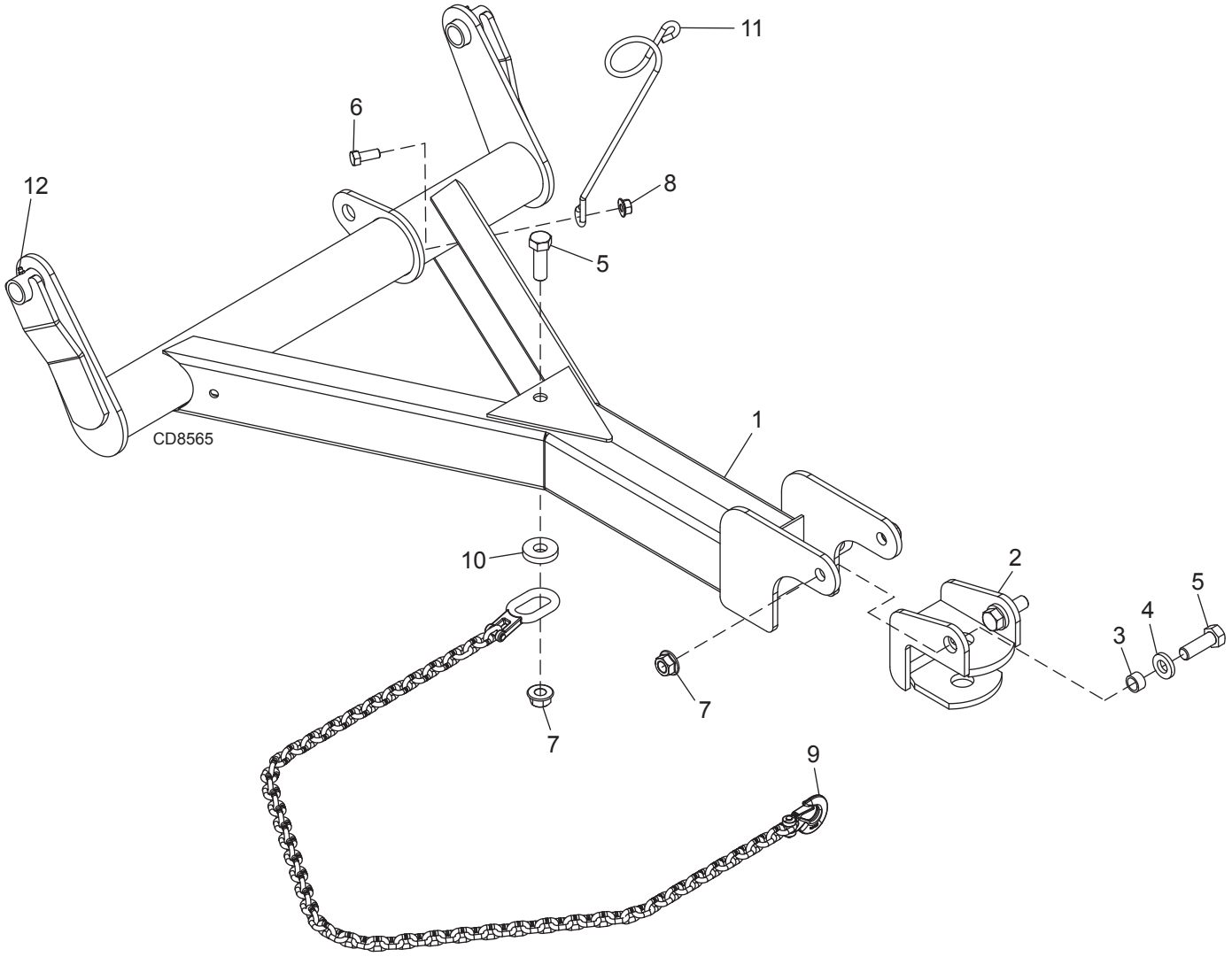
A - Complete Drive Assembly



REF	PART	QTY	DESCRIPTION
A	57413RP	1	Complete drive assembly
1	40574	1	Yoke, 1-3/8 - 6 spline
2	110RP	2	U-joint cross & bearing kit
3	40764	2	Spring pin, 10 x 80 (package of 10)
4	40575	1	Inboard yoke, inner profile
5	40587	1	Inner profile tube
6	40593	1	Outer profile tube & sleeve
7	40576	1	Inboard yoke, outer profile
8	57416	1	Friction clutch, 1340, 1-3/4 - 20 spline
12	40766	2	Bearing ring, SC25
13	40777	2	Anti-rotation chain
14	18864RP	1	Decal, danger, rotating driveline
15	33347RP	1	Decal, danger, guard missing
16	40778	2	Screw, (package of 10)
17	40767	1	Support bearing

