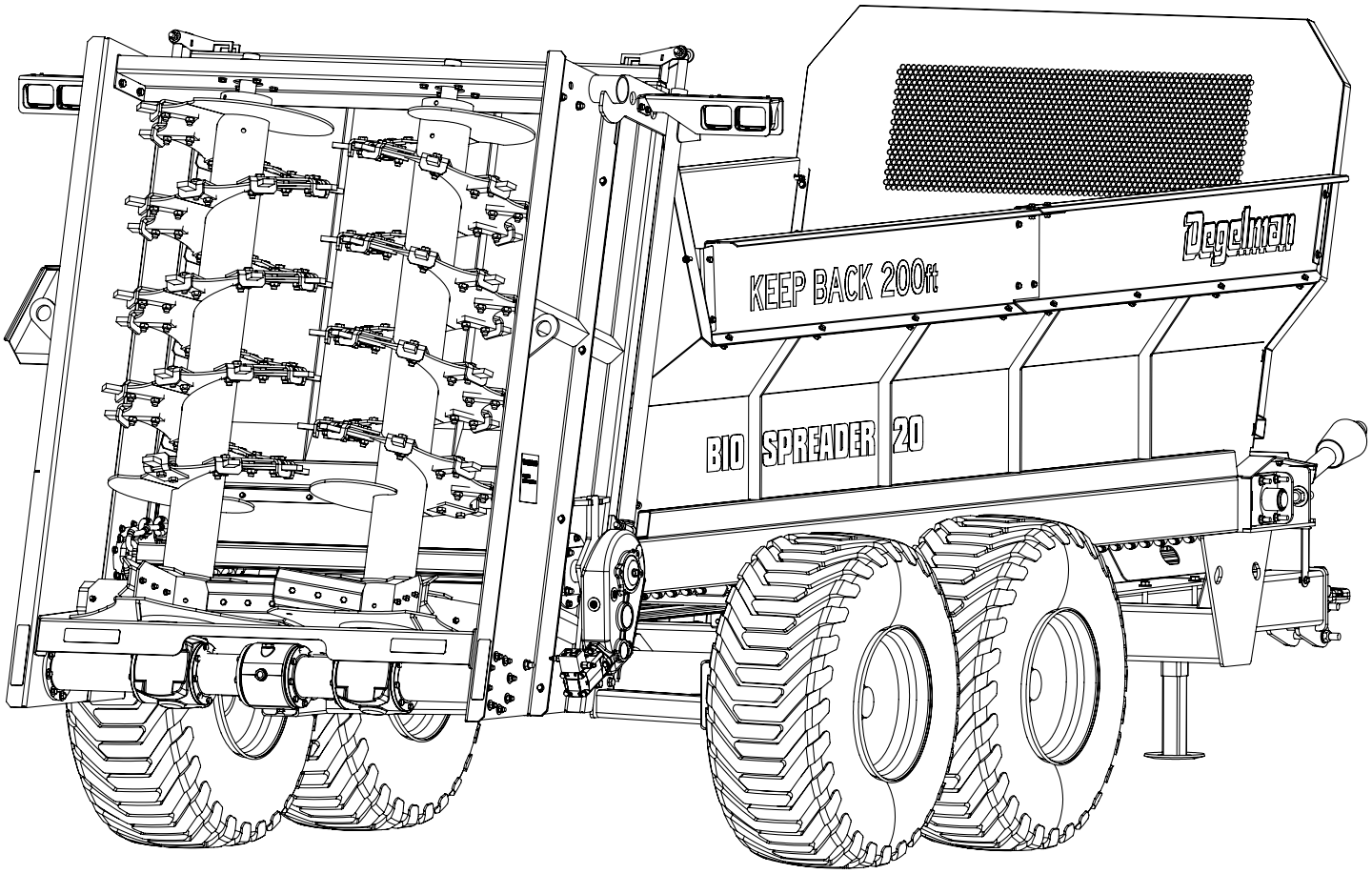
Degelman

OPERATOR & PARTS MANUAL

BIO SPREADER



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PRE-DELIVERY CHECK LIST

DEGELMAN INDUSTRIES BIO SPREADER 14 & 20

PRE-DELIVERY INSPECTION SHEET

The purpose of this document is to ensure that the operator, user or owner is aware of all safety guidelines and operating and maintenance methods before taking possession of the machine.

GENERAL		
1	Ensure the operator receives a copy of the instructions & parts manual.	
2	Draw attention to the safety decals located on the machine.	
3	Explain the functions of the machine.	
4	Locate, identify & explain spreader hydraulic and electric connectors to towing vehicle.	
5	Check oil level of floor chain gearbox and auger 3-in-1 gearbox.	
6	Explain how to cut the PTO guard to size and where to fit the safety chains.	

HYDRAULIC & PNEUMATICS		
7	Check hydraulic hose condition and connectors.	
8	Check hydraulic cylinder for leaks and damage.	

STRUCTURE		
9	Check condition of body, drawbar & augers.	
10	Check condition of all cylinders & pins.	
11	Grease all points if necessary (see manual).	

LIGHTING		
12	Check operation of lights.	
13	Check condition of cabling & 7 pin connector.	

WHEELS & TIRES		
14	Check condition of tires.	
15	Ensure tire pressures are correct for speed & load.	
16	Check wheel nut torque. (Check daily for first week of use)	

SERIAL NUMBER

CONTENTS

1. INTRODUCTION

READ THIS MANUAL carefully to learn how to operate and service your machine correctly. Failure to do so could result in personal injury or equipment damage.

THIS MANUAL SHOULD BE CONSIDERED a permanent part of your machine and should remain with the machine upon any re-sale.

MEASUREMENTS in this manual are given in both customary imperial and metric equivalents. Use only correct replacement parts and fasteners. Metric and imperial fasteners may require a specific metric or imperial wrench.

RIGHT-HAND AND LEFT-HAND sides are determined by facing in the direction the implement will travel when going forward.

SERIAL NUMBER - Accurately record all the serial numbers to help in tracing the machine should it be stolen. Your dealer also needs these numbers when you order parts. File the identification numbers in a secure place off the machine.

WARRANTY is provided as part of Degelman Industries support program for customers who operate and maintain their equipment as described in this manual. The warranty is explained on the warranty certificate which you should have received from your dealer.

This warranty provides you the assurance that Degelman Industries will back its products where defects appear within the warranty period. In some circumstances, Degelman Industries also provides field improvements, even if the product is out of warranty. Should the equipment be abused, or modified to change its performance beyond the original factory specifications, the warranty will become void and field improvements may be denied.

2. SAFETY, SAFETY DECAL LOCATION AND

2.1 RECOGNIZE SAFETY INFORMATION

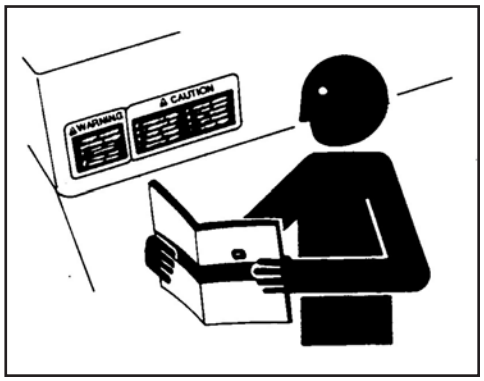
This is a safety-alert symbol, when you see this symbol on your machine or in the manual be alert to the potential for personal injury. Follow recommended precautions and safe operating practices.

2.2 UNDERSTAND SIGNAL WORDS

A signal word—DANGER, WARNING, or CAUTION—is used with the safety-alert symbol. DANGER identifies the most serious hazards.

DANGER or WARNING safety decals are located near specific hazards. General precautions are listed on CAUTION safety decals. CAUTION also calls attention to safety messages in this manual.

2.3 FOLLOW SAFETY INSTRUCTIONS



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

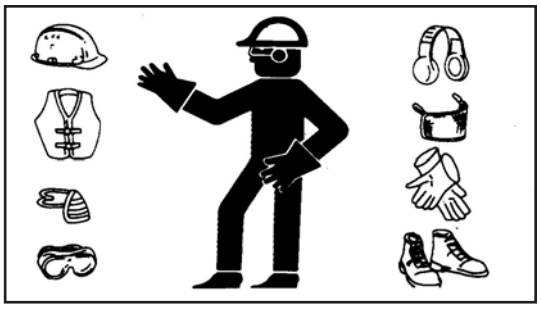
There can be additional safety information contained on parts and components sourced from suppliers that are not specified in this operator's manual.

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

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

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

2.4 WEAR PROTECTIVE CLOTHING



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

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

2.5 PARK MACHINE SAFELY

Before working on the machine:

- Disengage PTO
- Lower the rear gate
- Set parking brake
- Shut off engine and remove key

2.6 AVOID CONTACT WITH MOVING PARTS

Keep hands, feet and clothing away from power driven parts. Never clean, lubricate or adjust machine when it is running.

2.7 AVOID HIGH PRESSURE FLUID

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

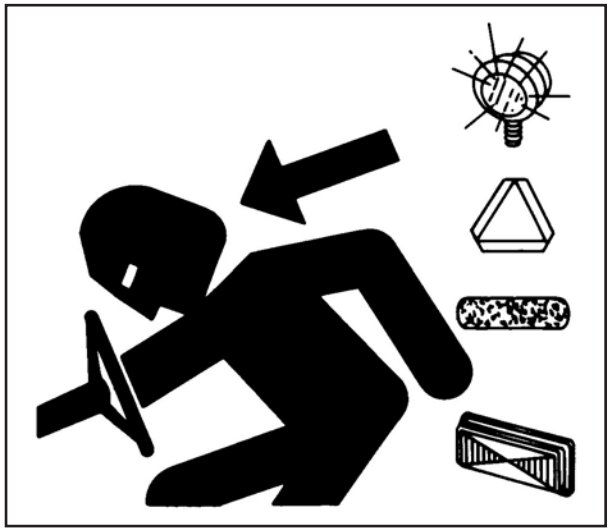
Avoid the hazard by relieving pressure before disconnecting hydraulic lines. Tighten all connections before applying pressure.

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

If an accident occurs, see a doctor immediately.

2.8 TRANSPORT SAFELY

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

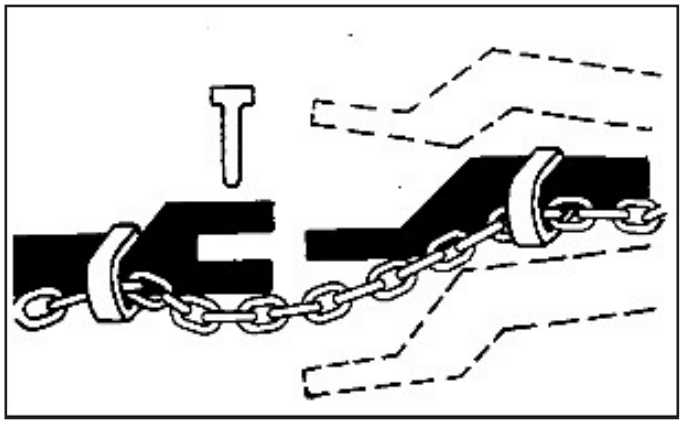


Use headlights, flashing warning lights, and turn signals day and night. Follow local regulations for equipment lighting and marking. Keep lighting and marking visible, clean, and in good working order. Replace or repair lighting and marking that has been damaged or lost.

2.9 USE A SAFETY CHAIN

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

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



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

2.10 SAFETY DECAL LOCATION

1. CAUTION - Read and understand operator manual fully before operating machine.

   WARNING - Refer to local transportation regulations, use hitch jack before removing hitch pin.

   DANGER – Keep shield in place to prevent entanglement.

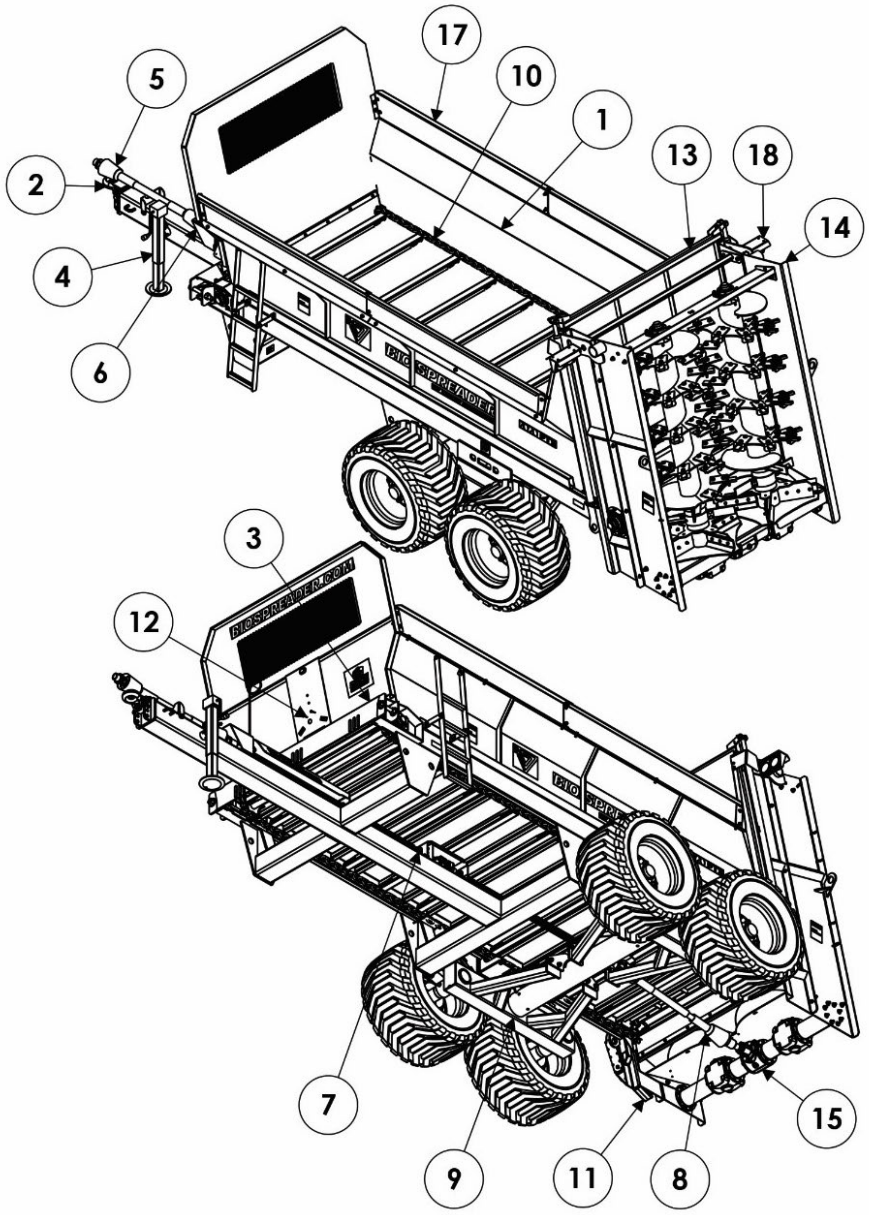
   WARNING – Rising or Falling tongue can cause serious injury or death.

2. WARNING – Disengage PTO and shut tractor off before servicing or cleaning machine.

3. WARNING - Properly torque wheel lug nuts.

4. WARNING – Disengage PTO, shut tractor off and apply park brake.

3. COMPONENT LOCATIONS



Component

1. BIOSPREADER BOX
2. HITCH
3. FLOOR CHAIN GUARD
4. JACK 7000 LBS
5. FRONT PTO
6. SHEAR PIN
7. INTERMEDIATE DRIVE SHAFT
8. REAR PTO WITH OVER-RUN CLUTCH
9. TANDEM AXLE
10. FLOOR CHAIN
11. FLOOR CHAIN RELIEF VALVES
12. APRON CHAIN FLOW CONTROL VALVE
13. REAR GATE
14. BEATER ASSEMBLY
15. BEATER GEAR BOX (3-in-1)
16. ACCESS LADDER
17. EXTENSIONS PACKAGE
18. LIGHT PACKAGE

4. OPERATING INSTRUCTIONS

The intended purpose of the vehicle is to tow and spread manure and other materials.

4.1 CONNECTING TO TRACTOR

Check the tractor operator's manual for draw bar position capacity rating. The draw bar in its shortest position has the highest load rating. Attach spreader to tractor draw bar, attach the safety chain, and attach the spreader PTO to the tractor. Remove the screw jack from drawbar, and locate in transport position provided. The jack pivots to go into transport position. Ensure the spreader front PTO does not bottom out as described in section 4.3.

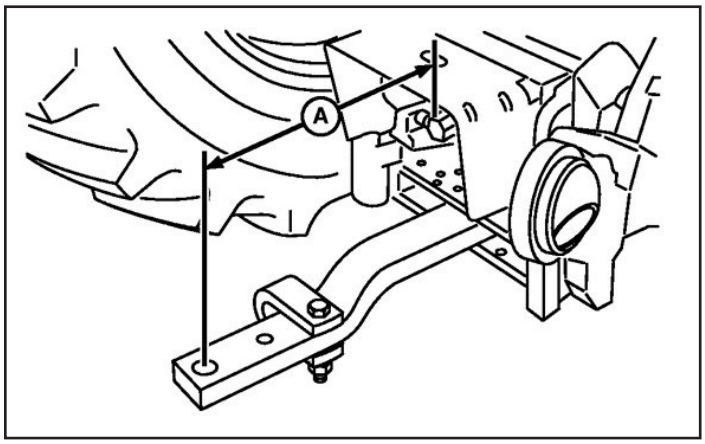
The PTO can be installed incorrectly on Tractors with the Large 1.75" 20 Spline PTO output shaft.

Note: Ensure that pin connection is to tractor and bolted U joint on the

4.2 TRACTOR PTO LENGTH

Degelman provides a PTO shaft with a length that is designed for tractors with a draw bar pin to end of tractor PTO dimension ranging from 14 to 20 inches (A). The preferred distance between the draw bar pin and end of PTO shaft is 14". Adjusting the draw bar to 14" (Shortest Position) will minimize PTO shaft vibration and make the tractor more stable when pulling a fully loaded manure spreader.

Note: The BioSpreader was designed to allow tight turning in corals. These tight maneuvers require the PTO to be disengaged. During field operation with the PTO engaged, reduce the turning angle (less than 35º) between tractor and machine to prevent PTO vibration and damage. Reduce turning angle when PTO vibration or noise is detected.



4.3 REDUCING PTO SHAFT

Turn off the tractor and remove key before fitting PTO.

KEEP SHAFT SLIDING SURFACES GREASED. Attach chains fitted to PTO guard (to prevent rotation of guard) to suitable point on the tractor and hole provided on metal cover over PTO shaft on spreader. Ensure that the spring-loaded pins in splined yokes are fully locked in position. Always disengage the PTO when turning sharply to avoid damage to the universal joints.

4.3.1 REDUCING PTO SHAFT LENGTH

1. In circumstances when the PTO shaft provided with the spreader bottoms out when turning, the PTO shaft can be shortened. Attach the spreader hitch to the tractor. Do not attach the PTO shaft to the tractor PTO output shaft. Position the tractor to its tightest turning position. This occurs when the rear tire of the tractor is close to the spreader hitch.

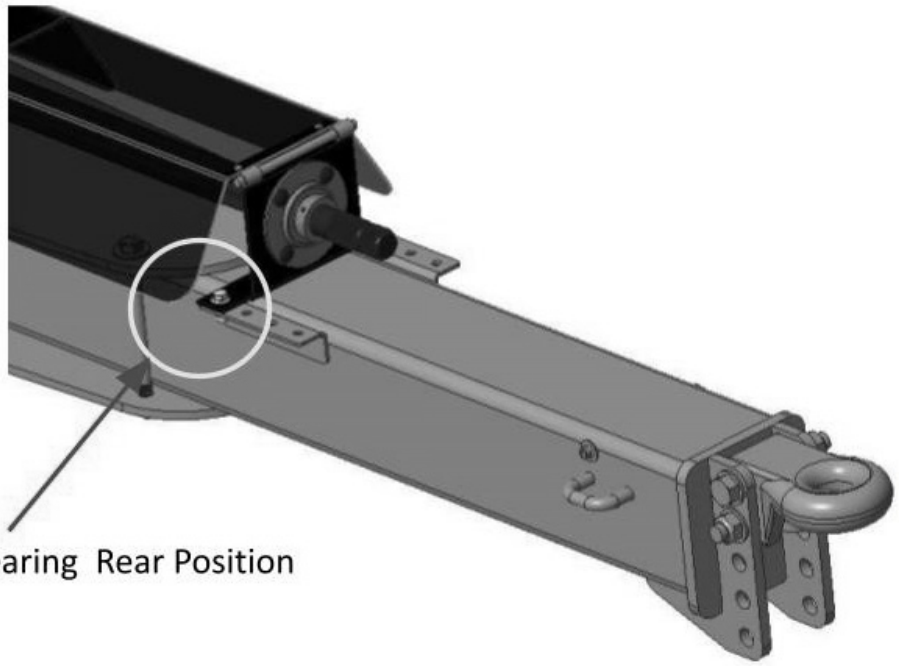
2. IMPORTANT - Position the front intermediate bearing in the most rearward position. See Figure A-A.

3. Slide the tractor end of the PTO shaft from the spreader end of the PTO shaft. Attach the front section of the PTO to the tractor. Lay the two halves of the PTO shaft alongside one another and measure distance A (Figure B-B). This is the distance from the end of the outer plastic safety shield to the top of the inner plastic safety shield. Also measure and note the distances B and C (Figure C-C) of the portion of inner steel telescoping shaft protruding out of each PTO shield. Mark the required lengths on both the front and rear section of the plastic telescoping safety shield, allowing enough clearance (1 inch [25 mm]) to prevent shaft halves from hitting the yoke stops when turning. This will also help with attaching and detaching the PTO to the tractor PTO output shaft.

4. Cut both plastic telescoping shields to the length A + 1 inch (25 mm). Caution to not cut the inner steel telescoping shaft. Once the plastic safety shields are cut from both PTO halves, measure the distance A + 1 inch (25 mm) from the end of both steel telescoping shafts. This will result in the inner telescoping steel section of both shafts extending beyond the plastic safety shield. This will help in the assembly of both PTO halves.