REF	PART	QTY	DESCRIPTION
18	40779	1	Grease fitting, (package of 10)
23	40589	1	Slide lock collar repair kit
24	57268	1	Outer guard half, complete
25	57269	1	Inner guard half, complete
26	57414	1	Half shaft asy, male, with shield
31	57438	1	Flange yoke
32	57432RP	2	Friction disc
33	57440	1	Hub, 1-3/4 - 20 spline
34	57434	1	Thrust plate
35	57439	1	Belleville spring
36	57259	6	M10-1.5P x 55 mm HHCS, CL8.8
37	57260	6	M10-1.5P Lock nut w/nylon insert
38	57261	2	M12-1.5P Lock nut w/nylon insert
39	57262	2	M12-1.5P x 65 mm HHCS, CL8.8
	HHCS		Hex Head Cap Screw

DS8.30 / DS10.40 TONGUE ASSEMBLY

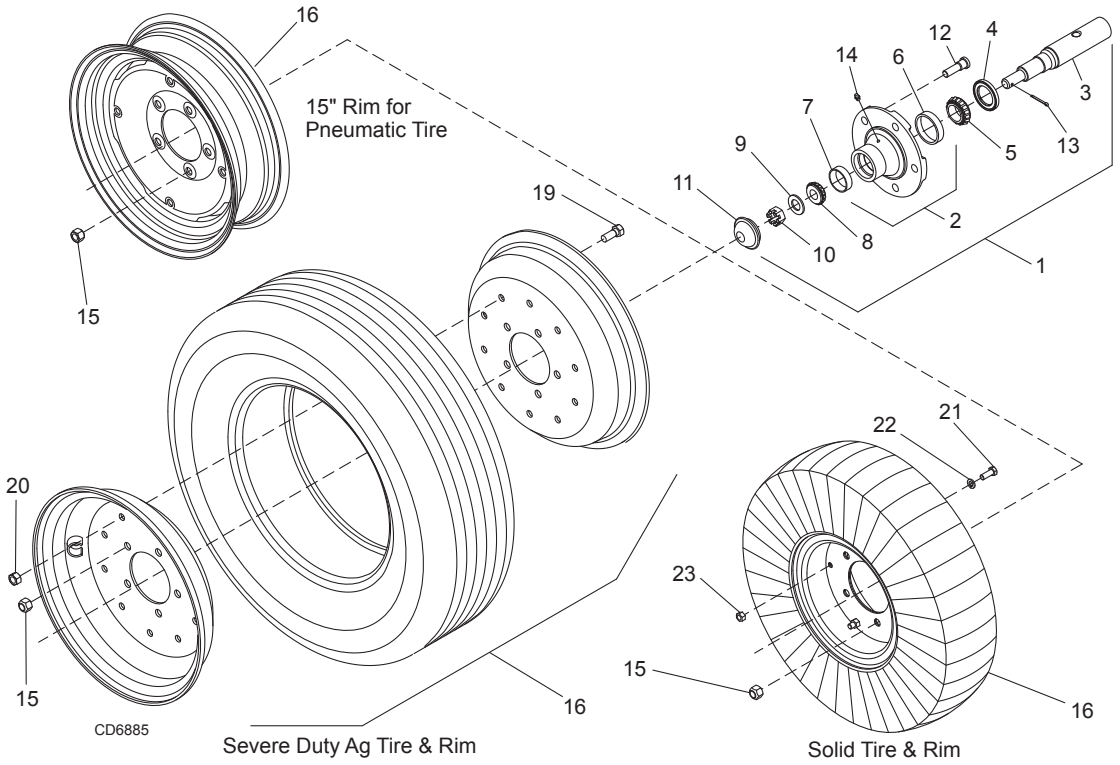


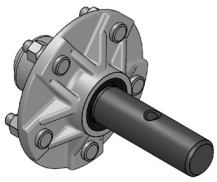
REF	PART	QTY	DESCRIPTION
1	1040726RP	1	Tongue, WA (DS8.30) **-or-**
1	1040721	1	Tongue, WA (DS10.40)
2	1038933	1	Hitch, Cat 1 clevis (DS8.30) **-or-**
2	1038085RP	1	Hitch, Cat 2 clevis (DS10.40)
3	13087	2	Sleeve, HT 3/4 x 1 x 9/16
4	28873	2	3/4 ID x 1-1/2 OD x 1/4 Washer
5	13759 *		3/4 NC x 2-1/4 HHCS, GR5
6	6100RP *		1/2 NC x 1-1/4 HHCS, GR5
7	302207 *		3/4 NC Flanged lock nut
8	11900RP *		1/2 NC Flanged lock nut
9	19407	1	Safety chain, 6400 lb
10	8424	1	3/4 ID x 2 OSD x 3/8 Washer
11	3443	1	Hydraulic hose holder
12	12296 *		1/4-28 Straight grease fitting

HHCS Hex Head Cap Screw

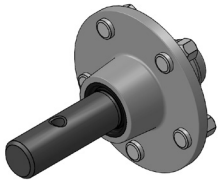
* Standard hardware, obtain locally

WHEEL & TIRE ASSEMBLY





STYLE A

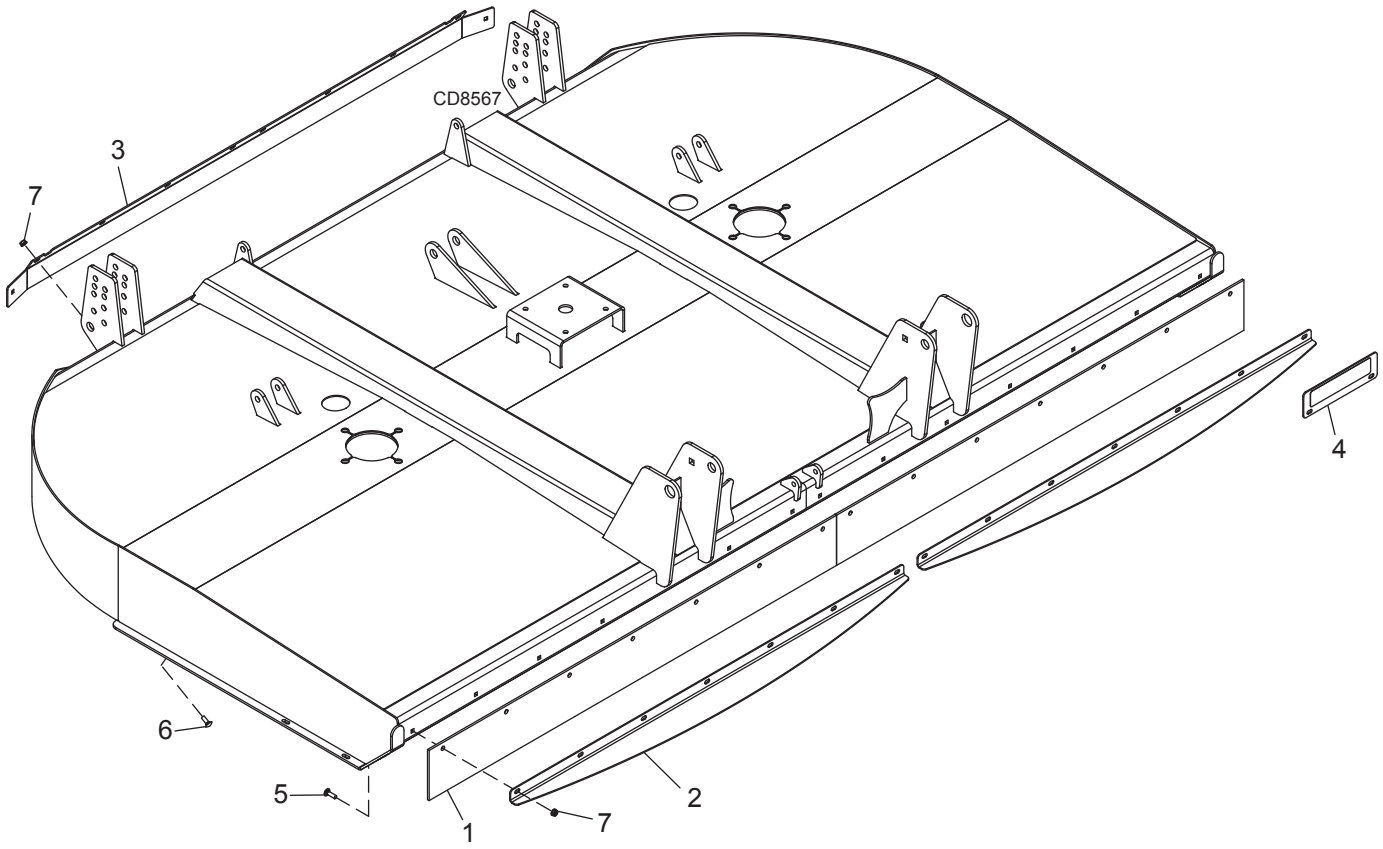


STYLE B

REF	PART	QTY	DESCRIPTION
1A	1017050RP	1	Heavy hub assembly - Style A (includes items 2 - 15)
1B	603798	1	Hub assembly - Style B (includes items 2 - 15)
2	1017034RP	1	Heavy wheel hub with cups - Style A (includes items 6, 7, 14)
3A	1017033RP	1	Axle (for use with Style A)
3B	603799	1	Axle (for use with Style B)
4	1017027RP	1	Seal
5	1017028RP	1	Bearing cone
6	1017036RP	1	Bearing cup
7	1017037RP	1	Bearing cup
8	1017029RP	1	Bearing cone
9	1017031RP	1	Washer
10	1017032RP	1	Castle nut (for use with Style A)
11	1017035RP	1	Hub cap
12	1017038	5	Stud
13	1017069	1	Cotter pin
14	1017067	1	Grease fitting
15	35317	5	Nut, lug 1/2 NF