5. Clean burrs at each end of the shields and shafts. Assemble both PTO halves. The telescoping shafts are timed and will only fit in one orientation. Drive the tractor in line with the spreader. Install the PTO shaft to the spreader and tractor. Check the PTO shaft length by driving the tractor in a sharp turning position while ensuring the PTO does not reach its shortest length.
6. Maximum extension from fully collapsed position is 300mm (12 inches).

FIGURE A-A



Front Drive Line Bearing Rear Position

FIGURE B-B

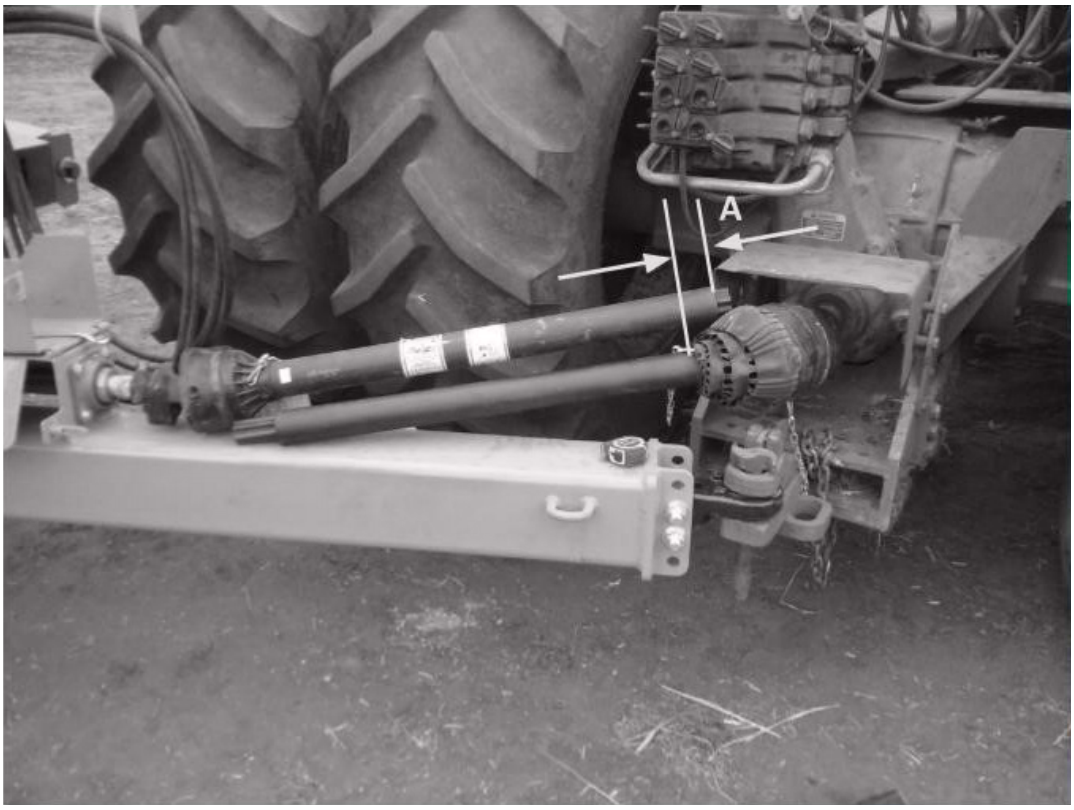
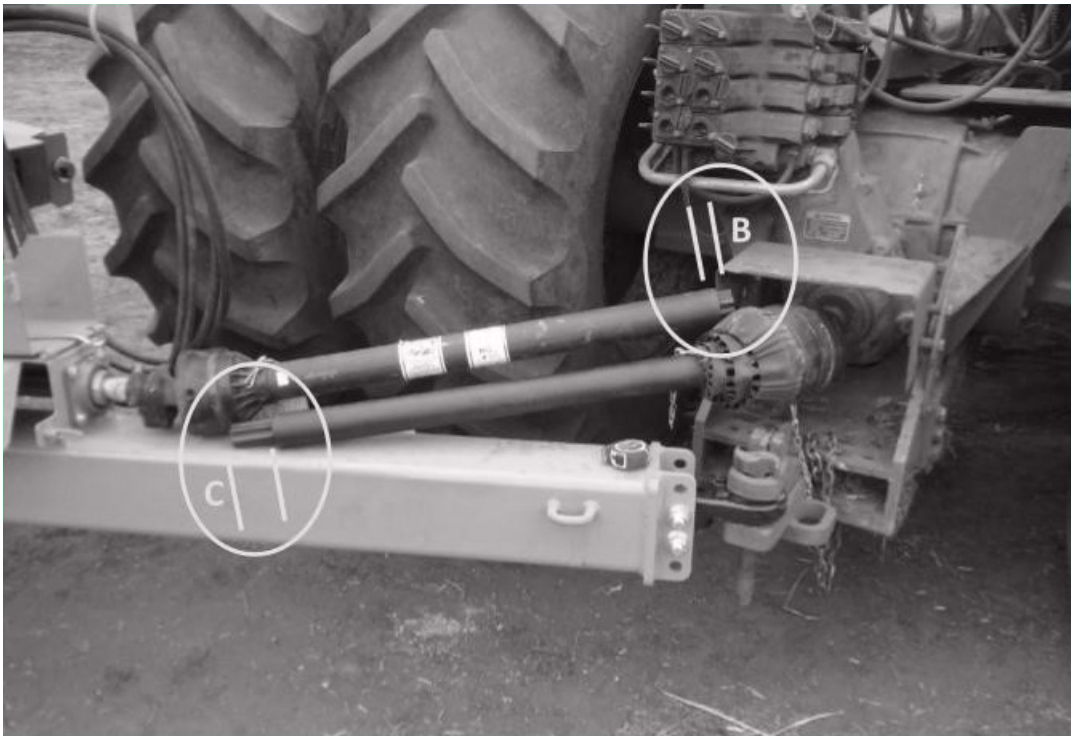


FIGURE C-C



4.3.2 ADJUSTING FRONT DRIVELINE POSITION

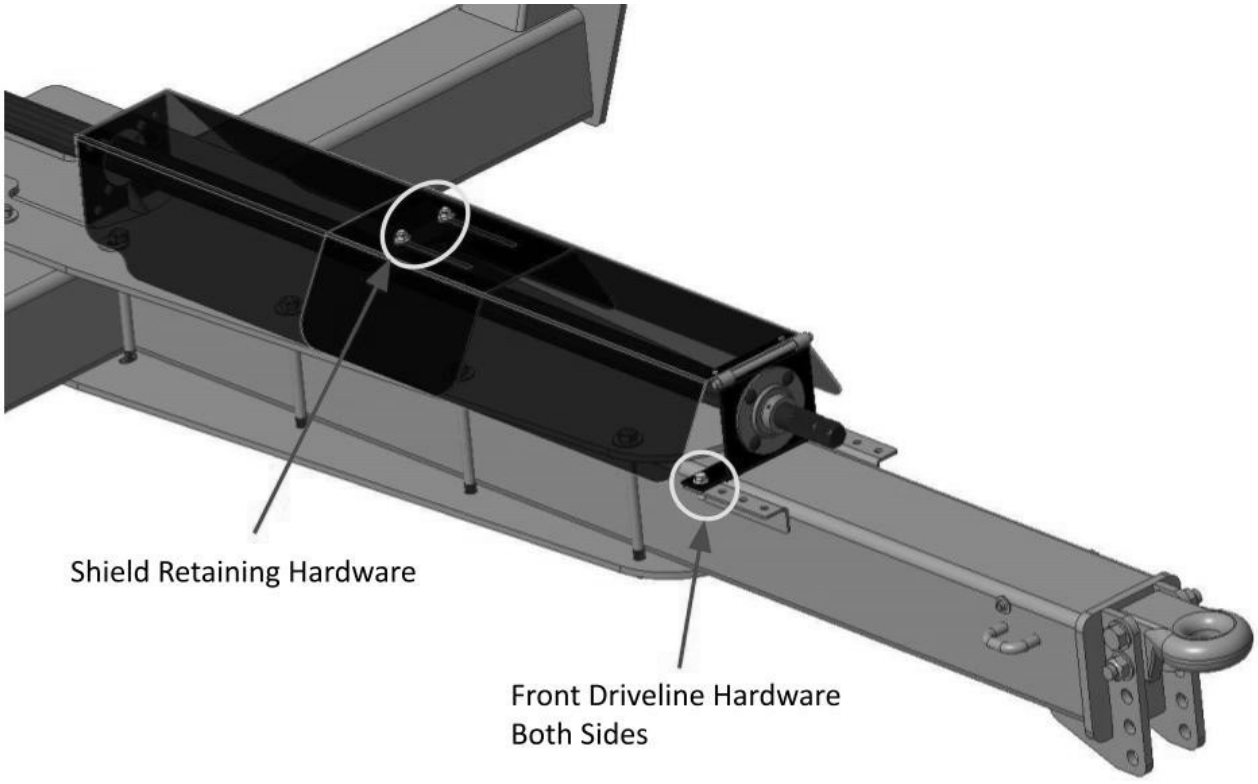
1. In circumstances when a tractor with a longer PTO to drawbar pin dimension is used, and the PTO shaft is extended to near the maximum extension from the fully collapsed position of 300mm (12 inches), the front driveline bearing should be adjusted forward to prevent the PTO shafts from separating or vibrating.

2. Attach the tractor to the spreader. The front of the PTO should be installed and locked to the tractor output shaft. Position the tractor in a sharp turning position.

3. Remove the bolts at the lower bearing support. Loosen the retaining hardware at the shield.

4. Position the front bearing forward until the PTO shaft reaches its shortest position. Slide the front bearing back to the nearest set of attachment holes. Install and tighten the bearing support hardware. Tighten the shield retaining hardware.

5. When a tractor with a shorter PTO output to hitch pin dimension is reattached to the spreader, the front bearing drive line position will need to be readjusted backward to prevent the PTO shaft front reaching its shortest length. This can result in spreader driveline or tractor PTO component failures when turning sharp.



4.4 COUPLING OF HYDRAULIC HOSES

Connect the hoses for the floor chain hydraulic motor and rear gate to tractor. Check the direction of movement by moving the hydraulic lever of both the floor drive and rear gate. If the desired direction does not match the operator preference, then switch the hoses at the tractor. Marking these hoses will assist in correct future coupling.

REAR GATE HYDRAULIC LINES

FLOOR CHAIN UNLOADING DIRECTION HYDRAULIC PRESSURE

FLOOR CHAIN UNLOADING DIRECTION HYDRAULIC RETURN

Note: CHECK DIRECTION OF FLOOR BEFORE LOADING.
During floor chain reversal, full hydraulic flow is directed to chain drive hydraulic and is not adjustable by the spreader control valve. When reversing, slowly engage the hydraulic lever and only reverse floor for a few seconds.

4.5 CHAIN TENSION ADJUSTMENT

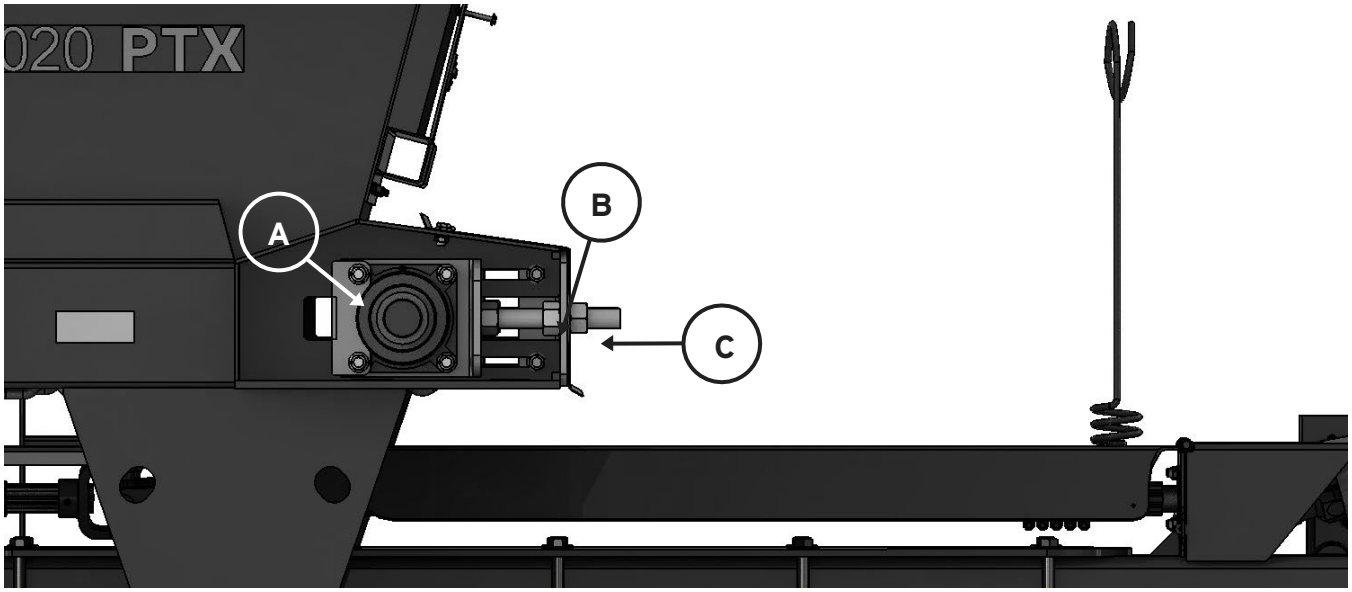
When adjusting the floor chain ensure that the adjustment is carried out equally on both sides and the box is unloaded completely while running.

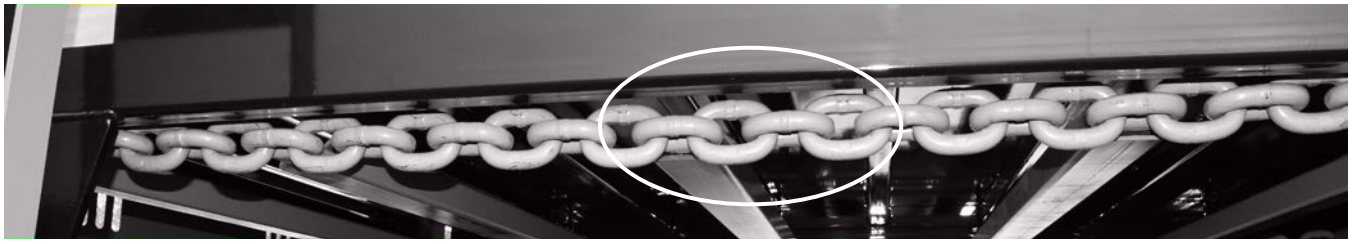
CHAIN TENSION STEPS

1. Loosen nuts A (four each side) 1/2 to 1 turn.
2. Loosen jam nuts B (one each side) using a 1 7/8-inch wrench. When loose turn multiple times to allow for chain tensioning.
3. Turn nut C (one each side) until chain is at the correct tension (Clockwise to tension – Counter Clockwise to loosen).
4. Tighten jam nuts B to 80 ft-lb (110 N-m).
5. Tighten bearing nuts A to 50 ft-lb.

Note: After tensioning procedure, run chain slowly with tractor hydraulics and recheck chain tension.

DO NOT ALLOW THE CHAINS TO BECOME TOO TIGHT, OR TOO LOOSE (SEE FIGURE BELOW). KEEP CHAINS ADJUSTED CORRECTLY





CHECK CHAIN TENSION AT MID POINT OF HITCH BEAM SUPPORTS - TOP OF CHAIN LINK JUST ABOVE OR LEVEL WITH LOWER EDGE OF BOX STRUCTURE.

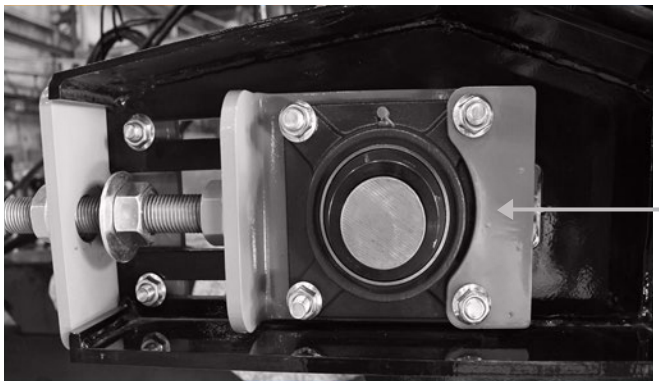
4.6 REVERSE FLOOR

ENSURE CORRECT TENSION ON FLOOR CHAIN FIRST. DO NOT REVERSE IF THE FLOOR CHAIN IS TOO LOOSE. THE FLOOR SHOULD ONLY BE REVERSED FOR VERY SHORT PERIODS TO CLEAR THE AU-

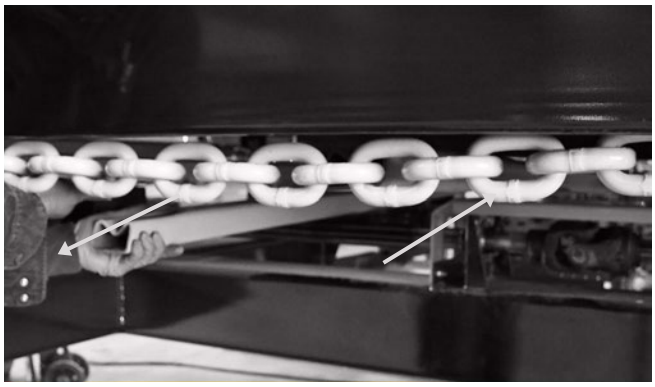
Prolonged reversing of the floor drive while loaded may cause damage to gearbox, shafts, and floor chain components. When reversing slowly engage the hydraulic lever, and ensure the chain is moving.

4.7 FLOOR CHAIN SLAT INSTALLATION AND REMOVAL

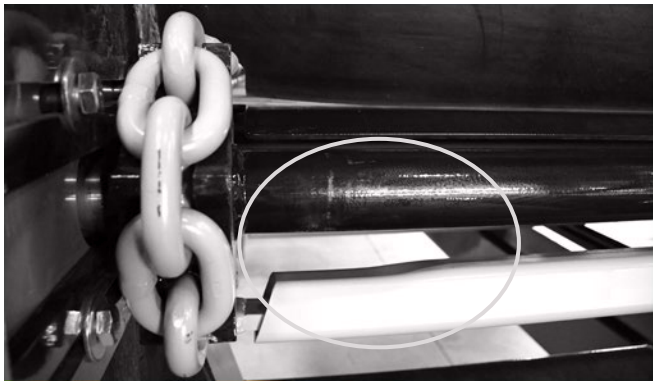
To install or remove chain slats loosen chain tension as described in previous section 4.6.
Back off front chain bearing until bearing hits rear stop.



MOVE BOTH FRONT BUSHINGS TO REAR STOP



PULL CHAIN OUTWARD AND PUSH SLAT INWARD UNTIL CHAIN TAB SLIDES OUT OF SLAT. REVERSE THIS STEP TO INSTALL SLAT.



CHECK CORRECT ORIENTATION OF SLAT BEFORE TENSIONING CHAIN. FORMED EDGE OF SLAT FACES THE CHAIN SHAFT. INCORRECT ORIENTATION CAN CAUSE THE CHAIN TO JUMP THE SPROCKET AND DAMAGE CHAIN DRIVE COMPONENTS.

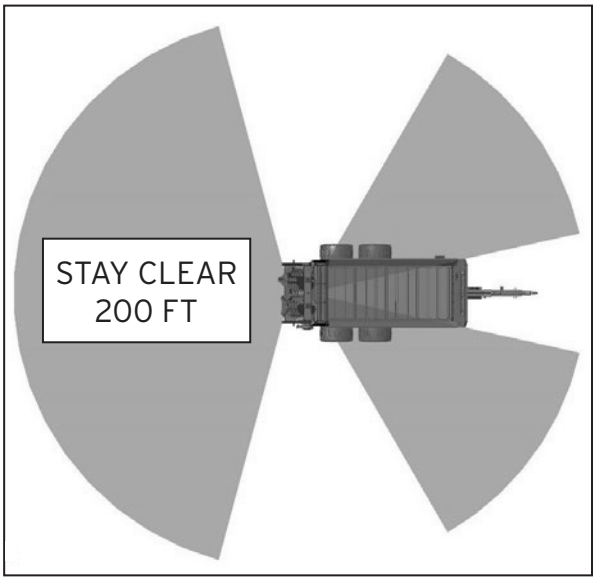
Note: Before daily use check beaters to ensure they can freely spin by hand without any obstruction. Failure to do so may

4.8 SPREADING PROCEDURE

- Select speed of floor chain on control valve. Note: Setting the floor chain speed to max level will require more tractor power
- Engage PTO to power the rear augers – tractor at idle
- Raise rear gate
- Increase tractor engine RPM
- Engage hydraulic lever for floor chain
- When material begins to discharge drive in the direction of desired location for spreading material.

4.9 OPERATING HAZARD AREA

- The shaded areas are hazard area.
- Stay away from the sides and rear of the spreader during operation to prevent being hit by flying material. Solid objects thrown from beaters can cause severe injury and property damage.



NOTE: Hidden objects in material can be thrown further than the material being spread. These objects could result in serious injury or loss of life and can cause property damage.
Note: Know what you are loading.

4.10 REAR GATE

As the load height reduces, lower the rear gate to cover the augers. This will help prevent foreign objects from being thrown forward.

4.11 OPERATING GUIDELINES

4.11.1 SPREADER LOADING

Draw bar loading is affected by distribution of material in the spreader box. Loading only the front of the spreader (load ahead of the axle) can result in hitch/draw bar loading that exceeds the rated capacity of both the tractor and spreader. Loading the spreader evenly from front to back is recommended. Check tractor manual for draw bar position capacity.

4.11.2 ROAD TRANSPORTATION

When transporting a fully loaded spreader always drive at speeds that allow full control of the tractor and spreader. A fully loaded spreader weighs more than the tractor. If the ground is wet or frozen tractor stability is reduced. A fully loaded spreader can require greater stopping distance when traveling downhill, reduce travel speed.

4.11.3 FLOOR CHAIN SPEED

The floor chain speed can be adjusted to:

1. Change rate of spread. Faster speeds increase application rate
2. Match the tractor available power
3. Change spread width. High chain speeds reduce overall spread width

4.11.4 REAR GATE POSITION

Maximum rear gate position should be adjusted such that the lower gate seal is level with the top of the manure pile. This reduces the amount of material being thrown forward. Lowest gate position should be slightly greater than half of load height.

The rear gate position can be adjusted to:

1. Change rate of spread. Higher positions increase application rate
2. Change spread width. Lower positions can increase spread width

4.11.5 GROUND SPEED

Tractor ground speeds during spreading are typically between 3.0 and 6.0 mph (5.0 and 10.0 kmph). Lower ground speeds result in higher application rates.

4.11.6 PADDLE HALVES

The paddle halves are located between the beater lower paddle assembly and beater auger flighting. These friction fit paddle assemblies reduce the concentration of wet manure in the centre 5 feet of spread. The right and left beater each have the option to be equipped with 3 sets of paddles.

4.11.7 SPREADING BALES

When spreading round bales for bedding, reduce floor chain speed to half or less using the flow control valve. Round bales should be placed in the spreader box with the flat ends facing the front and rear of the spreader. During spreading of round bales, fully raise the rear gate.

4.11.8 END DUMPING MANURE PILE OR FORAGE WAGON

The spreader can be converted to pile manure or be used as a forage wagon by removing the rear beater assembly. When using the spreader as an end dump to pile manure or as a forage wagon adjust the flow control valve for the floor chain drive to the maximum position to speed up unloading.

5. BEATER SYSTEM

5.1 GENERAL USE

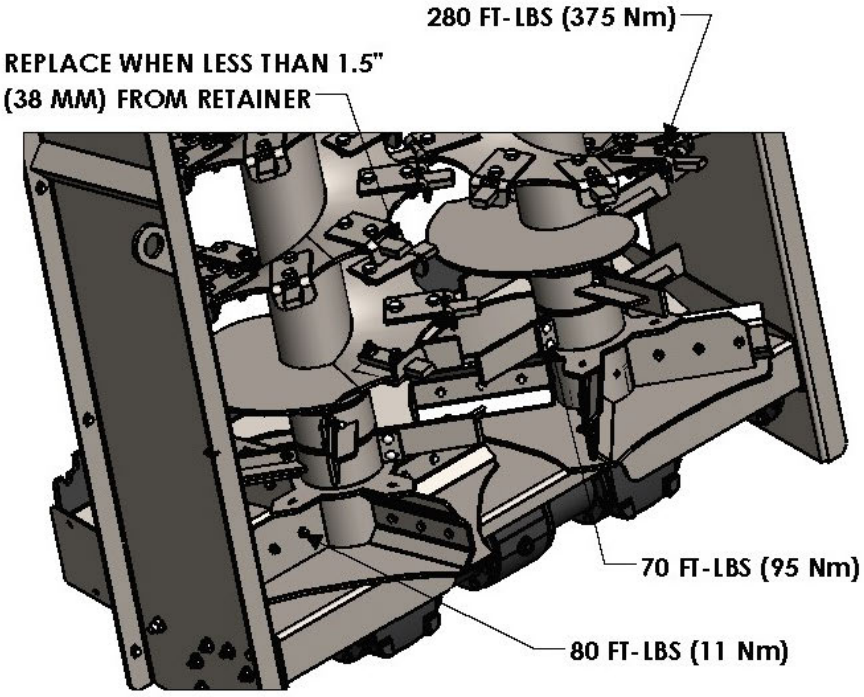
The detachable beater system is designed purely for wider spread patterns and consistency. The beaters system can be used to spread bedding material. The beater system can be removed allowing the spreader to be used for dumping manure into piles or can be used as a forage wagon.

5.2 BEATER MAINTENANCE

The beater system components are subject to an extreme environment. After time, the beater components will require maintenance and service. This section of the manual describes replacement of the wear components.

5.2.1 SPIKE AND DOUBLE SHEAR RETAINER REPLACEMENT

Inspect all spikes on both beaters. Look for wear and damage. The lower spikes have more material passing over them and will wear quicker than the upper spikes. Replace spikes that are less than 1.5″ (38 mm) from the front face of the double shear retainer bracket. Torque the spike and double shear retainer bracket hardware to 280 ft - lb. (375 Nm).



5.2.2 PADDLE HALVES

The paddle halves are a friction fit to the beater main tube. Rocks and hard objects may result in the paddle halves being reoriented. Check the orientation of the paddle halves. Reorient paddle halves such that any three groups of paddle halves on the same tube are 90° to each other. Loosen the paddle half hardware, reorient to correct position and retighten. Torque the hardware to 70 ft-lb (95 Nm).

5.2.3 PADDLE REPLACEMENT

Each beater has 4 lower paddles. When replacing these paddles replace all four to maintain proper beater balance. When replacing the lower paddles replace all hardware. To replace the lower paddles, remove the three bolts, install the new paddles with new hardware and torque to 80 ft-lb (110 Nm).

5.2.4 3-in-1 BEATER DRIVE COUPLER

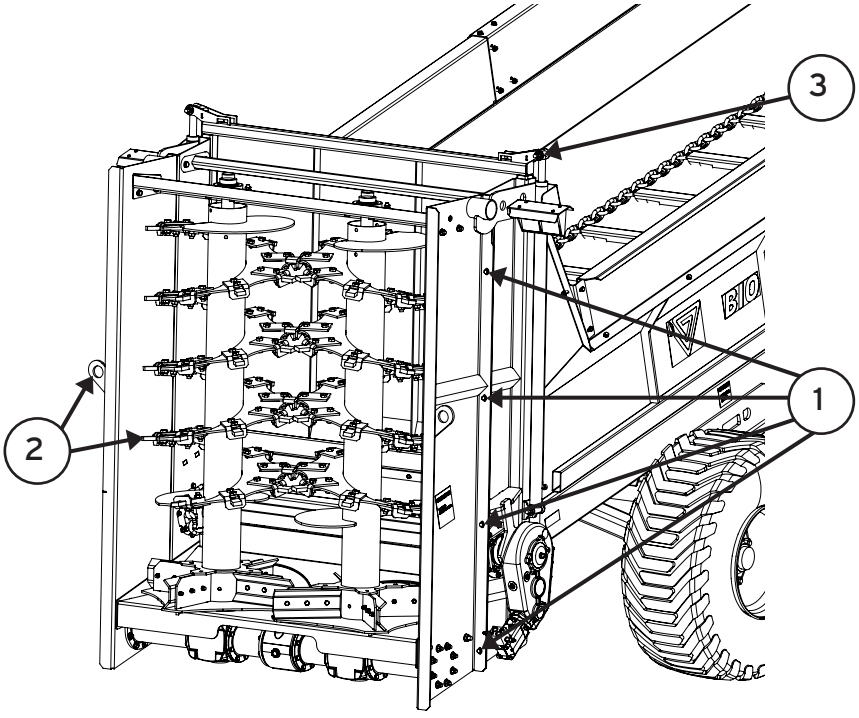
The rubber block coupler between the 3-in-1 gear box and beater cushions the drive from beater impacts. This coupler is designed to have no play between the beater and 3-in-1 gear box. Contact your dealer if there is play between the beater and 3-in-1 gear box.

5.3 BEATER ASSEMBLY ATTACHMENT AND REMOVAL SAFETY

Caution: When attaching or removing the beater system ensure all operators are clear of pinch points.

Caution: When aligning the beater system during attachment or removal turn the tractor off, set the park brake, and remove the key.

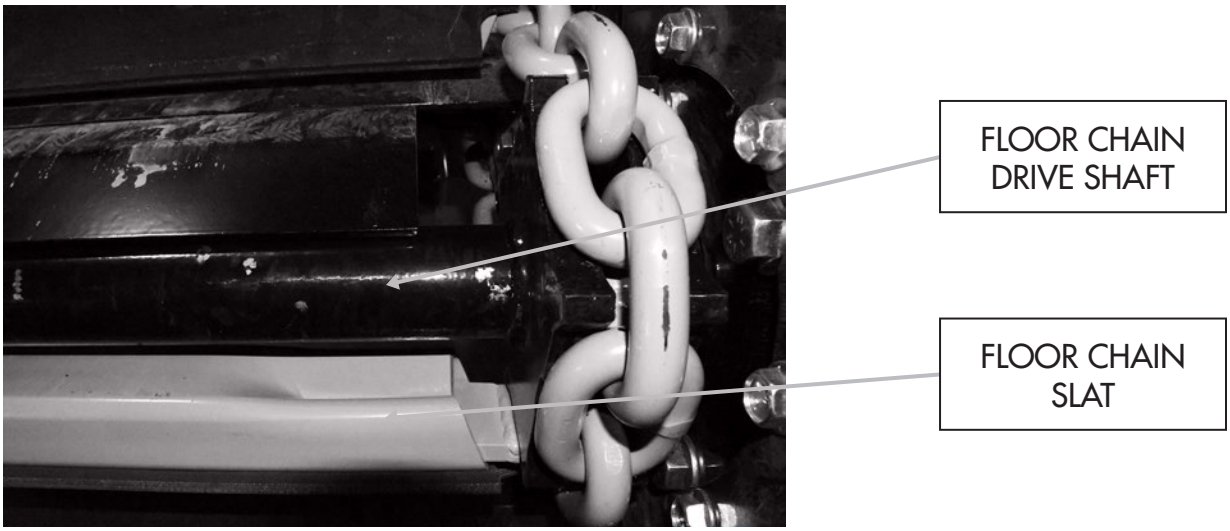
Note: The beater system weighs approximately 3,000



1. Attachment hardware (Both sides)
2. Lift Location
3. Hanger guide

5.3.1 REMOVING THE BEATER SYSTEM

1. Clean all material from beaters and deck.
2. Position the chain floor with one slat above the drive shaft and one slat below the drive shaft. This allows for maximum clearance between beater main body and beater system.



3. Remove the rear PTO shaft from the 3-in-1 gear box input shaft and intermediate drive shaft. Store in a safe place.
4. Remove the hardware from the left and right side. 8 bolts, 4 each side.
5. Using an approved lifting apparatus at each lifting location on the rear of the beater structure.
6. Lift the beater system upward a few inches until the upper hinge plate clear the hinge tube.

The beater system weighs approximately 3,000 lbs. (1,350 kg). Ensure the lifting strap or chain is not more than 30° from vertical.

7. Lift the beater assembly clear of the spreader and lay it down with the front side down using stand, blocks or old tires to prevent the beater deck from damage.
8. The machine is now ready for use without the beater assembly.

5.3.2 ATTACHING THE BEATER SYSTEM

1. Clean all material from main body attachment surface decks.
2. Use approved lifting apparatus at each lifting location on the rear of the beater structure.

The beater system weighs approximately 3,000 lbs. (1,350 kg). Ensure the lifting strap or chain is not more than 30° from verti-

3. Lift the beater system and place it a few inches from the upper hinge. Guide the hinge tubes of the beater system onto the main body hinge plates.
4. Continue lowering the beater system slowly until the main body and beater system mating surfaces contact each other.
5. Install the attachment hardware on both sides of the main body and beater system. Tighten all eight bolts 80 ft-lbs. (110 N-m).
6. Install the rear PTO shaft onto the main body drive line with the overrun clutch on the input on the 3-in-1 gear box.

6. MAINTENANCE

6.1 LUBRICATION OF SPREADER

All sealed bearings – 1/2 pump of grease gun maximum
Over greasing can cause bearing seal damage.

DAILY

Overrun clutch to front of main 3-in-1 gearbox.
PTO universal joints and CV.
IMPORTANT: ENSURE CV JOINT IS GREASED BEFORE FIRST USE!

WEEKLY

Grease sliding shield of PTO shaft.
Check gearbox oil levels.
Driveline support bearings (front, middle and rear).
Top auger bearings (Grease nipples access provided on the left of the turrets when heading forward).
Grease PTO input drive system.

a. Input shaft.
b. Cross joint fittings.
c. Guard bearings.
d. Shear bolt housing.
e. Over-running clutch (5 pumps).

ANNUALLY

Change oil in all gearboxes
Shear bolt bushing (Rear of Tractor PTO Shaft).
Grease hitch jack top.
Wheel bearing check and grease if necessary.

TYPE OF LUBRICATION GREASE	Multi-purpose
GEARBOXES (GEAR OIL)	80W90

6.2 WHEEL BEARINGS

6.2.1 CHECK WHEEL BEARINGS

To check the wheel bearings:

1. Lift the wheel off the ground.
2. Turn in both directions slowly to check for any rough points or friction.
3. Turn it at high speed to check for unusual noises, such as grating or knocking.

If the bearing is damaged or worn, the bearing, race and seals should all be replaced.
To check the wheel bearing clearance, raise the axle until the wheel is no longer resting on the ground (ensure that the spreader cannot move).

Grip the wheel at the top and the bottom and check the clearance by trying to tilt it. The clearance can also be detected by using a lever between the wheel and the ground.
If you can feel any clearance, adjust the wheel bearing.

6.2.2 ADJUSTING THE WHEEL BEARINGS

Lift the axle until the wheel is no longer resting on the ground.

Large wheels should be removed so that the clearance is easier to feel and to make it easier to adjust.

- Remove the hubcap.
- Remove the cotter pin or hair-pin clip from the spindle.
- Tighten the castle nut (right-hand thread) to take up the internal clearance (the coni cal roller bearings should then be firmly held between the hub seating, the pressure ring, spindle and castle nut).

The rotation of the hub or wheel feels to be slightly stiff:

- Slacken the castle nut until there is no longer any friction between the castle nut and the outer bearing. Align the hole for the cotter pin and the notch in the castle nut.
- Tap the hub gently using a mallet to shake down the assembly.
- Check that the hub rotates more freely.
- Always better on the side of too free rather than too tight.
- When the hub has been adjusted, fit a new split cotter pin.
- Refit the hubcap.
- Refit the wheel following the instructions to tighten the wheel nuts (See section 14 Wheel Nut Torque).

6.3 SERVICING INTERVALS

The period recommended is based on normal operating conditions. Severe or unusual conditions may require more frequent lubrication or oil changes.

DAILY (8 HRS)

1. Check for hydraulic fluid leaks and damaged hoses.
2. Inspect drive shields for damage and material build up.
3. Check the condition of the PTO guard regularly, if damaged replace as soon as possible.
4. Check Tire Pressure (40 PSI).

WEEKLY (40 HRS)

1. Check wheel nuts. Re-torque as needed. 375 to 450 ft. lbs. (510-610 NM).
2. Check gearbox oil level.

   a. Floor Chain Drive Gearbox

      i. Oil should be level with the middle of the sight glass.

      ii. Add oil as required through the top plug.

   b. Auger Gearbox

      i. Spreader hitch must be level when checking oil. Oil should be level with the middle of the sight glass.

      ii. Add oil as required through the top plug.

      iii. Oil may take a while to distribute in casing, allow a few minutes and recheck level and repeat if necessary

Note: Overfill can cause excessive heat and seal failure.

3. Check and adjust the floor chain tension.

ANNUALLY

1. The walking beam inner wear strips and outer pivots bushings require annual inspection.
2. Check the condition of the frame sealing flaps. Replace if not sealing the sides or bottom.
   a. Front.
   b. Rear Gate.
   c. Auger Deck.
3. Check condition of beater spikes and paddles. Repair when there are loose bolts, cracked welds, chipped, bent or broken spikes or paddles. Replace when any spikes that are worn within 1.5 inch (38 mm) from double shear retainer outer surface.
4. Clean machine.
5. Check general hardware/bolt tightness. Retighten if necessary.
6. Check bushings on floor chain drive shaft.

6.4 SERVICE RECORD

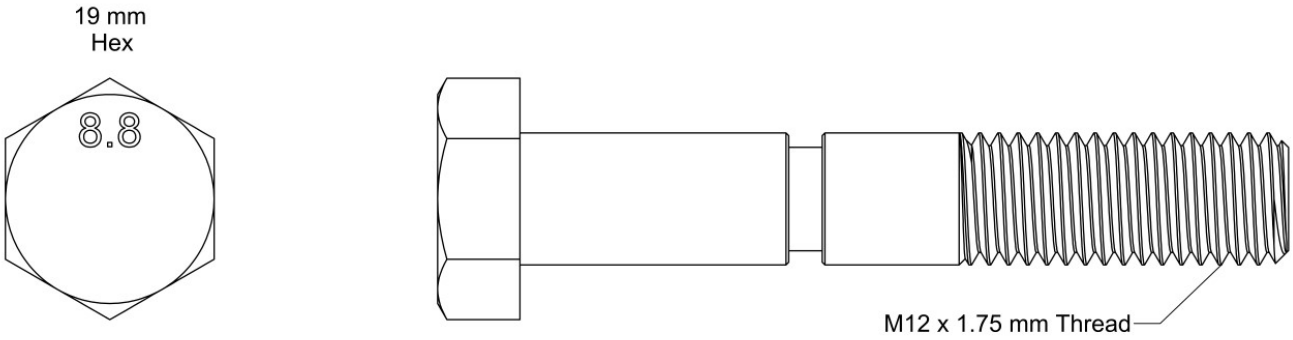
Refer to section 8.1 Lubrication of Spreader and 8.2 Servicing Intervals for details

SERVICE RECORD ACTION CODE CK = CHECK CL = CLEAN G = GREASE		SERVICED BY																			
ACTION CODE	MAINTENANCE																				
40 HOUR OR MONTHLY																					
G	PTO DRIVELINE																				
G	INTERMEDIATE PTO'S																				
G	BEATER BEARINGS																				
CK	OIL LEVEL CHAIN DRIVE GEARBOX																				
CK	OIL LEVEL 3-IN-1 GEARBOX																				
CK	TIRE PRESSURE (40 PSI)																				
CK	WHEEL NUTS																				
CK	FLOOR CHAIN TENSION																				
ANUALLY																					
CK	WALKING BEAM WEAR STRIPS																				
CK	WALKING BEAM PIVOT BUSHINGS																				
CK	SEALING FLAPS (3 PTS)																				
CK	BEATER SPIKES AND PADDLES																				
CK	MACHINE																				

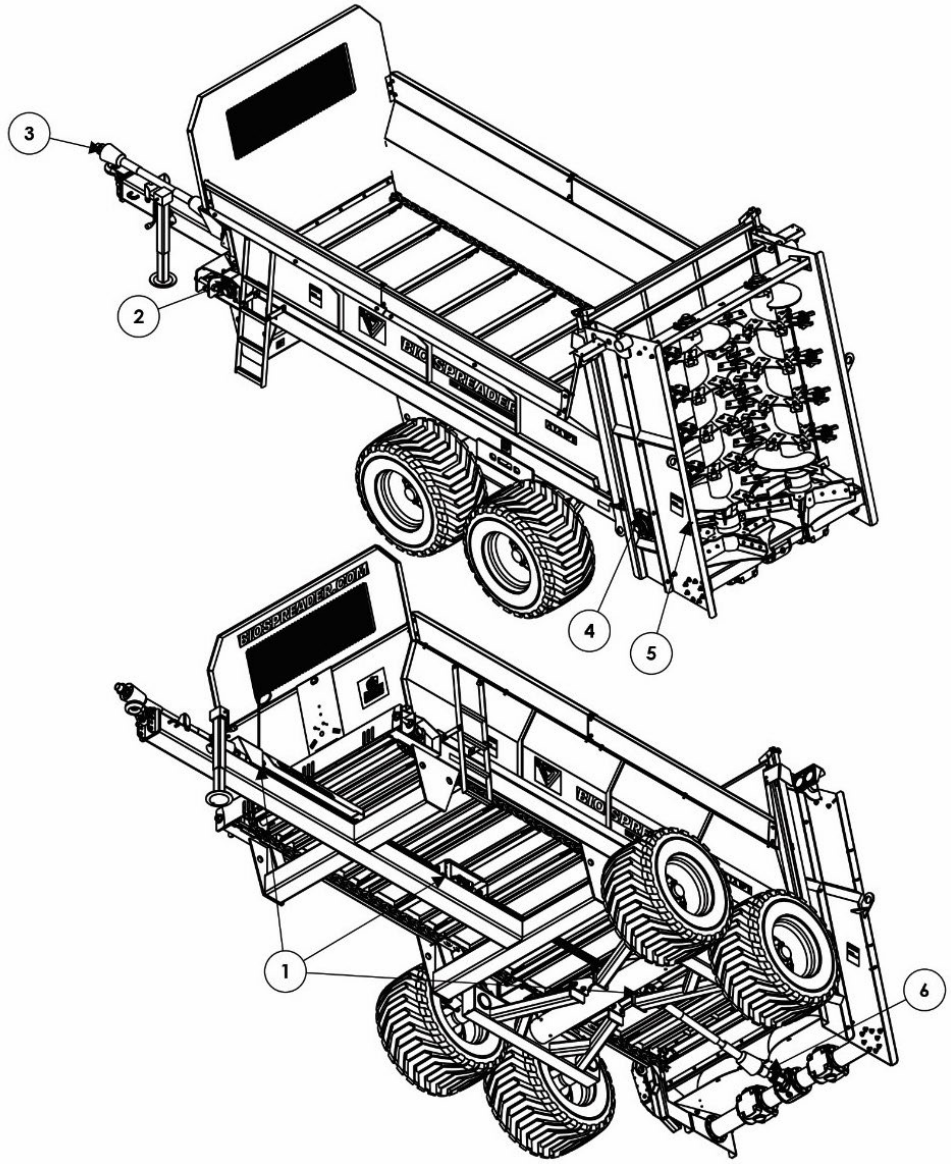
6.5 SHEAR BOLT PROTECTION

The shear bolt is located on the spreader end of the front PTO shaft. The Shear bolt is custom designed to ensure failure before damaging any other component of the machines. Using a different bolt can result in costly driveline and gear boxes failures.

Shear Bolt Part # - DUT75000 – See Your Dealer.