REF	PART	QTY	DESCRIPTION
16	1017088	1	15" Rim for pneumatic tire - 5 bolt **-or-**
16	1017040	1	6.00 x 9 Solid tire, rim & hardware - 5 bolt **-or-**
16	1039976	1	25 x 8 -14 Severe duty ag tire, rim & hardware - 5 bolt **-or-**
16	1039976F	1	25 x 8 - 14 Severe duty ag tire, rim & hardware, foam filled - 5 bolt **-or-**
19	6100RP *		1/2 NC x 1-1/4 HHCS GR5
20	765 *		1/2 NC Locknut
21	19887 *		3/8 NC x 1 HHCS GR8
22	838RP *		3/8 Standard lock washer
23	835 *		3/8 NC Hex nut
-	1017042	2	Rim half for 6 x 9 solid tire
	HHCS		Hex Head Cap Screw
	*		Standard hardware, obtain locally

DS8.30 / DS10.40 BELT SHIELDING



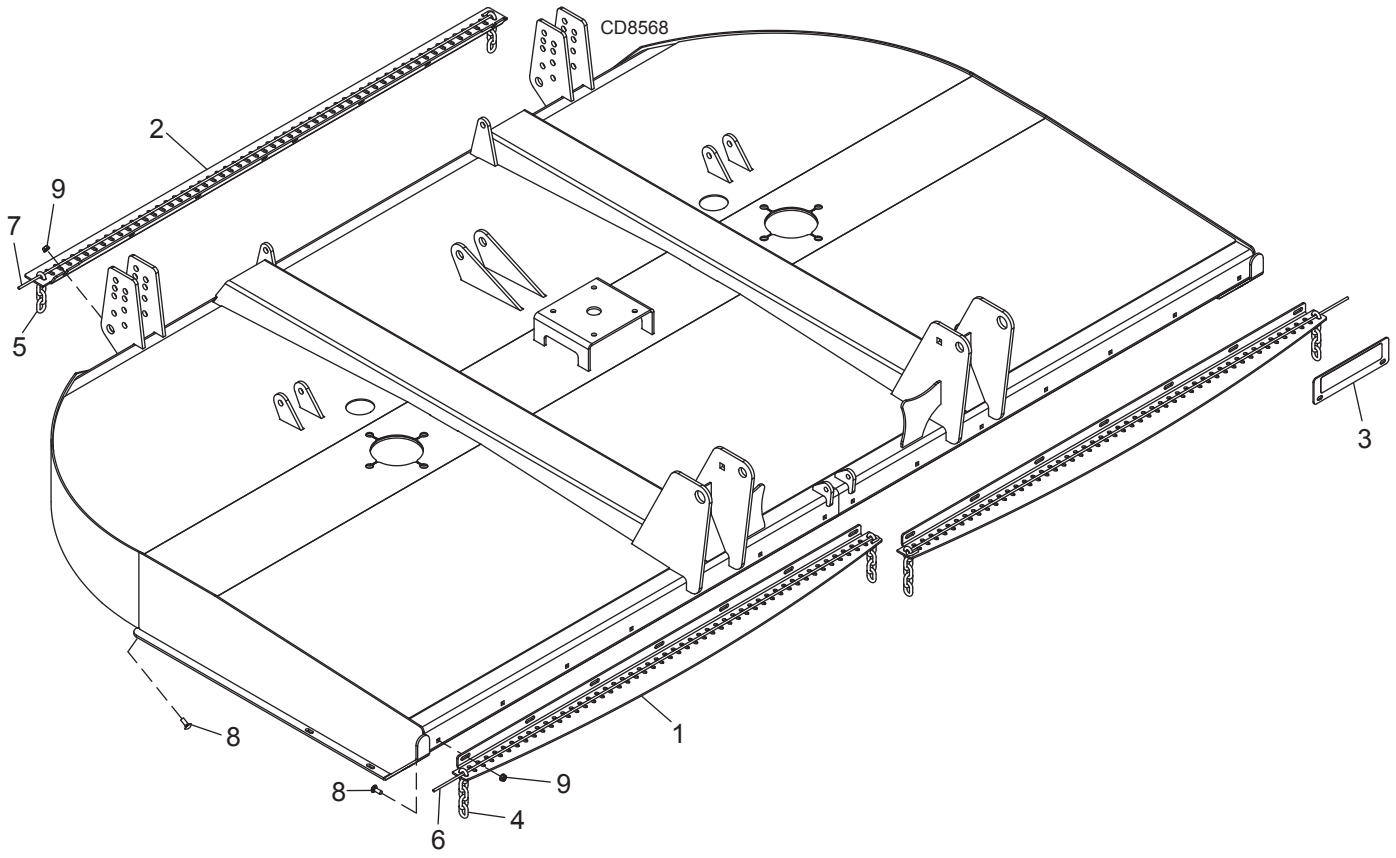
DS8.30

REF	PART	QTY	DESCRIPTION
1	1040657	2	Front rubber deflector
2	1043035	2	Front belt bracket
3	1043036	1	Rear band
4	1043037	1	Front reflector bracket w/reflector
5	20973RP	*	3/8 NC x 1-1/4 Carriage bolt, GR5
6	6697RP	*	3/8 NC x 1 Carriage bolt, GR5
7	14350RP	*	3/8 NC Flange lock nut
		*	Standard hardware, obtain locally