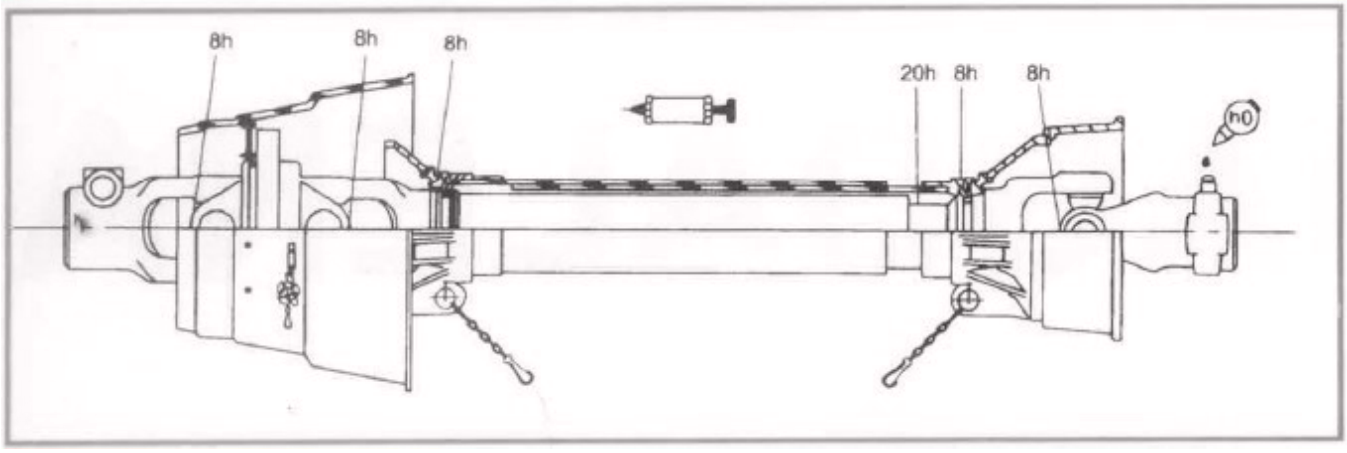


6.6 GREASING POINTS



KEY	GREASE POINT
1	ALL DRIVE LINE BEARINGS (3)
2	FRONT FLOOR CHAIN SHAFT (LEFT AND RIGHTI
3	FRONT PTO (UJOINTS, CV JOINT AND SHEAR PIN)
4	REAR FLOOR CHAIN SHAFT (LEFT AND RIGHT)
5	BEARINGS TOP OF AUGERS (GREASE POINT LEFT BACK END TURRET)
6	REAR PTO (UJOINTS AND OVERRUN CLUTCH)

6.7 PTO LUBRICATION LOCATIONS



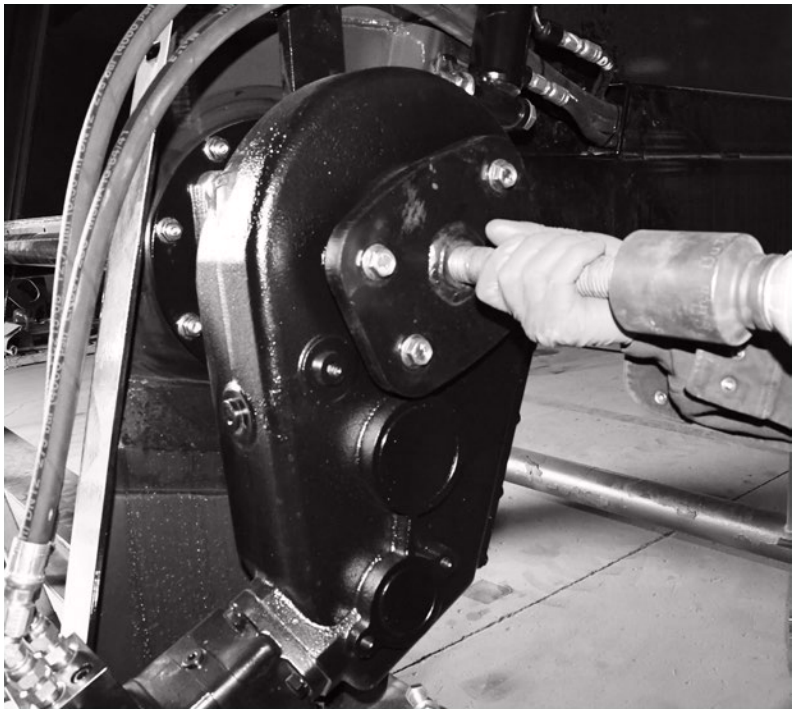
6.8 SPECIAL TOOLS

To aid in service the following special tools are available:

1. Puller for removal of the floor chain drive gear box from the rear drive shaft.

DESCRIPTION	PART #
Shaft Puller	DUT54124

SEE YOUR DEALER FOR THESE SPECIAL TOOLS.



6.9 HARDWARE TORQUE SPECIFICATIONS

The tables below give correct torque values for various bolts and cap screws. Tighten all bolts to the torques specified in chart unless otherwise noted. Check the tightness of bolts periodically, using these bolt torque charts as a guide. Replace hardware with the same strength (Grade/Class) bolt.

Imperial Torque Specifications

(Course Thread - based on "Zinc Plated" values)

Size (inches)	Grade 5	Grade 8
	lb. ft. (N.m)	lb. ft. (N.m)
1/4	7 (10)	10 (14)
5/16	15 (20)	20 (28)
3/8	25 (35)	35 (50)
1/2	65 (90)	90 (120)
9/16	90 (125)	130 (175)
5/8	130 (175)	180 (245)
3/4	230 (310)	320 (435)
1	550 (745)	770 (1050)
1-1/4	950 (1290)	1545 (2095)

Metric Torque Specifications

(Course Thread - based on "Zinc Plated" values)

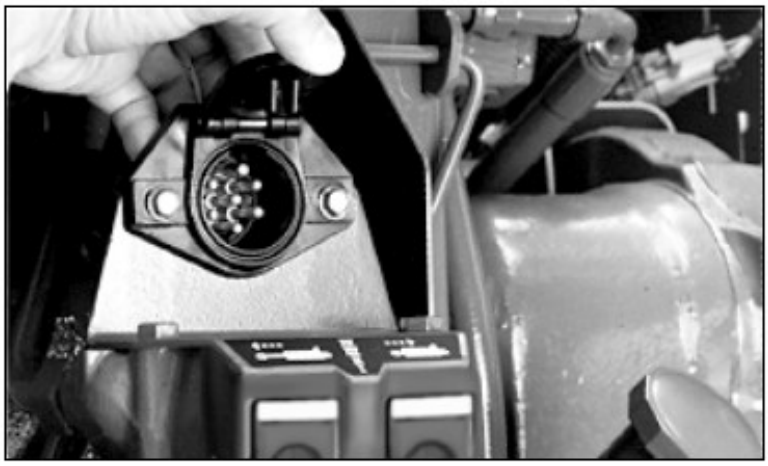
Size (mm)	Grade 8.8
	lb. ft. (N.m)
M12	80 (108)
M14	125 (170)

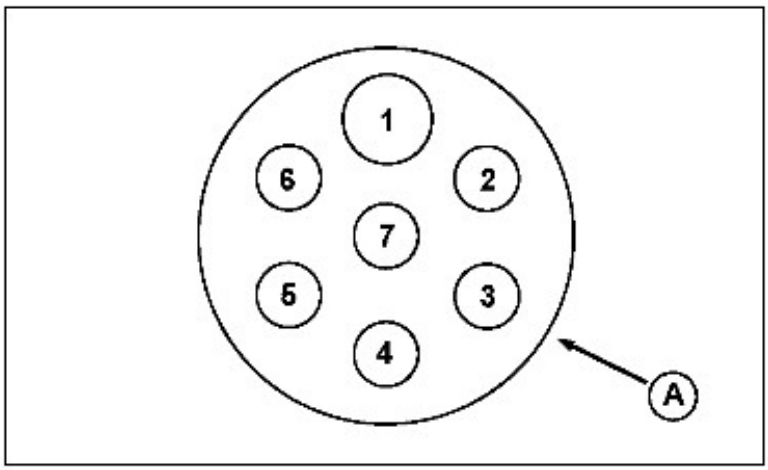
7. ELECTRICAL

7.1 SEVEN-TERMINAL OUTLET – 12 VOLT

Outlet (A) is used to connect lights, turn signals, and remote electrical equipment on trailers or implements. If equipped use auxiliary light on towed implement when tractor rear signals and other lights are obscured.

Terminal	Function
1	Ground
2	Flood Light
3	Left Turn
4	Accessory
5	Right Turn
6	Tail Light
7	Accessory





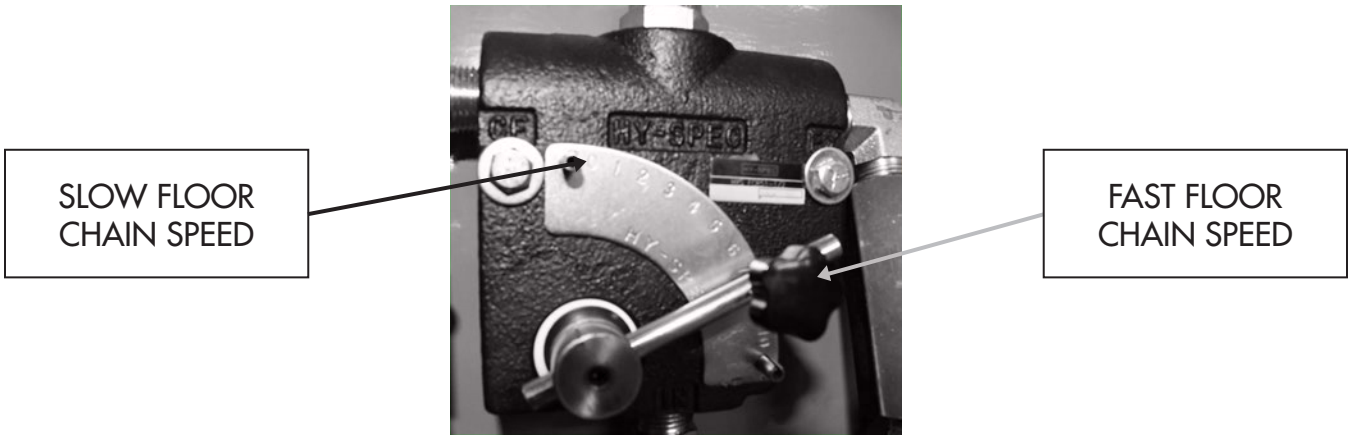
7.2 WARNING LIGHTS

LED Agricultural lights are standard on the BIO SPREADER 14 AND 20

8. FLOOR CHAINS

8.1 FLOOR SPEED CONTROL UNIT

Floor chain speed is adjusted by moving the lever on the floor control valve at the front of the spreader. Rotating the arm counter clockwise to the small index scale numbers reduces chain speed. Rotating the arm clockwise to the larger index scale numbers increases chain speed.

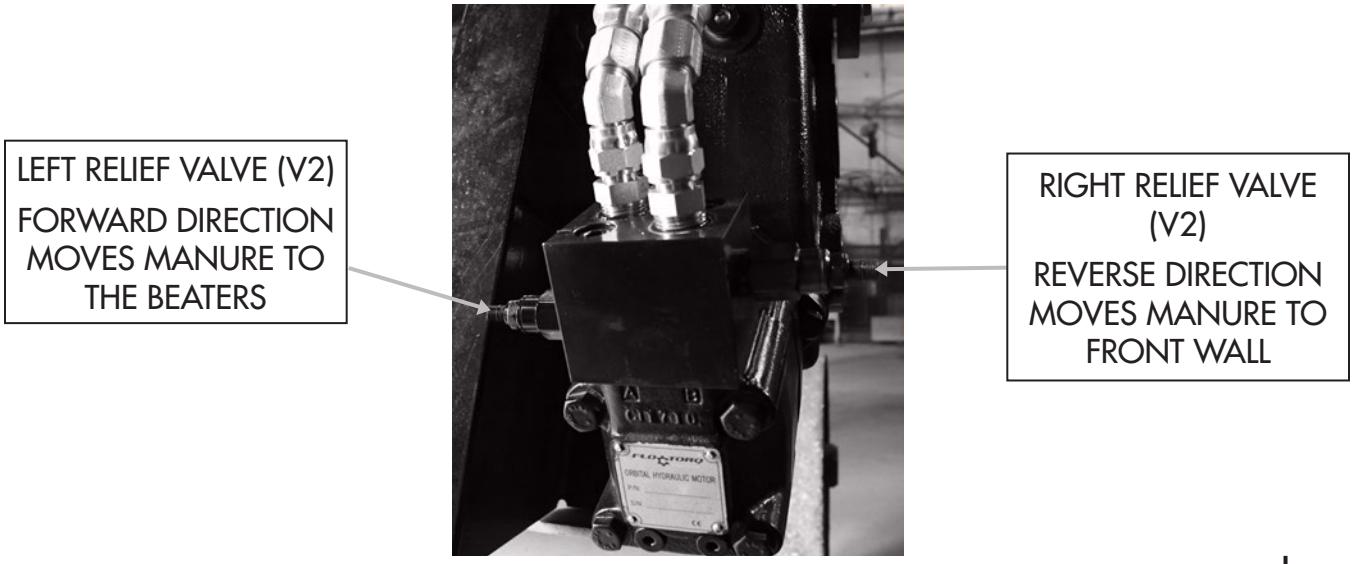


8.2 FLOOR CHAIN HYDRAULIC MOTOR RELIEF VALVES

The relief valves are located on the valve block located on the floor drive gearbox hydraulic motor. One relief valve sets the forward pressure and the other relief valves set the rearward pressure. These valves are pre-set to prevent overloading and damage to floor chain components. They can be adjusted at the operators own risk as described in the next section.

NOTE: ADJUSTING THE PRESSURE TO HIGHER SETTING MAY CAUSE DAMAGE TO GEARBOX, SHAFTS AND FLOOR CHAIN COMPONENTS.

8.2.1 SETTING CHAIN DRIVE HYDRAULIC RELIEF VALVES – FACTORY PRE-SET



BIOSPREADER 14

The forward and reverse hydraulic pressures are pre-set. To return to the factory pre-set, perform the following steps to each valve:

1. Disengage the PTO, shut the tractor off and apply the parking brake.
2. Loosen the left (driver's side) relief valve jam nut with a 14 mm wrench.
3. Using a 4 mm Allen key back the left (driver's side) set screw out (Counter Clockwise) until it stops.
4. Turn the set screw in 1 1/4 (1200PSI) full turns in from fully out. This will set the pressure in the unload direction.
5. Hold the set screw with the 4 mm Allen key at 1 1/4 full turns from maximum out and tighten the jam nut to 15 ft - lbs.
6. Loosen the right (passenger side) relief valve jam nut with a 14 mm wrench.
7. Using a 4 mm Allen key back the right set screw out (Counter Clockwise) until it stops.
8. Turn the set screw in 1 (900 PSI) full turn in from fully out. This will set the pressure in the reverse (toward front wall) direction
9. Hold the set screw with the 4 mm Allen key at 1 full turn from maximum out and tighten the jam nut to 15 ft - lbs.

BIOSPREADER 20

The forward and reverse hydraulic pressures are pre-set. To return to the factory pre-set, perform the following steps to the valve:

1. Disengage the PTO, shut the tractor off and apply the parking brake.
2. Loosen the left (driver's side) relief valve jam nut with a 14 mm wrench.
3. Using a 4 mm Allen key back the left (driver's side) set screw out (Counter Clockwise) until it stops.
4. Turn the set screw in 2 3/4 (1800PSI) full turns in from fully out. This will set the pressure in the unload direction.
5. Hold the set screw with the 4 mm Allen key at 2 3/4 full turns from maximum out and tighten the jam nut to 15 ft - lbs.
6. Loosen the right (passenger side) relief valve jam nut with a 14 mm wrench.
7. Using a 4 mm Allen key back the right set screw out (Counter Clockwise) until it stops.
8. Turn the set screw in 2 (1300 PSI) full turns in from fully out. This will set the pressure in the reverse (toward front wall) direction
9. Hold the set screw with the 4 mm Allen key at 2 full turns from maximum out and tighten the jam nut to 15 ft - lbs.

8.2.2 - INCREASING HYDRAULICS RELIEF VALVE SETTING PAST FACTORY PRE-SET

In the event the manure does not move toward the beaters the hydraulic relief pressure can be increased slightly.

Before increasing the relief valve setting check the flow control valve is set to motor full flow (fully clock wise index at 10), confirm the direction of chain movement is attempting to move in the forward direction, ensure the beaters are turning and the rear gate is up.

Follow the steps below to increase the factory pre-set

1. Disengage the PTO, shut the tractor off and apply the parking brake.
2. Visually inspect the chain front and rear shafts and the exposed chain for objects that may be restricting movement. Remove any objects that are restricting chain movement. If no abnormalities are found proceed to step 4.
3. After removing restrictive objects start the tractor engage the PTO, raise the rear gate and try moving the floor chain. If the floor chain does not move disengage the PTO, lower rear gate, shut the tractor off and engage the parking brake.
4. Increase the forward (left and side) direction relief valve setting. Insert the 4 mm Allen key and hold from turning. Loosen the jam nut and hold. Turn the Allen key in 1/4 turn (Clockwise) and hold while tightening the jam nut to 15 ft - lbs.
5. Start the tractor and engage the PTO, raise the rear gate and try moving the floor chain. If the floor chain does not move disengage the PTO, shut the tractor off and engage the parking brake, repeat STEP 4.

NOTE: ADJUSTING THE PRESSURE RELIEF VALVE TO ANYTHING OTHER THAN FACTORY SETTINGS IS DONE AT THE OPERATORS OWN RISK. CHANGES TO THE PRESSURE RELIEF SETTINGS WILL RISK DAMAGE TO MACHINE COMPONENTS.

9. PTO AND DRIVELINE

9.1 DRIVE LINE

The driveline consists of 3 components:

1. Front PTO with shear protection (Tractor coupler, CV joint, telescoping section, universal joint, shear bolt protection, spreader shaft connection and guarding).
2. Intermediate drive shaft(s).
3. Rear PTO with overrun clutch (Intermediate shaft coupler, universal joint, telescoping section, universal joint, overrun clutch, gear box coupler and guarding).

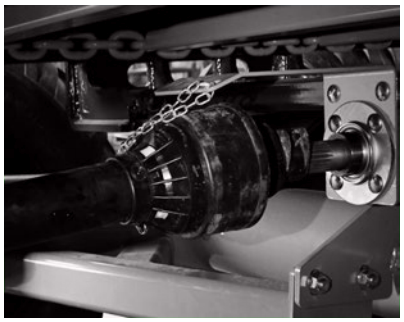
Proper maintenance and correct chain guard length prevent premature failure.

9.2 PTO SHAFT OPTIONS

Description	PART #
21 SPLINE 1 3/8 inch	DUT102306
20 SPLINE 1 3/4 inch	DUT102307
Rear PTO with overrun clutch	DUT102305

9.3 PTO GUARD SAFETY CHAIN FIXING

Proper use of PTO safety chains you can help avoid unnecessary and expensive damage to the PTO guard and its component parts.



The safety chains prevent the guard from rotating during normal operation. This prevents foreign objects and operator clothing from becoming entangled.
PTO guard life is maximized by the following:

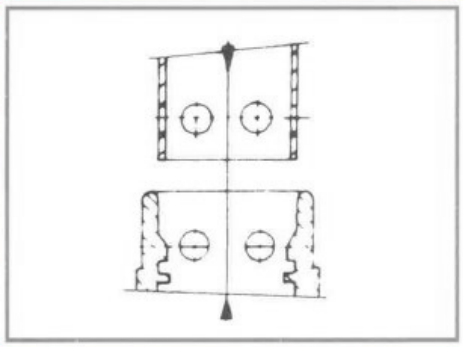
1. Keep chains at the correct length.
   Long chains will wrap around the guard and cause damage.
   Short chains will pull on the guard causing rapid wear.
2. Anchor chains at 90° from the shaft.
3. The chains length should allow for movement when turning.
4. Always maintain the shaft as per the manual.
5. Grease your shaft and guard bearings regularly.
6. Always replace worn chains and guarding.
7. Never perform work without stopping the tractor engine and all components have come to a complete stop.

9.4 PTO STORAGE

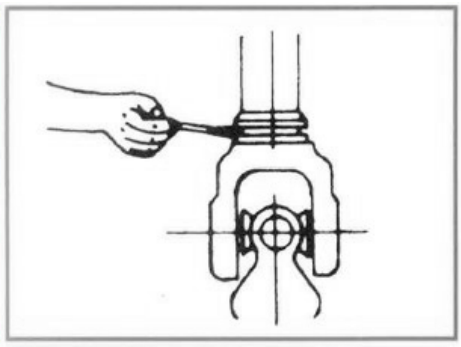
When the spreader is not in use stow PTO to prevent damage.

9.5 PTO GUARD

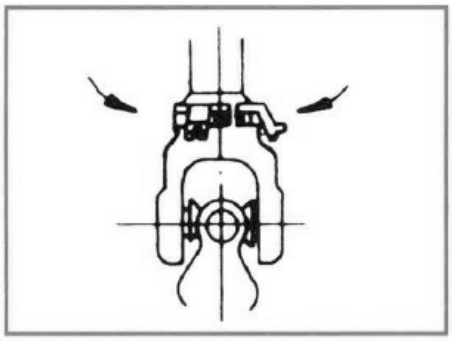
1. Set the guard according to inside pins and press down slightly knocking on the tube.



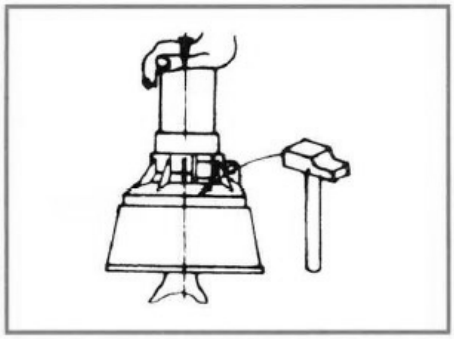
2. Clean and lubricate the collar inside grove.



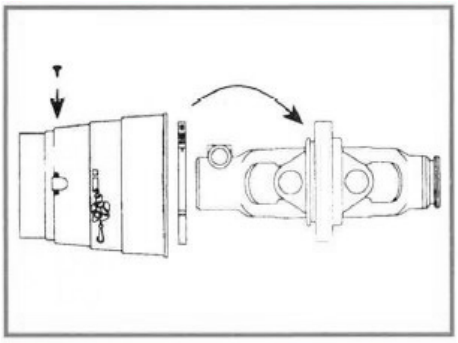
3. Hold PTO shaft vertically and insert collar, check for free rotation.



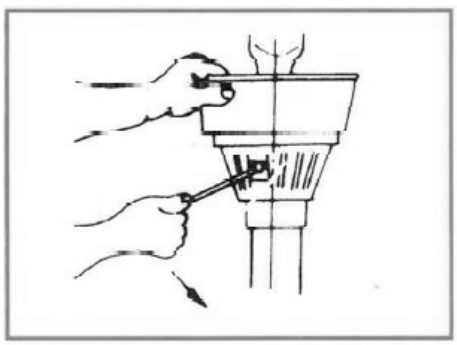
4. Set the cone housing according to the collar tabs. Press down and check to introduce the tabs into the cone housing knocking slightly on the cone to get a through location.



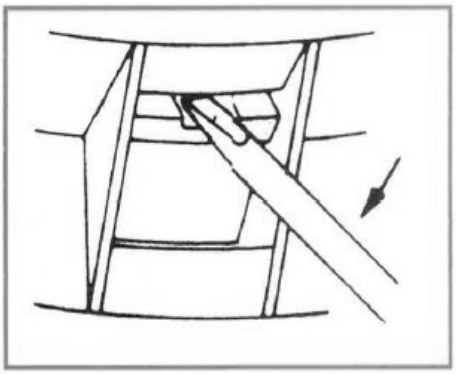
5. C.V. Joint Insert the retaining bearing onto the groove. Fit cone and install screws.



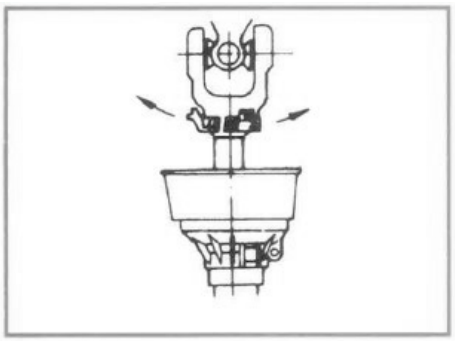
6. Hold PTO Shaft vertically.



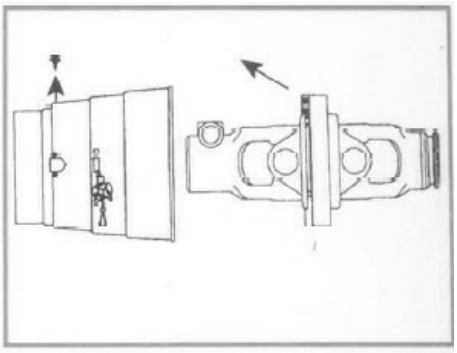
7. Press the cone down and release the collar tabs using a screwdriver. Press inward on the tab groove.



8. Draw out the cone-tube assembly and the collar from the housing.



9. Remove the screws. Remove the cone and retaining bearing.



10. TIRES AND WHEELS

10.1 TIRE AND WHEEL MAINTENANCE

Correct tire inflation pressure is essential for increased tire performance and life.

Under inflation results in excessive deflection which increases the heat generated by the tire, and premature failure. May cause tire to unseat during turning. Under inflation is difficult to see and may still appear as a fully inflated tire. Be sure to check tire pressure with a proper pressure gauge daily.

Over inflation reduces tire flexibility and increases the opportunity of impact damage. Ride quality will be reduced by increasing bounce during higher speeds,

10.2 TIRE PRESSURE AND TRAVEL SPEED – BIOSPREADER 14

The BIOSPREADER 14 utilizes 550/45-22.5 (16 ply) tires with an A8 speed rating. The Proper Inflation Pressure is 40 psi (280 kpa). The recommended travel speed when loaded is no more than 40 km/h.

10.3 TIRE PRESSURE AND TRAVEL SPEED – BIOSPREADER 20

The BIOSPREADER 20 utilizes 550/60-22.5 (18 ply) tires with an A8 speed rating. The Proper Inflation Pressure is 40 psi (280 kpa). The recommended travel speed when loaded is no more than 40 km/h.

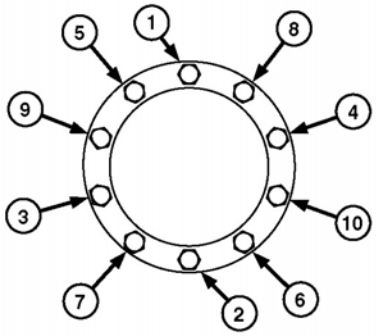
When transporting the BioSpreader, be sure to monitor the temperature of wheel bearings. High speeds, heavy loading or improper lubrication will lead to increased temperature and permanent, costly damage to the wheel bearings.

11. WHEEL NUT TORQUE

IMPORTANT: Wheels nuts are torqued to 375 to 450 ft-lbs (510-610 Nm)

Check wheel nut torque after each load for the first 10 loads, then daily for the first week, and once a week thereafter.

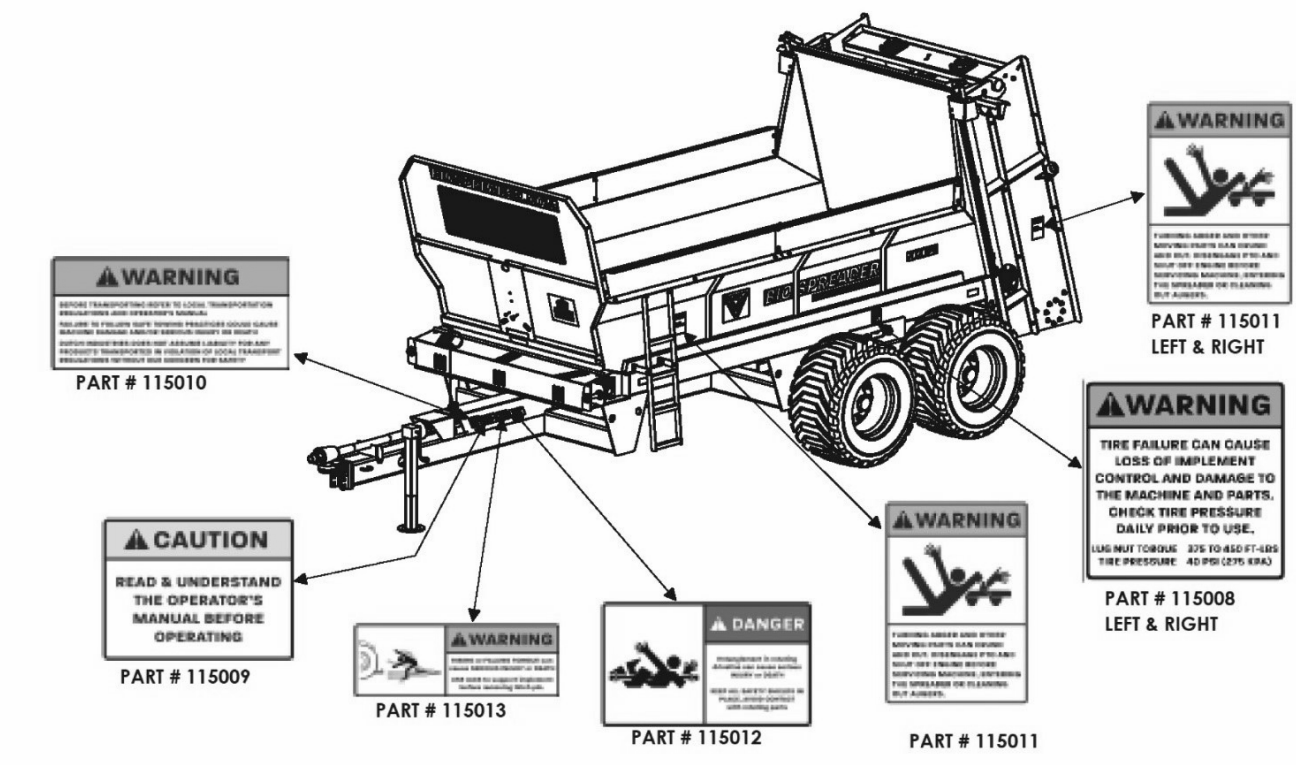
Initial wheel bolt torque: torque wheel bolts to specification using criss-cross pattern (as shown) to



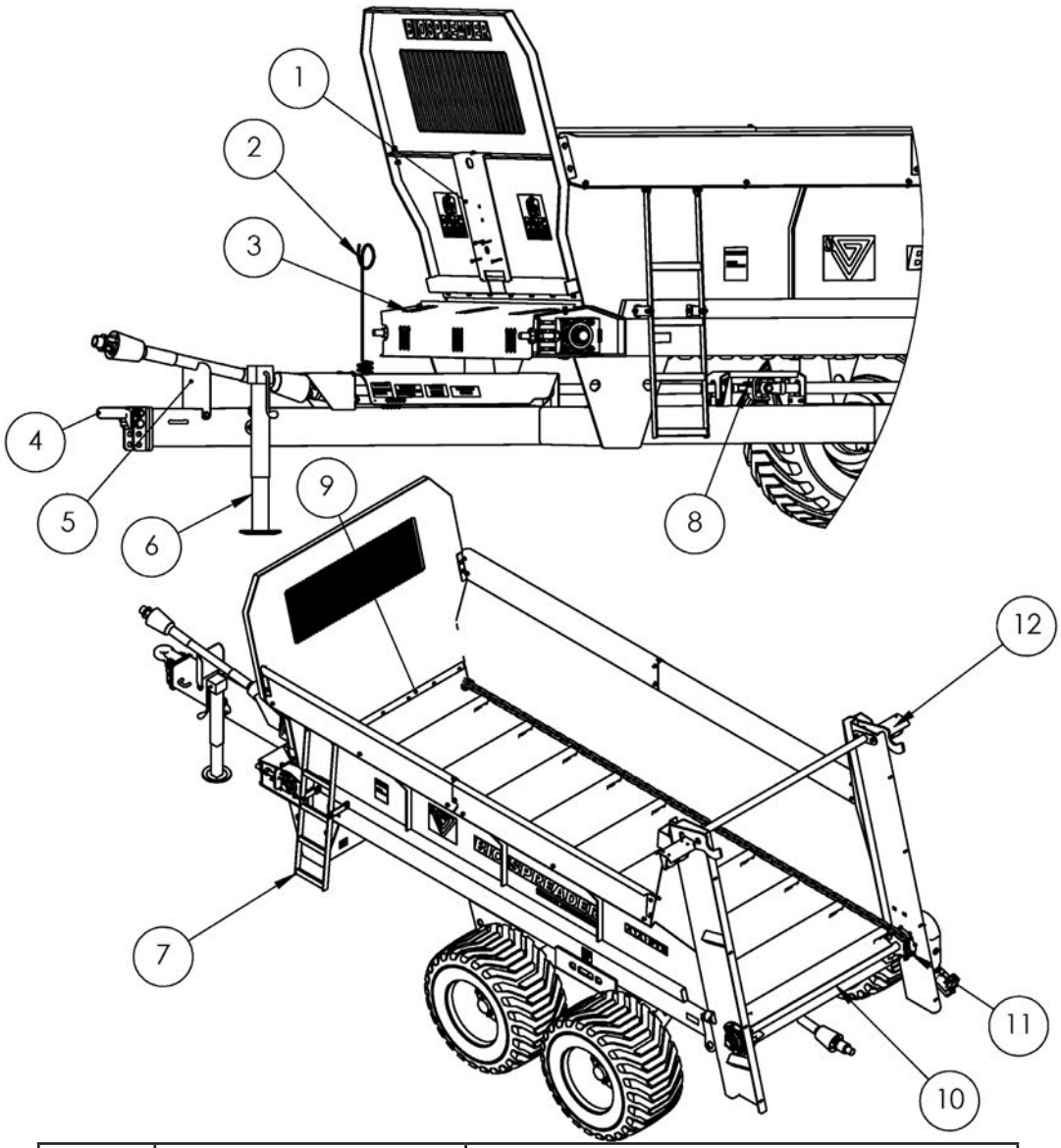
12. PART LIST

12.1 SAFETY DECALS

Safety decals provided free of charge.

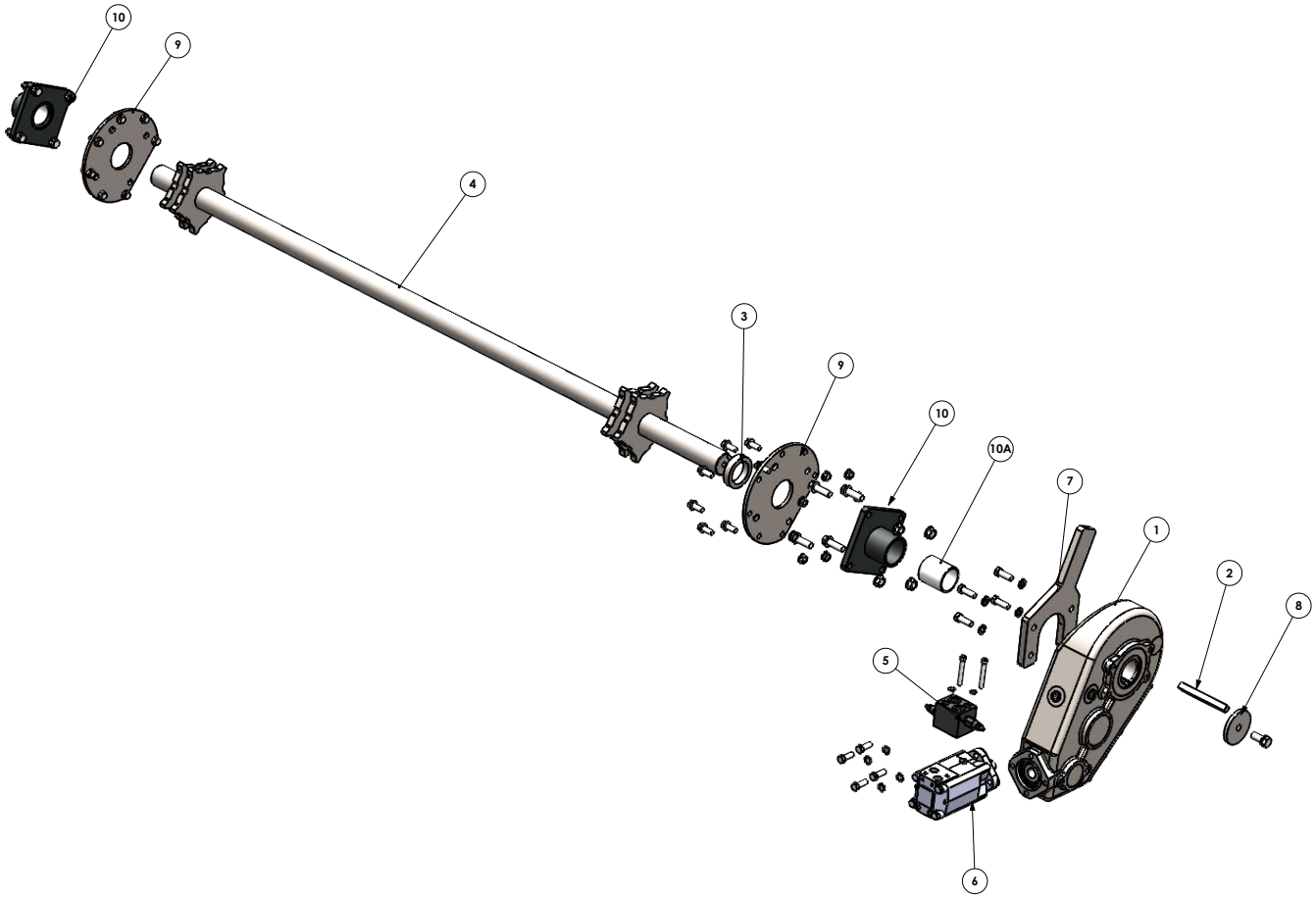


12.2 GUARDS AND MISCELLANEOUS PARTS



ITEM	PART NO.	DESCRIPTION
1	DUT64051	HYDRAULIC PLATE
2	DUT51304	HOSE HOLDER
3	DUT64025	APRON CHAIN GUARD
4	DUT74022	PINTLE HITCH
5	DUT64031	PTO SADDLE
6	DUT102336	JACK
7	DUT64028	LADDER ASSEMBLY
8	DUT64024	UNIVERSAL JOINT GAURD
9	DUT64034	APRON SEAL
10	DUT64035	REAR APRON SHAFT GUARD
11	DUT64036	REAR SHAFT WHEEL SCRAPERS
12	DUT74111	LIGHT PACKAGE

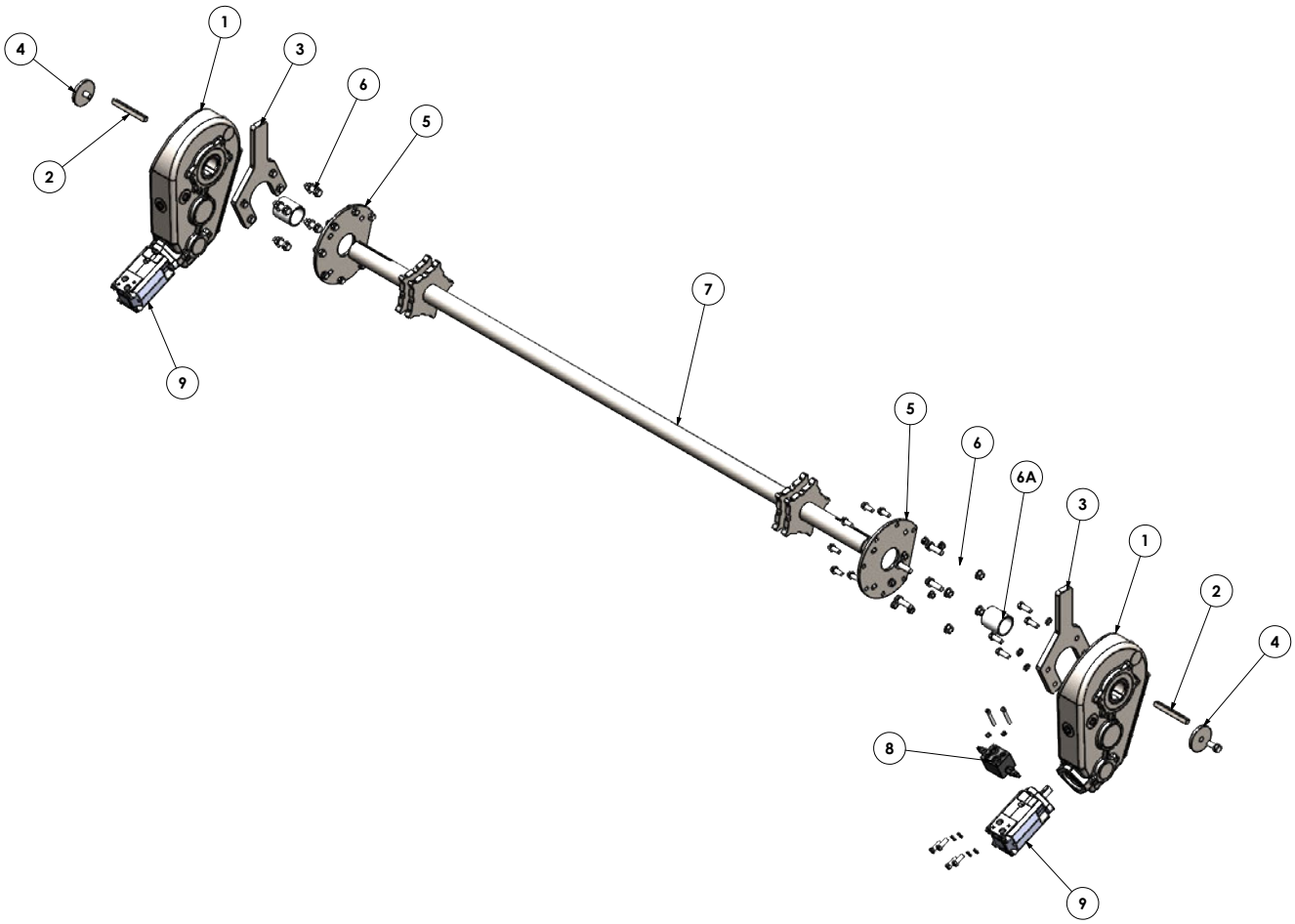
12.3 REAR SHAFT AND GEARBOX PARTS – BIOSPREADER 14



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	DUT102314	GEARBOX, APRON CHAIN	1
2	DUT53110	SQUARE KEYSTOCK,0.625,147MM,GEARBOX KEY	1
3	DUT61021	PFL,0.750,44W,0.01,APRON GEARBOX SPACER	1
4	DUT64040	REAR DRIVE SHAFT ASSEMBLY	1
5	DUT64096	RELIEF BLOCK ASSEMBLY	1
6	DUT64097	HYDRAULIC MOTOR ASSEMBLY	1
7	DUT64098	TORQUE PLATE ASSEMBLY	1
8	DUT64099	REAR SHAFT COVER ASSEMBLY	1
9	DUT64101	REAR BEARING MOUNT PLATE ASSEMBLY	2
10	DUT74009	REAR SHAFT BUSHING ASSEMBLY	2
10A*	DUT102232	COMPOSITE, 3X5/32, 2 7/16, BUSHING FOR FLOOR SHAFTS	2