DS10.40

REF	PART	QTY	DESCRIPTION
1	1040706	2	Front rubber deflector
2	1043045	2	Front belt bracket
3	1043046	1	Rear band
4	1043037	1	Front reflector bracket w/reflector
5	20973RP	*	3/8 NC x 1-1/4 Carriage bolt, GR5
6	6697RP	*	3/8 NC x 1 Carriage bolt, GR5
7	14350RP	*	3/8 NC Flange lock nut
		*	Standard hardware, obtain locally

DS8.30 / DS10.40 CHAIN SHIELDING (OPTIONAL)



DS8.50 / DSO8.50

REF	PART	QTY	DESCRIPTION
1	1043038	2	Front chain bracket
2	1043039	1	Rear chain bracket
3	1043037	1	Front reflector bracket w/reflector
4	3994	A/R	5/16 - 5 Link chain
5	4069	A/R	5/16 - 4 Link chain
6	1007853	2	.243 Dia bent pin
7	1007854	1	.243 Dia bent pin
8	6697RP	*	3/8 NC x 1 Carriage bolt, GR5
9	14350RP	*	3/8 NC Flange lock nut

A/R As Required

* Standard hardware, obtain locally

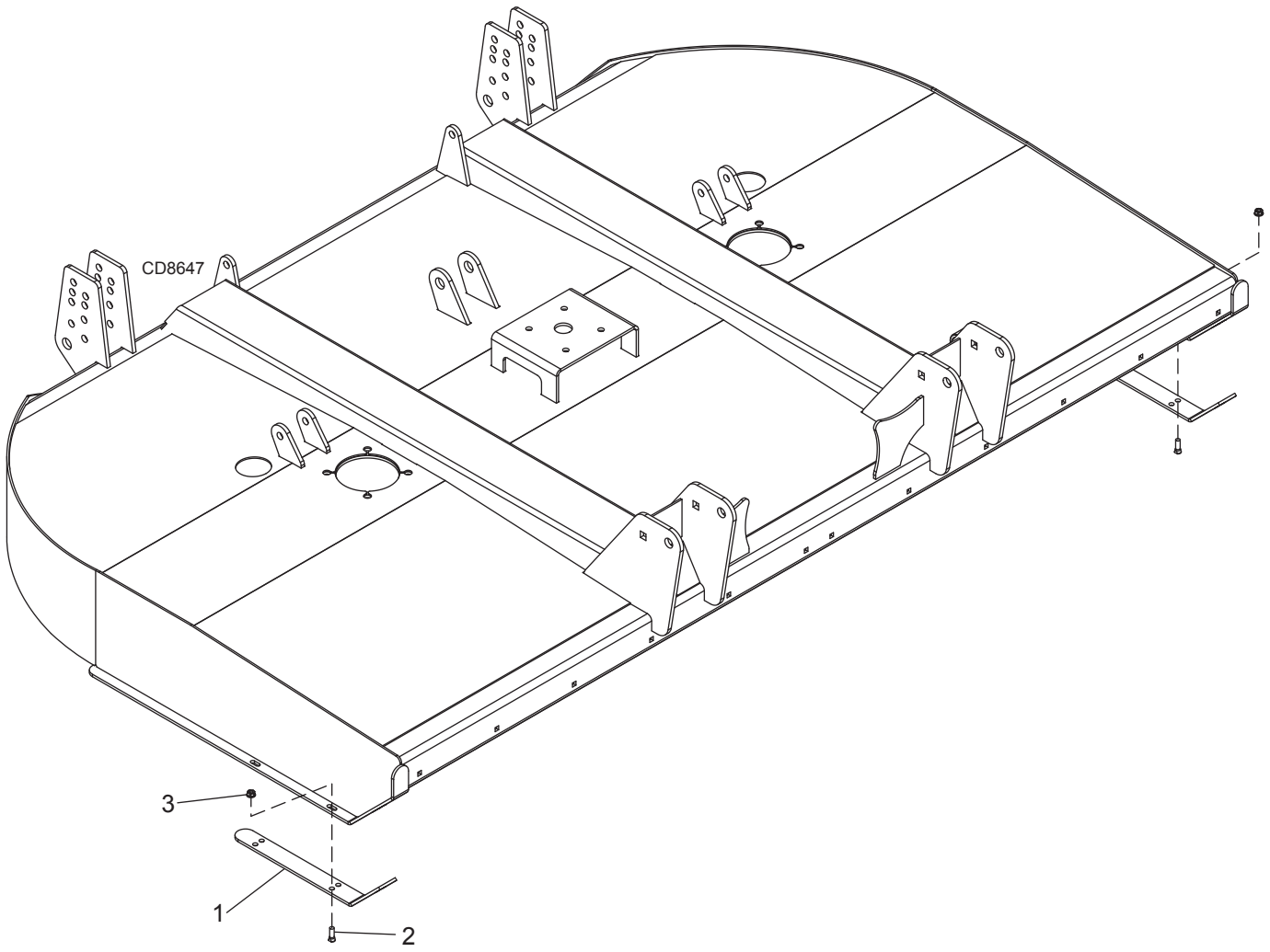
DS10.50 / DSO10.50

REF	PART	QTY	DESCRIPTION
1	1043048	2	Front chain bracket
2	1043049	1	Rear chain bracket
3	1043037	1	Front reflector bracket w/reflector
4	3994	A/R	5/16 - 5 Link chain
5	4069	A/R	5/16 - 4 Link chain
6	1007855	2	.243 Dia bent pin
7	1007856	1	.243 Dia bent pin
8	6697RP	*	3/8 NC x 1 Carriage bolt, GR5
9	14350RP	*	3/8 NC Flange lock nut