*DUT102232 IS INCLUDED IN DUT74009

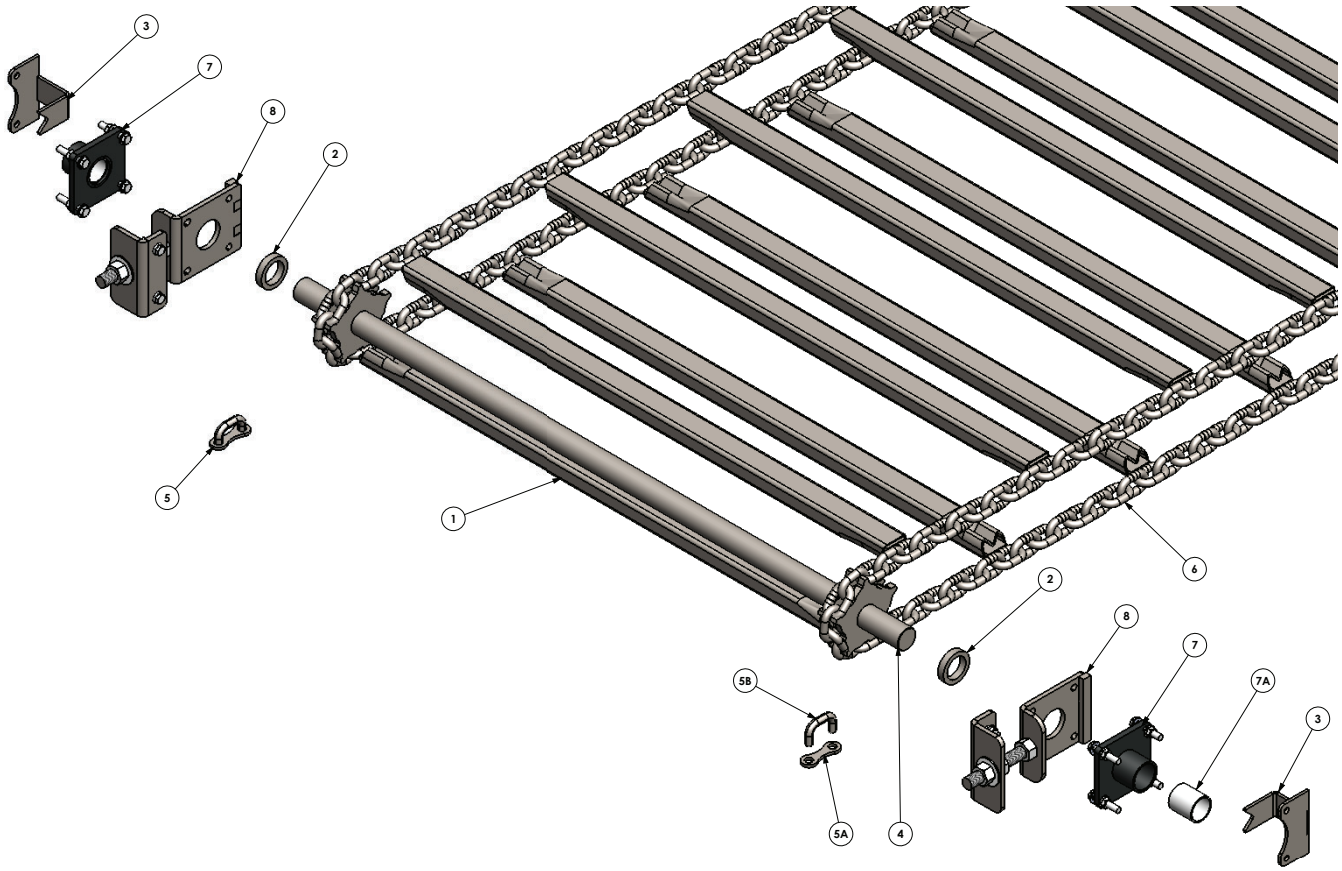
12.4 REAR SHAFT AND GEARBOX PARTS – BIOSPREADER 20



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	DUT102314	GEARBOX, APRON CHAIN	2
2	DUT53110	SQUARE KEYSTOCK,0.625,147MM,GEARBOX KEY	2
3	DUT64098	TORQUE PLATE ASSEMBLY	2
4	DUT64099	REAR SHAFT COVER ASSEMBLY	2
5	DUT64101	REAR BEARING MOUNT PLATE ASSEMBLY	2
6	DUT74009	REAR SHAFT BUSHING ASSEMBLY	2
6A*	DUT102232	COMPOSITE, 3X5/32, 2 7/16, BUSHING FOR FLOOR SHAFTS	2
7	DUT74040	REAR DRIVE SHAFT ASSEMBLY	1
8	DUT74096	RELIEF BLOCK ASSEMBLY	1
9	DUT74097	HYDRAULIC MOTOR ASSEMBLY	2

*DUT102232 IS INCLUDED IN DUT74009

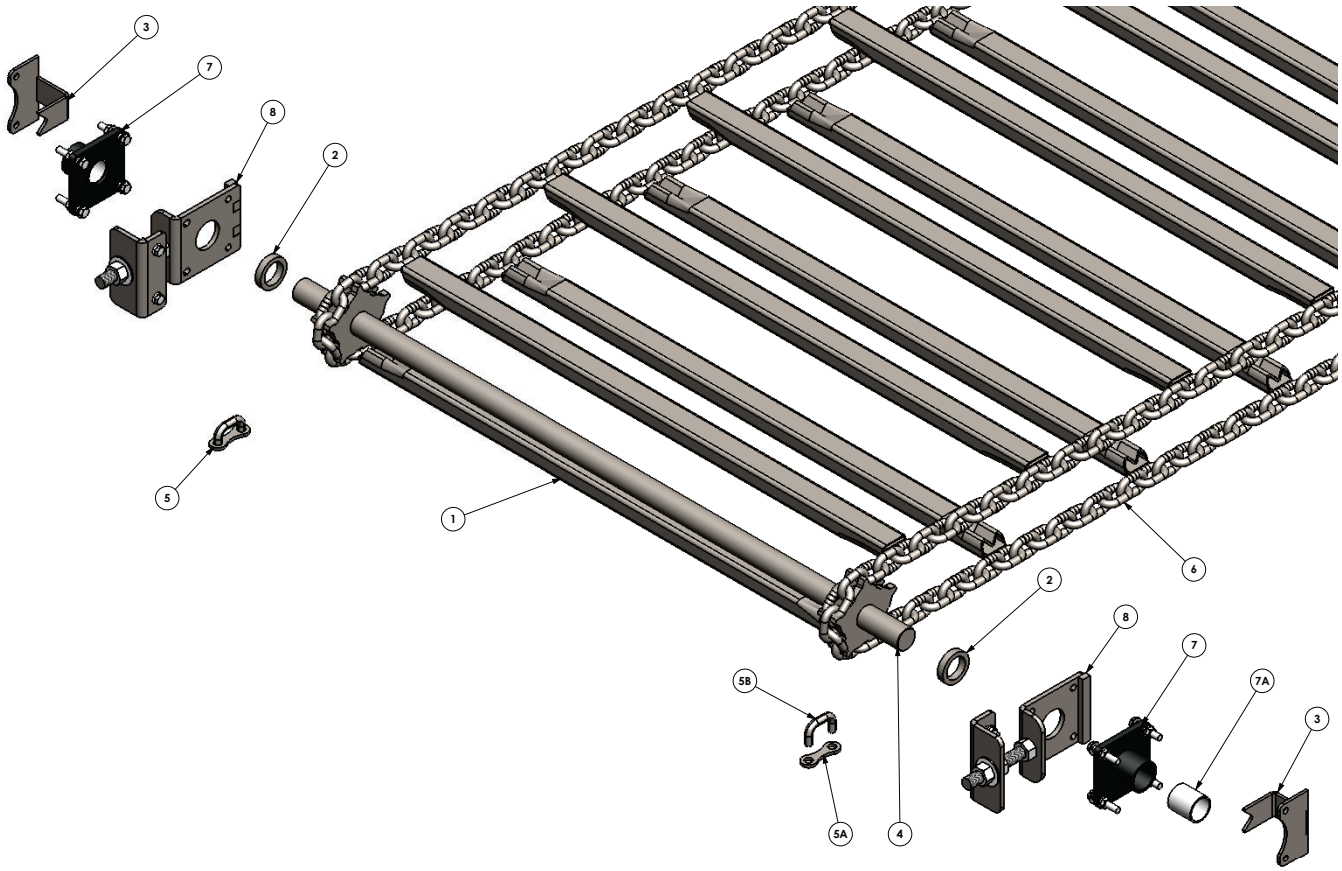
12.5 FRONT SHAFT AND FLOOR CHAIN PARTS BIOSPREADER 14



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	DUT53097	HSS,3X2X0.188,1643MM,APRON SLAT	21
2	DUT61021	PFL.0.750,44W,0.01,APRON GEARBOX SPACER	2
3	DUT64043	SCRAPER ASSEMBLY	2
4	DUT64077	FRONT SHAFT ASSEMBLY	1
5	DUT64100	CHAIN JOINER ASSEMBLY	2
5A*	DUT51123	PFL,0.313,44W,0.05,CHAIN JOINER LINK PLT	2
5B*	DUT53049	ROUND,3/4HR,151MM,CHAIN JOINER LINK	2
6	DUT64014	CHAIN TENSION ADJUSTER ASSEMBLY	2
7	DUT74020	FRONT SHAFT BUSHING ASSEMBLY	2
7A**	DUT102232	COMPOSITE, 3X5/32, 2 7/16, BUSHING FOR FLOOR SLATS	2
8	DUT74102	CHAIN TENSIONER PLATE ASSEMBLY	2

*DUT64100 INCLUDES 1 x DUT51123, 1 x DUT53049
**DUT102232 IS INCLUDED IN DUT74020

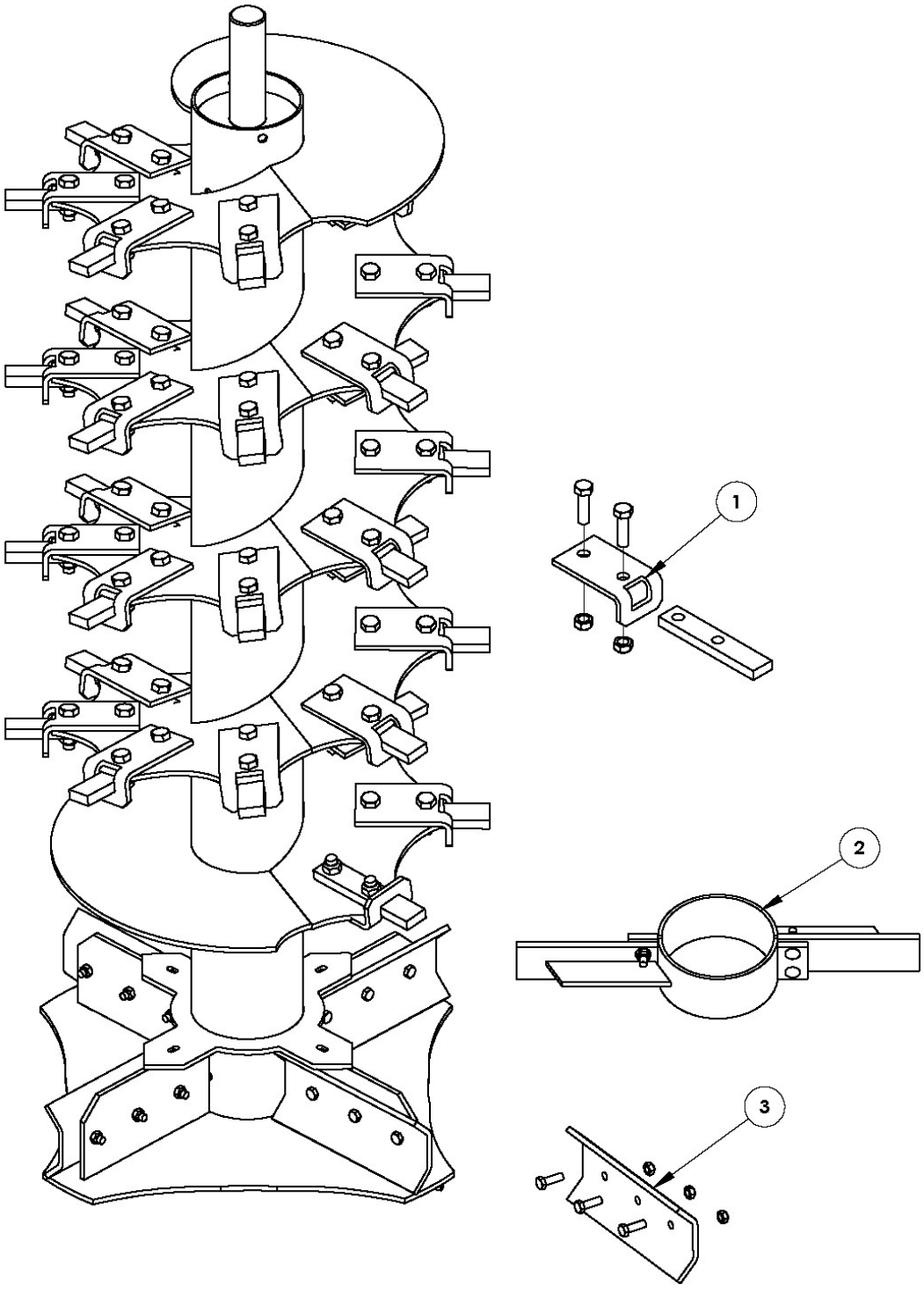
12.6 FRONT SHAFT AND FLOOR CHAIN PARTS BIOSPREADER 20



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	DUT53097	HSS,3X2X0.188,1643MM,APRON SLAT	24
2	DUT61021	PFL.0.750,44W,0.01,APRON GEARBOX SPACER	2
3	DUT64043	SCRAPER ASSEMBLY	2
4	DUT64077	FRONT SHAFT ASSEMBLY	1
5	DUT64100	CHAIN JOINER ASSEMBLY	2
5A*	DUT51123	PFL,0.313,44W,0.05,CHAIN JOINER LINK PLT	2
5B*	DUT53049	ROUND,3/4HR,151MM,CHAIN JOINER LINK	2
6	DUT74014	TABBED CHAIN - 20T	2
7	DUT74020	FRONT SHAFT BUSHING ASSEMBLY	2
7A**	DUT102232	COMPOSITE, 3X5/32, 2 7/16, BUSHING FOR FLOOR SLATS	2
8	DUT74102	CHAIN TENSIONER PLATE ASSEMBLY	2

*DUT64100 INCLUDES 1 x DUT51123, 1 x DUT53049

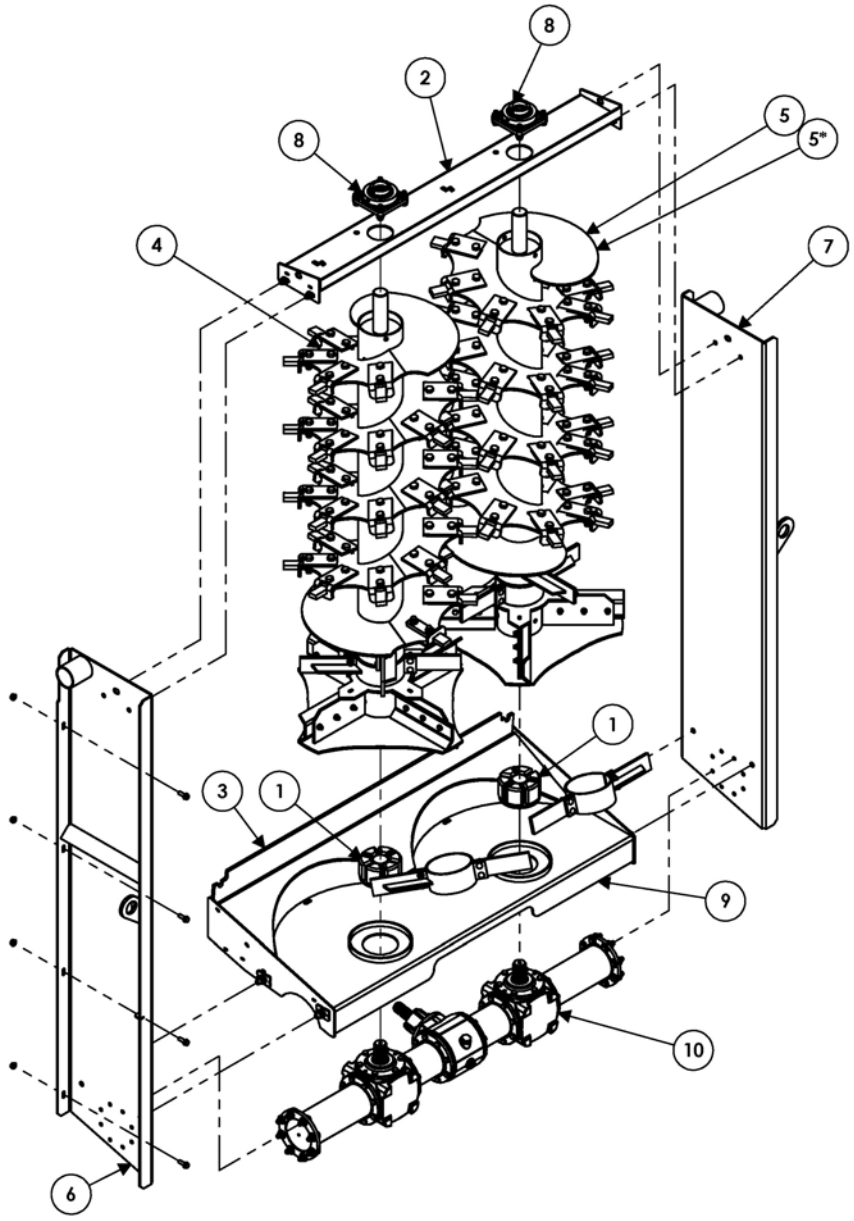
12.7 BEATER PARTS



ITEM	QTY.	PART NO.	DESCRIPTION
1	32	DUT64076	SPIKE TOOTH ASSEMBLY
2	2	DUT64055	AUGER PADDLE ASSEMBLY
3	4	DUT64070	BOTTOM PADDLE ASSEMBLY

12.8 BEATER HOUSING PARTS

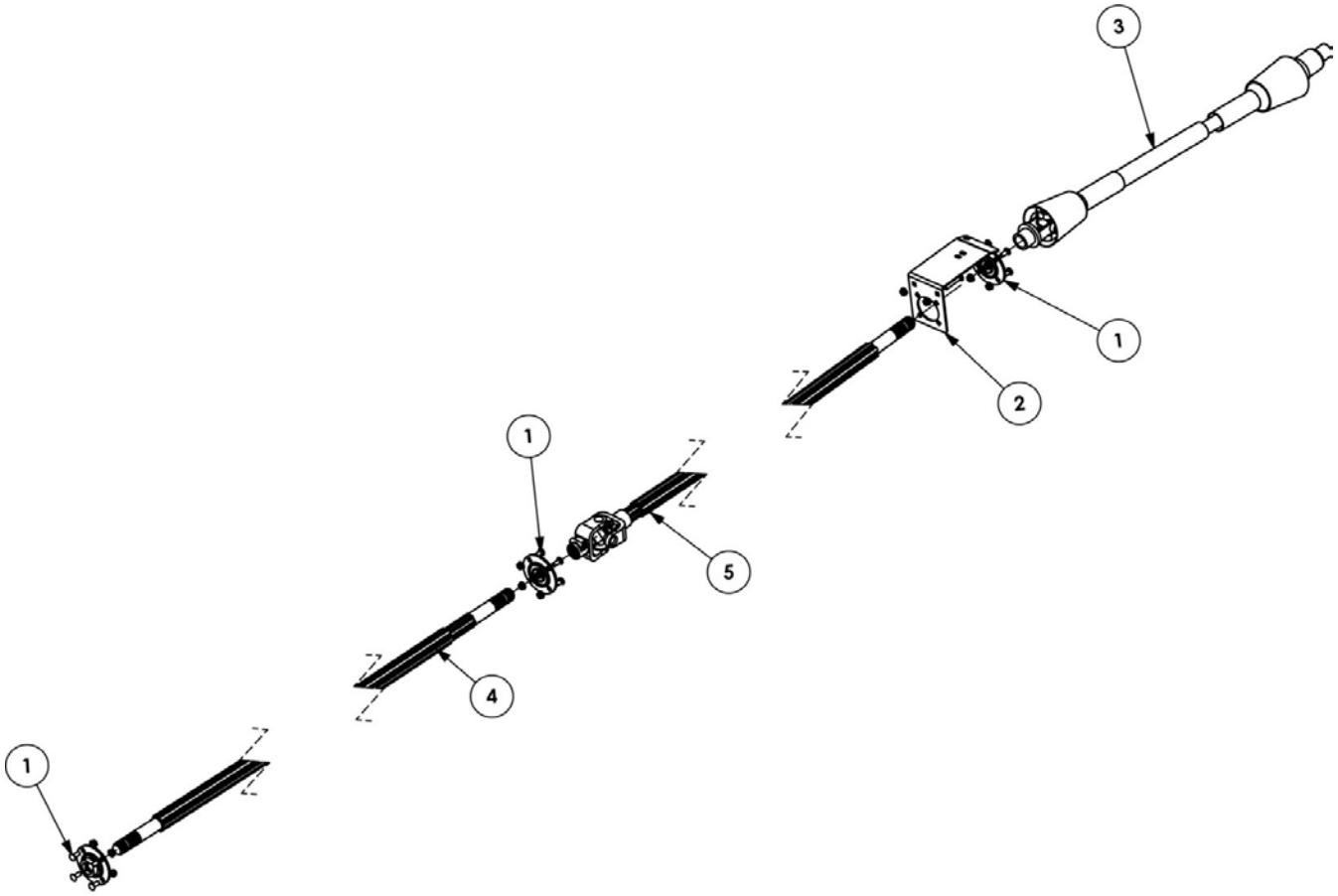
Part No. DUT64020



ITEM	PART NO.	DESCRIPTION
1	DUT54053	AUGER COUPLER & BLOCKS
2	DUT54154	BACK END TOP ASSEMBLY
3	DUT64034	APRON SEAL ASSEMBLY
4	DUT64067	AUGER ASSY LH, HEAVY DUTY
5	DUT64071	AUGER ASSEMBLY RH, HEAVY DUTY
6	DUT64074	REAR TURRET ASSEMBLY LH
7	DUT64075	REAR TURRET ASSEMBLY RH
8	DUT64087	2 7/16 BEARING ASSEMBLY
9	DUT64089	AUGER DECK
10	DUT64094	3 IN 1 GEARBOX ASSEMBLY