A/R As Required

* Standard hardware, obtain locally

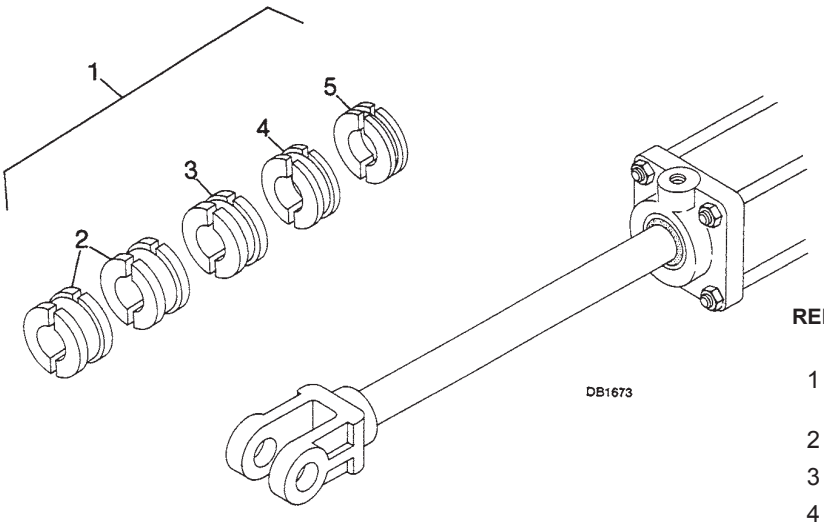
REPLACEABLE SKID SHOES (OPTIONAL)



REF	PART	QTY	DESCRIPTION
A	1042775	1	Kit, bolt-on skid shoes
1	1042776RP	2	Skid shoe
2	21636	6	3/8 NC x 1-1/4 Clipped head plow bolt
3	14350RP *	6	3/8 NC Flanged lock nut

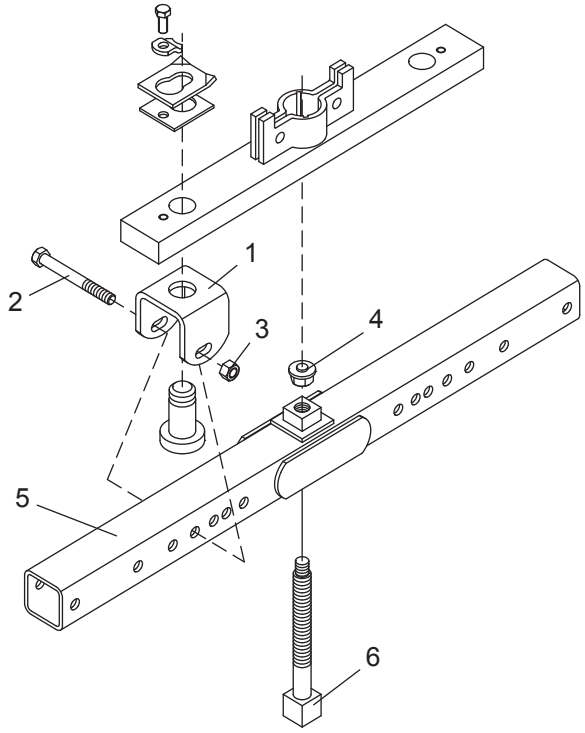
* Standard hardware, obtain locally

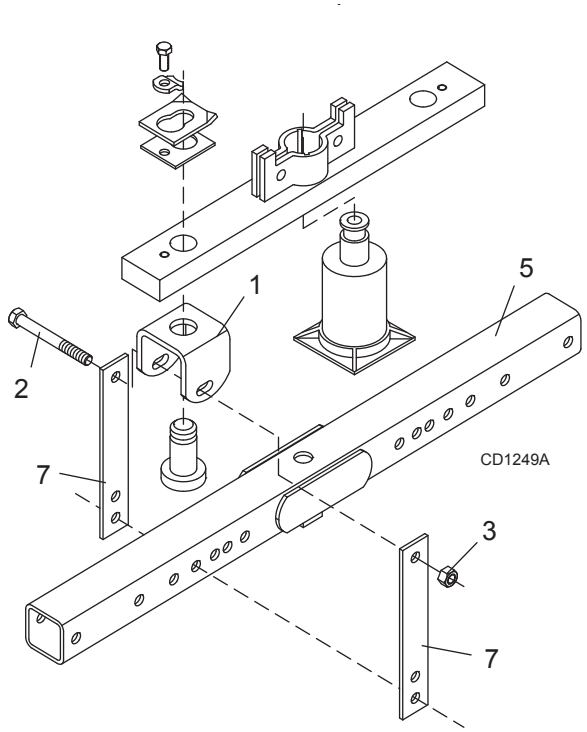
HYDRAULIC CYLINDER STROKE CONTROL KIT



REF	PART	QTY	DESCRIPTION
1	24098	1	Stroke control set for 1-1/4" cylinder rod (contains items 2 - 5)
2	-----	2	1-1/2" Segment
3	-----	1	1-1/4" Segment
4	-----	1	1" Segment
5	-----	1	3/4" Segment

CROSSBAR PULLER (OPTIONAL)





REF	PART	QTY	DESCRIPTION
A	8811	1	Crossbar puller, complete
1	19914RP	2	Crossbar puller clevis
2	3097 *	4	5/8 NC x 4-1/2 HHCS, GR5
3	230RP *	4	5/8 NC Hex nut
4	24879RP	1	Crossbar puller pad assembly

REF	PART	QTY	DESCRIPTION
5	24876	1	Crossbar puller tube assembly
6	24881	1	Crossbar puller screw assembly
7	24885	4	Crossbar puller link
		*	Standard hardware, obtain locally

NOTES

BOLT TORQUE CHART

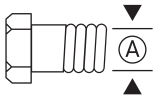
Always tighten hardware to these values unless a different torque value or tightening procedure is listed for a specific application.

Fasteners must always be replaced with the same grade as specified in the manual parts list.

Always use the proper tool for tightening hardware: SAE for SAE hardware and Metric for metric hardware. Make sure fastener threads are clean and you start thread engagement properly.

All torque values are given to specifications used on hardware defined by SAE J1701 MAR 99 & J1701M JUL 96.

SAE SERIES TORQUE CHART



SAE Bolt Head Identification

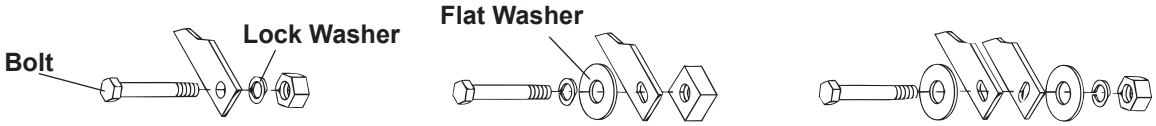
SAE Grade 2
(No Dashes)

SAE Grade 5
(3 Radial Dashes)

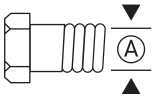
SAE Grade 8
(6 Radial Dashes)

Ⓐ		Marking on Head					
		SAE 2		SAE 5		SAE 8	
Diameter (Inches)	Wrench Size	lbs-ft	N-m	lbs-ft	N-m	lbs-ft	N-m
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"	467	634	722	979	1020	1383