12.9 DRIVELINE PARTS - BIOSPREADER 14

Part No. DUT64015

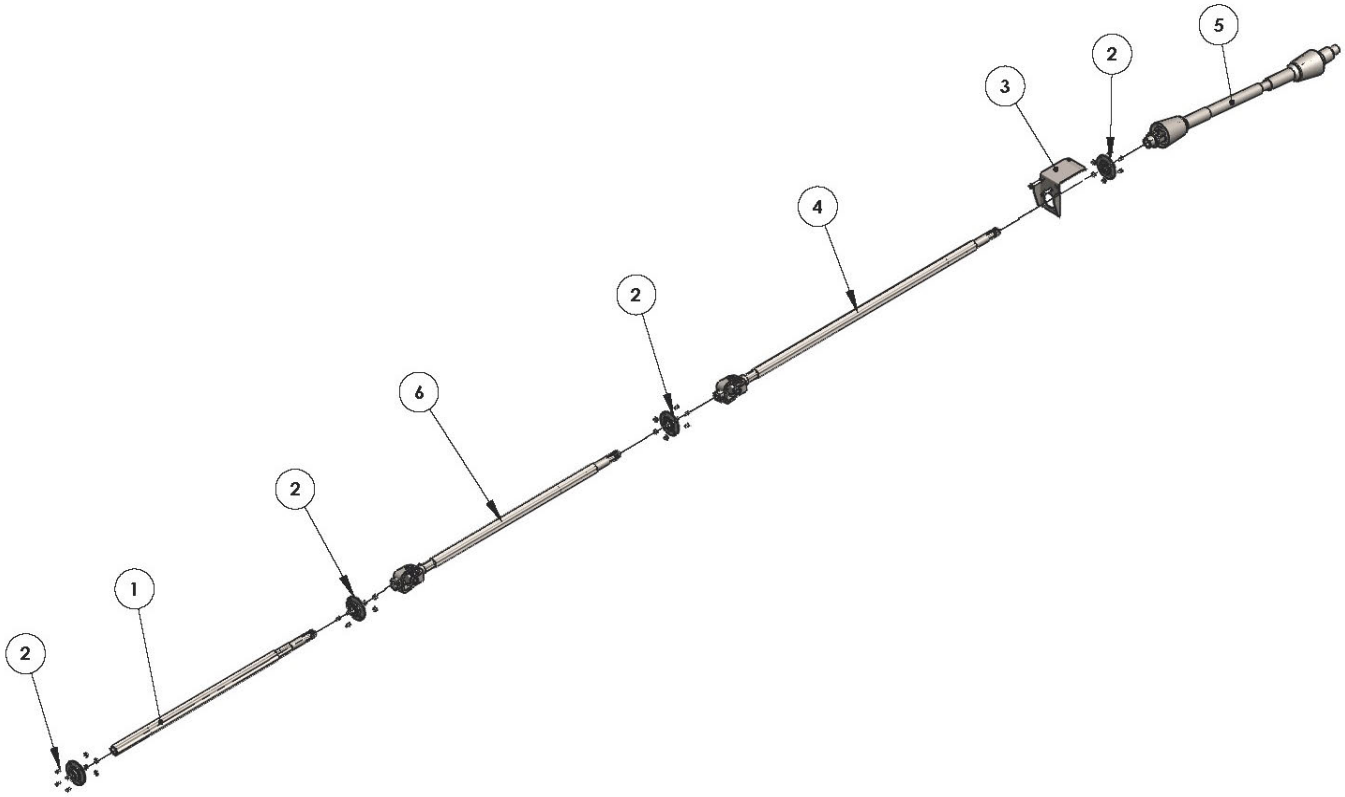


ITEM	QTY.	PART NO.	DESCRIPTION
1	3	DUT64103	1-3/4 BEARING ASSEMBLY
2	1	DUT64104	REAR DRIVE SHAFT BEARING MOUNT
3	1	DUT102305	PTO REAR SHAFT 1 3/4, Z20-Z6
4	1	DUT102312	PTO FRONT INTERMEDIATE M-M
5	1	DUT102313	PTO INTERMEDIATE REAR M-F

FRONT PTO SHAFT OPTIONS		
ITEM	PART NO.	DESCRIPTION
1	DUT102306	1-3/8 Z21 SHAFT
2	DUT102307	1-3/4 Z20 SHAFT

12.10 DRIVELINE PARTS - BIOSPREADER 20

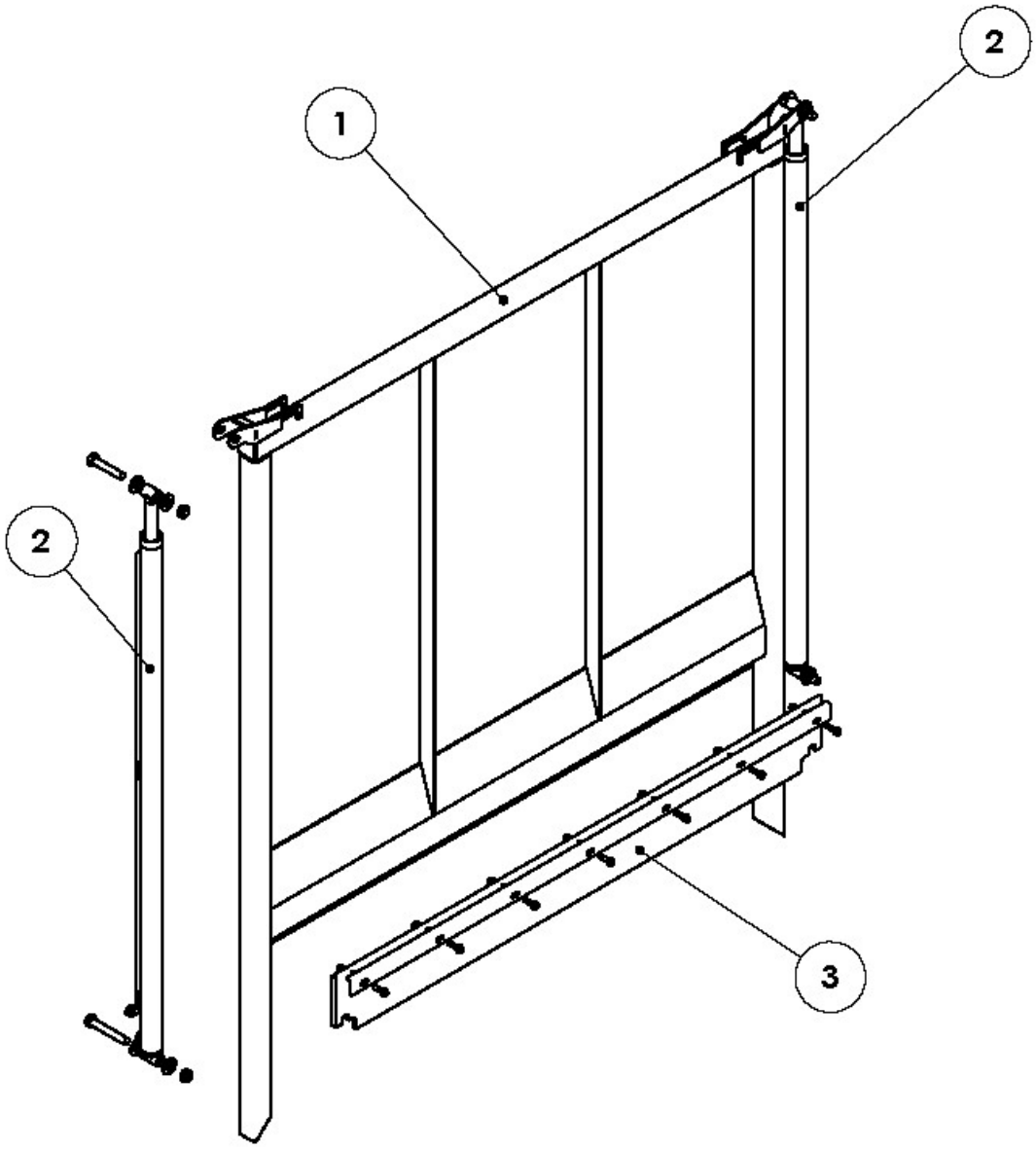
Part No. DUT74015



ITEM	QTY.	PART NO.	DESCRIPTION
1	1	DUT102385	PTO FRONT INTERMEDIATE M-M
2	4	DUT64103	1-3/4 BEARING ASSEMBLY
3	1	DUT74104	REAR DRIVE SHAFT BEARING MOUNT
4	1	DUT102313	PTO INTERMEDIATE REAR M-F
5	1	DUT102305	PTO REAR SHAFT 1 3/4, Z20-Z6
6	1	DUT102384	PTO INTERMEDIATE REAR M-F

FRONT PTO SHAFT OPTIONS		
ITEM	PART NO.	DESCRIPTION
1	DUT102306	1-3/8 Z21 SHAFT
2	DUT102307	1-3/4 Z20 SHAFT

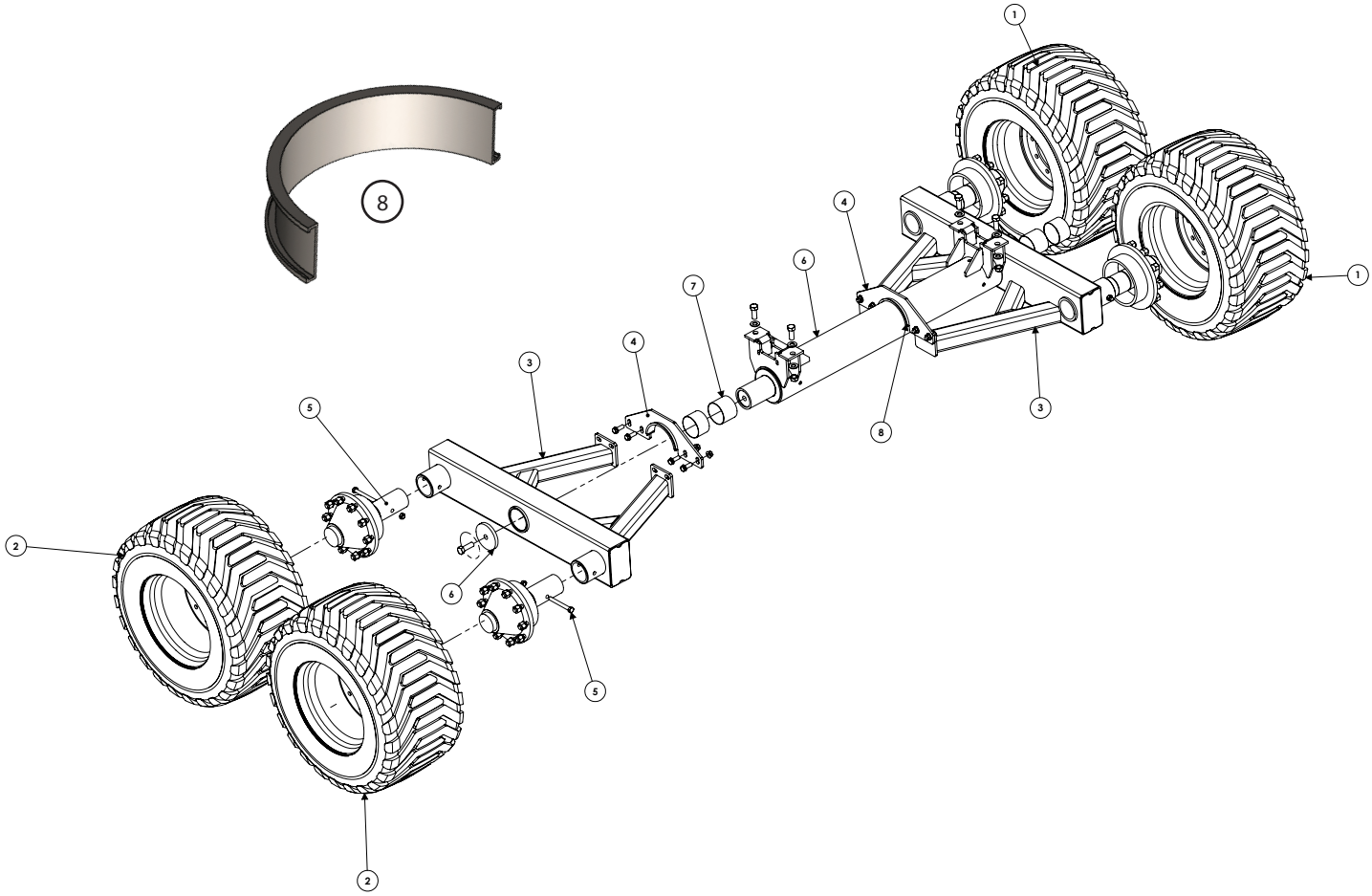
12.11 REAR GATE PARTS



ITEM	QTY	PART NO.	DESCRIPTION
1	1	DUT64039	SPREADER GATE
2	2	DUT64105	HYDRAULIC RAM ASSEMBLY
3	1	DUT64034	APRON SEAL ASSEMBLY

12.12 TANDEM AXLE PARTS – BIOSPREADER 14

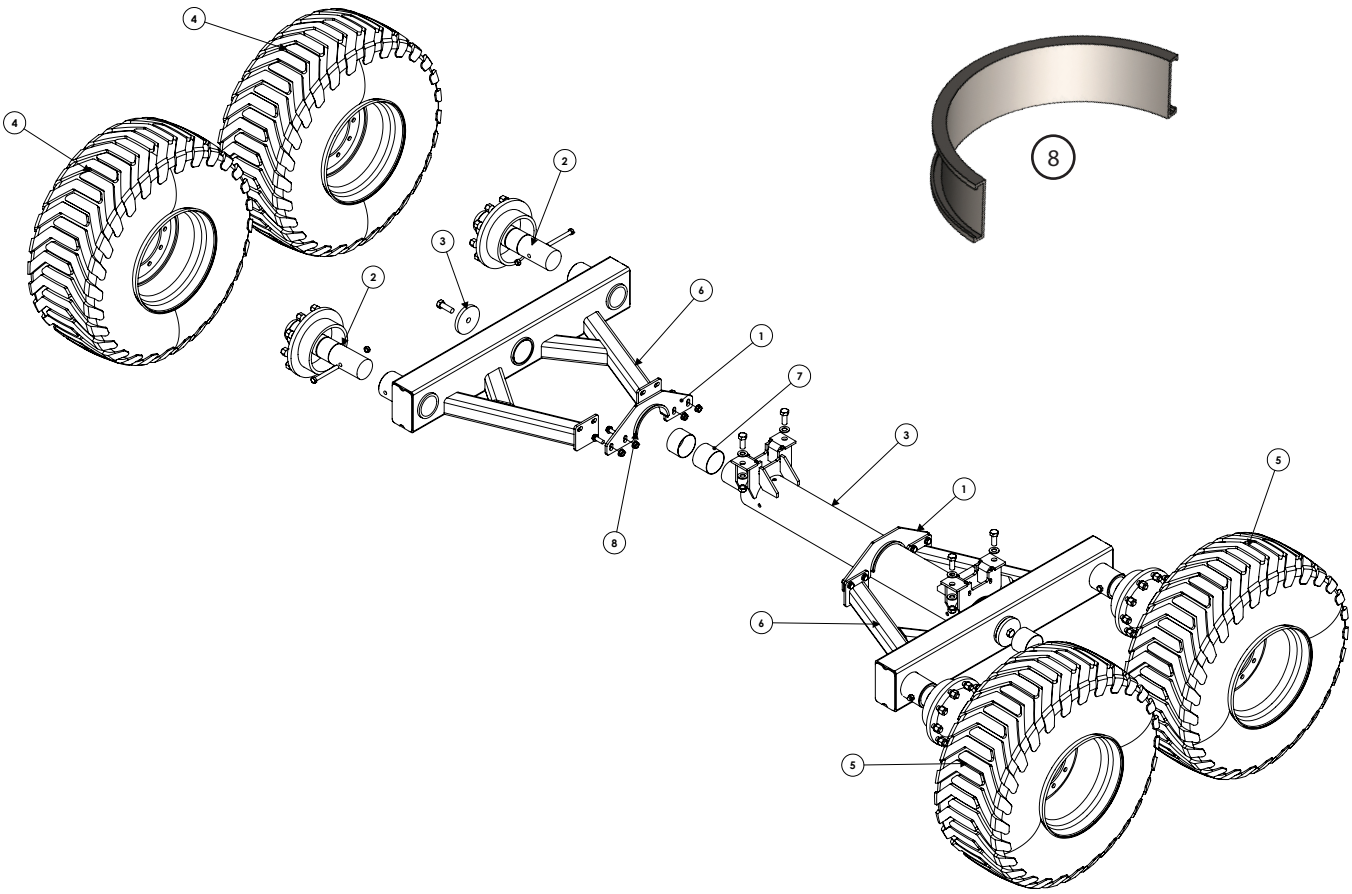
Part No. DUT64017



ITEM	QTY	PART NO.	DESCRIPTION
1	2	DUT64018	LEFT TIRE ASSEMBLY
2	2	DUT64019	RIGHT TIRE ASSEMBLY
3	2	DUT64052	WALKING BEAM ASSEMBLY
4	2	DUT64106	AXLE SADDLE ASSEMBLY
5	4	DUT64108	AXLE STUB ASSEMBLY
6	1	DUT64110	AXLE ROUND ASSEMBLY
7	4	DUT102294	COMPOSITE,5X0.125,98MM,BUSHING FOR TNDM
8*	2	DUT63003	UHMW CHANNEL,1/4X2,355MM,AXLE

12.13 TANDEM AXLE PARTS – BIOSPREADER 20

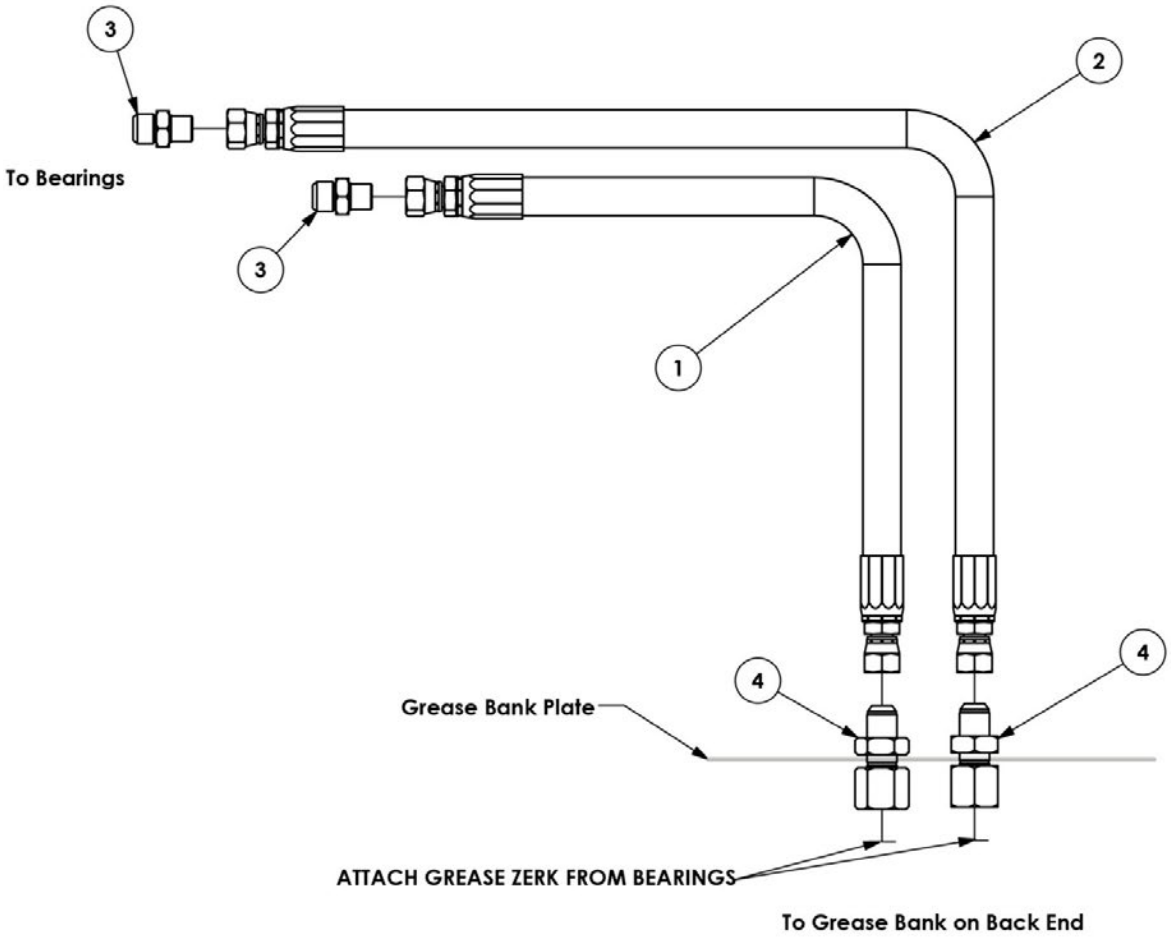
Part No. DUT74017



ITEM	QTY	PART NO.	DESCRIPTION
1	2	DUT64106	AXLE SADDLE ASSEMBLY
2	4	DUT64108	AXLE STUB ASSEMBLY
3	1	DUT64110	AXLE ROUND ASSEMBLY
4	2	DUT74018	LEFT TIRE ASSEMBLY
5	2	DUT74019	RIGHT TIRE ASSEMBLY
6	2	DUT74052	WALKING BEAM ASSEMBLY
7	4	DUT102294	COMPOSITE,5X0.125,98MM,BUSHING FOR TNDM
8	2	DUT63003	UHMW CHANNEL,1/4X2,355MM,AXLE