TYPICAL WASHER INSTALLATIONS



METRIC SERIES TORQUE CHART



Metric Bolt Head Identification

Metric
Grade 8.8

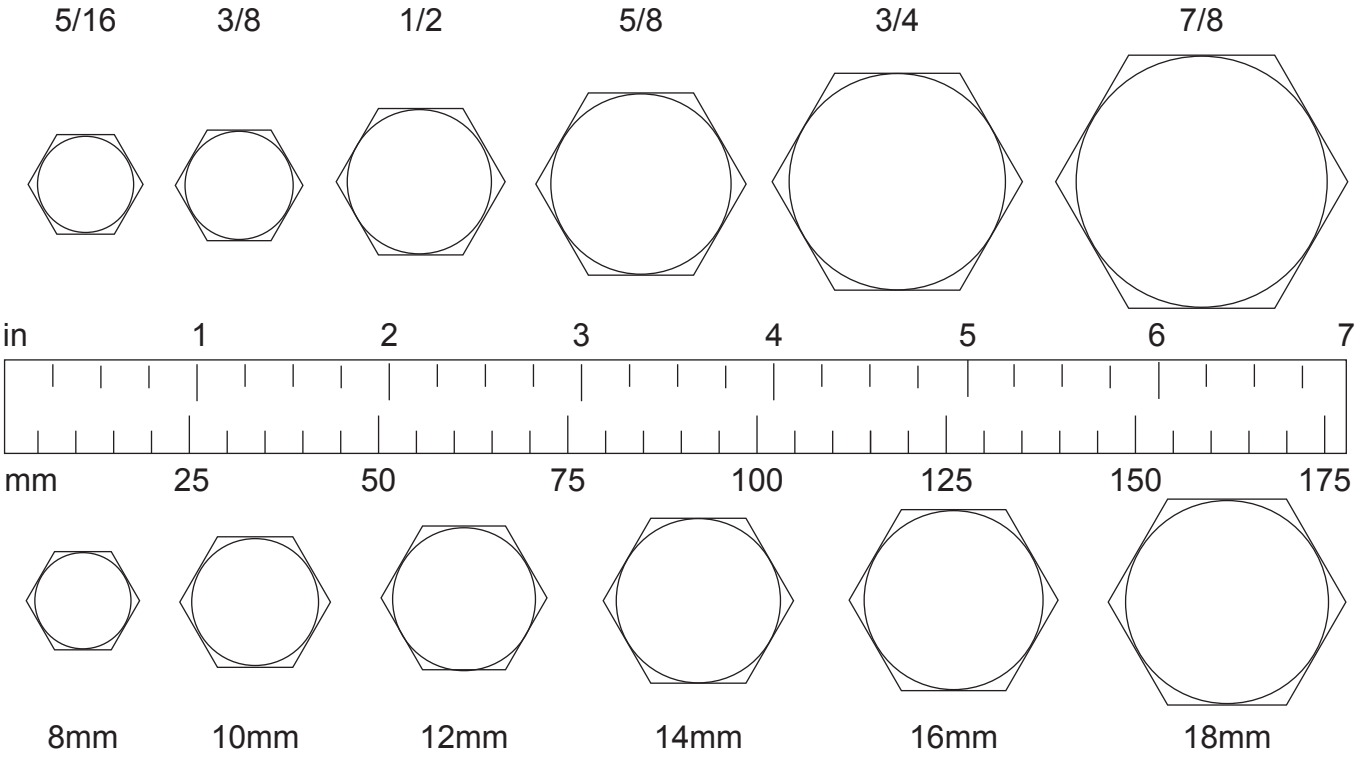
Metric
Grade 10.9

Ⓐ		Coarse Thread				Fine Thread				Ⓐ
		Marking on Head				Marking on Head				
		Metric 8.8		Metric 10.9		Metric 8.8		Metric 10.9		
Diameter & Thread Pitch (Millimeters)	Wrench Size	N-m	lbs-ft	N-m	lbs-ft	N-m	lbs-ft	N-m	lbs-ft	Diameter & Thread Pitch (Millimeters)
6 x 1.0	10 mm	8	6	11	8	8	6	11	8	6 x 1.0
8 x 1.25	13 mm	20	15	27	20	21	16	29	22	8 x 1.0
10 x 1.5	16 mm	39	29	54	40	41	30	57	42	10 x 1.25
12 x 1.75	18 mm	68	50	94	70	75	55	103	76	12 x 1.25
14 x 2.0	21 mm	109	80	151	111	118	87	163	120	14 x 1.5
16 x 2.0	24 mm	169	125	234	173	181	133	250	184	16 x 1.5
18 x 2.5	27 mm	234	172	323	239	263	194	363	268	18 x 1.5
20 x 2.5	30 mm	330	244	457	337	367	270	507	374	20 x 1.5
22 x 2.5	34 mm	451	332	623	460	495	365	684	505	22 x 1.5
24 x 3.0	36 mm	571	421	790	583	623	459	861	635	24 x 2.0
30 x 3.0	46 mm	1175	867	1626	1199	1258	928	1740	1283	30 x 2.0

BOLT SIZE CHART

NOTICE: Chart shows bolt thread sizes and corresponding head (wrench) sizes for standard SAE and metric bolts.

SAE BOLT THREAD SIZES



METRIC BOLT THREAD SIZES

ABBREVIATIONS

AG . . . . . Agriculture
ASABE . . . . . American Society of Agricultural & Biological Engineers (formerly ASAE)
ASAE . . American Society of Agricultural Engineers
ATF . . . . . Automatic Transmission Fluid
BSPP . . . . . .British Standard Pipe Parallel
BSPTM . . . . . British Standard Pipe Tapered Male
CV . . . . . Constant Velocity
CCW . . . . . Counter-Clockwise
CW . . . . . .Clockwise
F . . . . . Female
FT . . . . . Full Thread
GA . . . . . .Gauge
GR (5, etc.) . . . . . Grade (5, etc.)
HHCS . . . . . .Hex Head Cap Screw
HT . . . . . Heat-Treated
JIC . . . . . Joint Industry Council 37° Degree Flare
LH . . . . . Left Hand
LT . . . . . Left
m . . . . . Meter
mm . . . . . Millimeter
M . . . . . .Male
MPa . . . . . Mega Pascal
N . . . . . Newton
NC . . . . . .National Coarse
NF . . . . . National Fine
NPSM . . . . . National Pipe Straight Mechanical
NPT . . . . . National Pipe Tapered
NPT SWF . . National Pipe Tapered Swivel Female
ORBM . . . . . .O-Ring Boss - Male
P . . . . . Pitch
PBY . . . . . Power-Beyond
psi . . . . . Pounds per Square Inch
PTO . . . . . Power Take Off
QD . . . . . Quick Disconnect
RH . . . . . Right Hand
ROPS . . . . . Roll-Over Protective Structure
RPM . . . . . .Revolutions Per Minute
RT . . . . . Right
SAE . . . . . Society of Automotive Engineers
UNC . . . . . Unified Coarse
UNF . . . . . .Unified Fine
UNS . . . . . Unified Special

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PART NO.

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