12.14 HYDRAULIC TOP BEARING GREASER

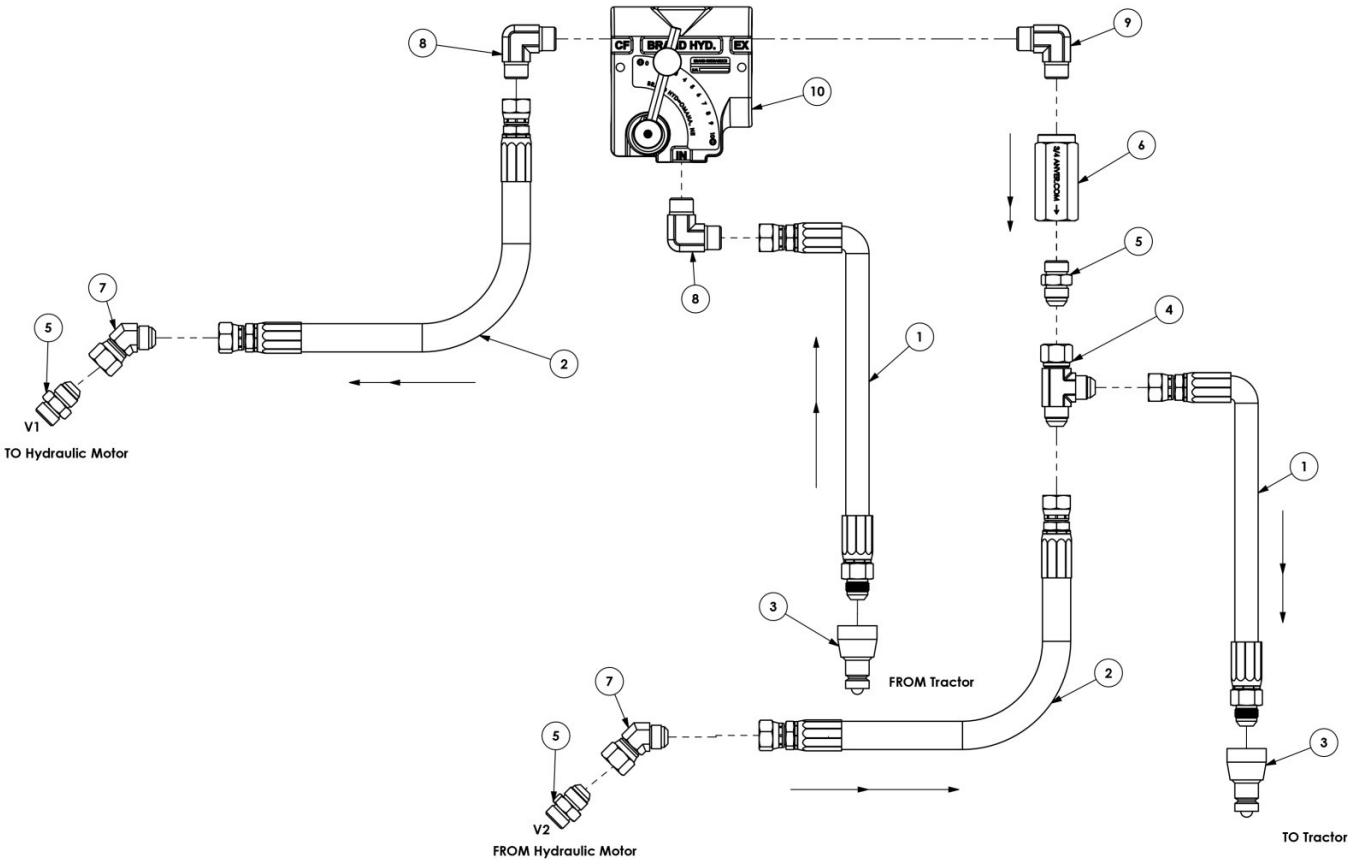
Part No. DUT102237



ITEM	QTY	PART NO.	DESCRIPTION
1	1	DUT102235	HOSE 4WC-4FJX,H14504 84.3INCH,4WC-4FJX
2	1	DUT102236	HYD. FITTING 4MJ-2MP
3	2	DUT112355	HOSE 4WC-4FJX, H14504 118.9INCH, 4WC-4FJX
4	2	DUT112546	HOSE 4WC-4FJX, H14504 84.3INCH, 4WC-4FJX

12.15 HYDRAULIC FLOOR DRIVE KIT – BIOSPREADER 14

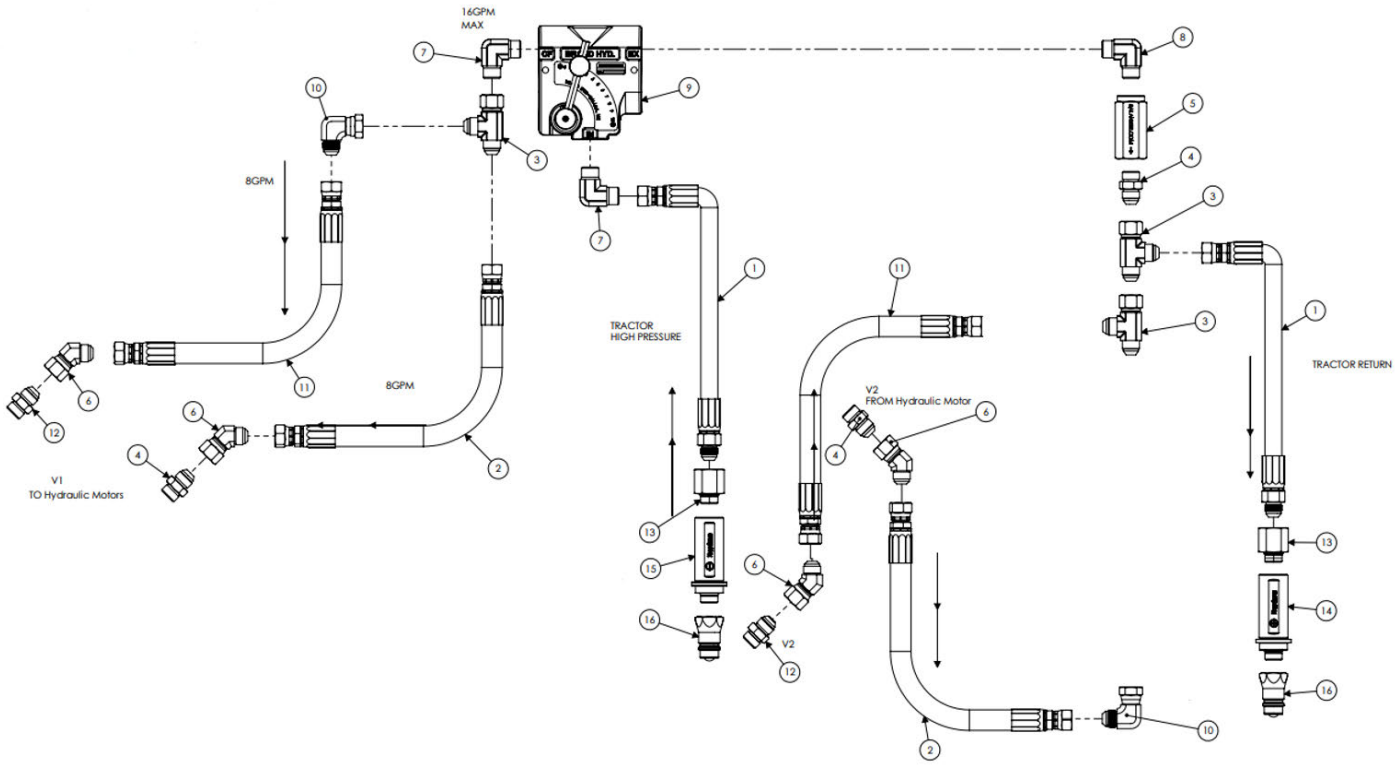
Part No. DUT102225



ITEM	QTY.	PART NO.	DESCRIPTION
1	2	DUT102227	HYD. FLOOR DRIVE - HOSE A
2	2	DUT102228	HYD. FLOOR DRIVE - HOSE B
3	1	DUT112244	HYD FITTING 8FJXR-8MJT
4	3	DUT112254	HYD FITTING 8MP-8MJ
5	1	DUT112255	HYD FITTING CHECK VALVE EDC30S
6	2	DUT112257	HYD FITTING 8MJ-8FJX45
7	2	DUT112265	HYD.FITTING 8MP-8MJ90
8	1	DUT112640	HYD FITTING 8MP-8MP90
9	1	DUT115001	FLOW CONTROL VALVE
10	2	DUT112781	HYD FITTING 8MB-8FP
11	1	141830	GRIP, HOSE - #8 ORB M - GREEN +
12	1	141831	GRIP, HOSE - #8 ORB M - GREEN -
13	2	DUT112687	HYD FITTING 8FB PIONEER QUICK COUPLER

12.16 HYDRAULIC FLOOR DRIVE KIT – BIOSPREADER 20

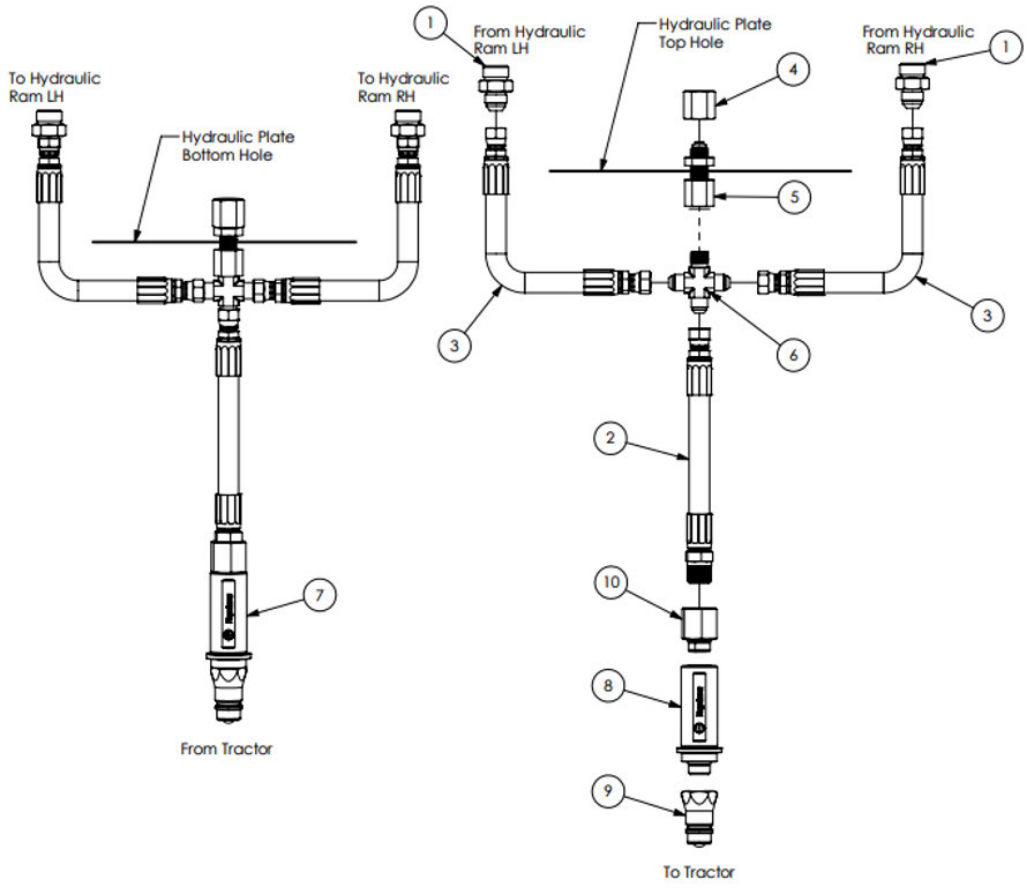
Part No. DUT102380



ITEM	QTY.	PART NO.	DESCRIPTION
1	2	DUT102227	HYD FLOOR DRIVE - HOSE A
2	2	DUT102381	8020 HYD FLOOR DRIVE - HOSE B
3	3	DUT112244	HYD FITTING 8FJXR-8MJT
4	3	DUT112254	HYD FITTING 8MP-8MJ
5	1	DUT112255	HYD FITTING CHECK VALVE EDC30S
6	4	DUT112257	HYD FITTING 8MJ-8FJX45
7	2	DUT112265	HYD.FITTING 8MP-8MJ90
8	1	DUT112640	HYD FITTING 8MP-8MP90
9	1	DUT115001	FLOW CONTROL VALVE
10	2	DUT112190	HYD.FITTING 8MJ-8FJX90
11	2	DUT102392	8020 HYD FLOOR DRIVE - HOSE C
12	2	DUT112284	HYD FITTING 7/8 ORB to 3/4 JIC
13	2	DUT112781	HYD FITTING 8MB-8FP
14	1	141830	GRIP, HOSE - #8 ORB M - GREEN +
15	1	141831	GRIP, HOSE - #8 ORB M - GREEN -
16	2	DUT112687	HYD FITTING 8FB PIONEER QUICK COUPLER

12.17 HYDRAULIC SLURRY GATE KIT – BIOSPREADER 14

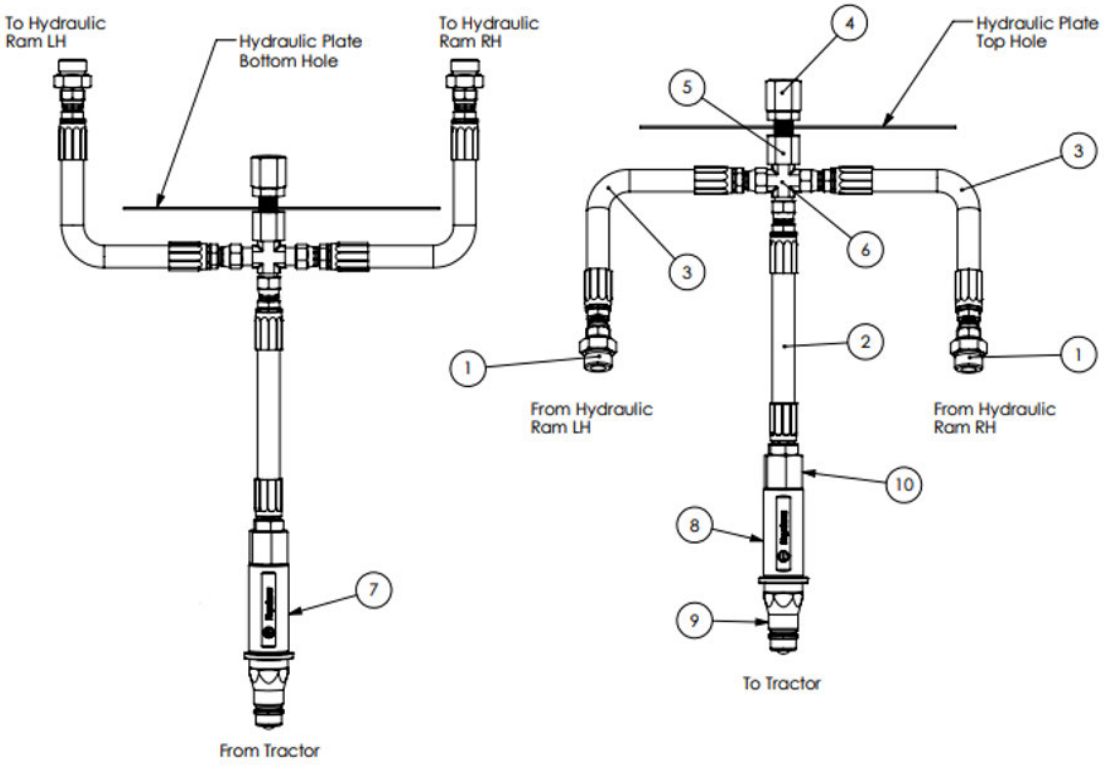
Part No. DUT102226



ITEM	QTY.	PART NO.	DESCRIPTION
1	4	DUT102212	HYD. FITTING-6MB-6MJ ADAPTER
2	2	DUT102229	HYD SLURRY GATE - HOSE C
3	4	DUT102230	HYD SLURRY GATE - HOSE D
4	2	DUT112196	HYD.FITTING 6FJCN
5	2	DUT112642	HYD FITTING FEMALE NPT - MALE JIC
6	2	DUT113062	HYD FITTING M JIC - M NPT CROSS
7	1	141832	GRIP, HOSE - #8 ORB M - BLUE +
8	1	141833	GRIP, HOSE - #8 ORB M - BLUE -
9	2	DUT112687	HYD FITTING 8FB PIONEER QUICK COUPLER
10	2	DUT112781	HYD FITTING 8MB-8FP

12.18 HYDRAULIC SLURRY GATE KIT – BIOSPREADER 20

Part No. DUT102387



ITEM	QTY.	PART NO.	DESCRIPTION
1	4	DUT102212	HYD. FITTING-6MB-6MJ ADAPTER
2	2	DUT102229	HYD SLURRY GATE - HOSE C
3	4	DUT102388	8020 HYD SLURRY GATE - HOSE D
4	2	DUT112196	HYD.FITTING 6FJCN
5	2	DUT112642	HYD FITTING FEMALE NPT - MALE JIC
6	2	DUT113062	HYD FITTING M JIC - M NPT CROSS
7	1	141832	GRIP, HOSE - #8 ORB M - BLUE +
8	1	141833	GRIP, HOSE - #8 ORB M - BLUE -
9	2	DUT112687	HYD FITTING 8FB PIONEER QUICK COUPLER
10	2	DUT112781	HYD FITTING 8MB-8FP

13. STORAGE

For extended periods of non-use, the spreader should be prepared for storage.
Clean the spreader by manually removing material. Pressure wash the entire spreader.

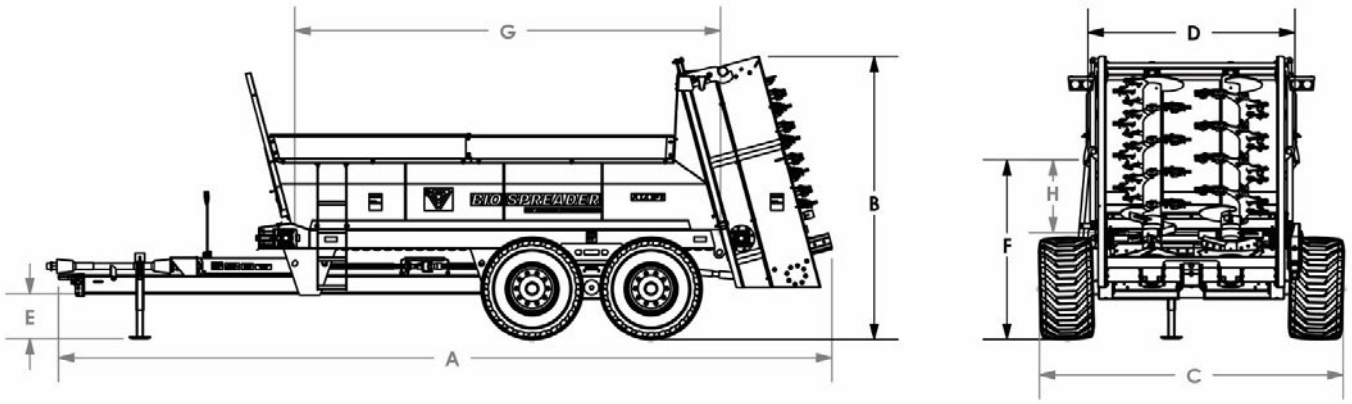
IMPORTANT: Do not high-pressure wash bearings and gear boxes directly. High pressure water can get past seals and cause damage.

14. IDENTIFICATION PLATE

The machine serial number is required with all orders for spare parts and technical enquires.
The identification plate with the machine serial number is attached on the left side and on the rear facing surface of the front main cross structure tubing.

15. DIMENSIONS - BIOSPREADER 14

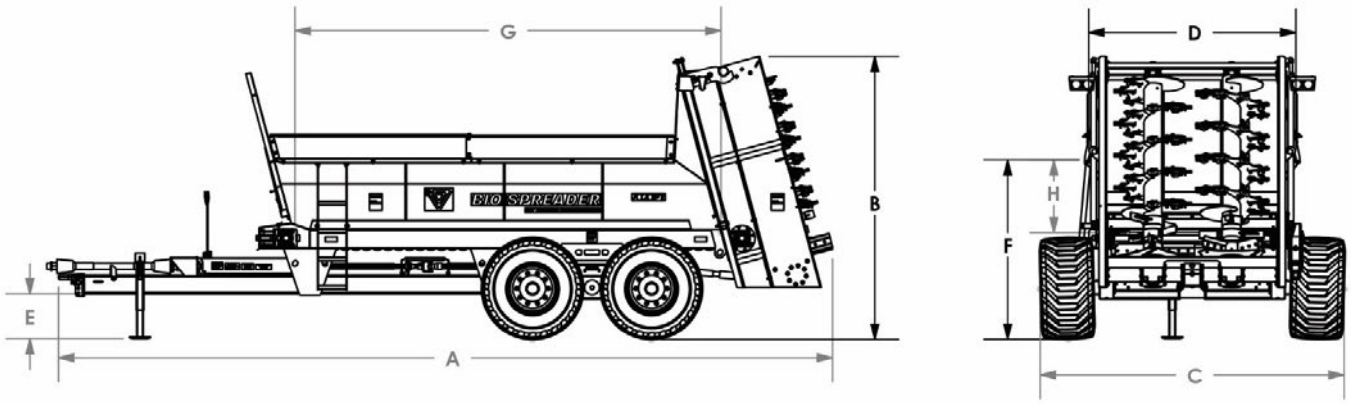
Unloaded Mass – 14,000 lbs. (6,350 Kg)
Loaded Mass – 42,000 lbs. (19,050 Kg)



OVERALL LENGTH		OVERALL HEIGHT		OVERALL WIDTH		BOX INSIDE WIDTH		HITCH HEIGHT		LOADING HEIGHT		BOX INSIDE LENGTH		BOX INSIDE HEIGHT	
A		B		C		D		E		F		G		H	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
321	8153	119	3010	127	3226	72.5	1842	19	483	74.8	1900	197	4991	33	838

16. DIMENSIONS - BIOSPREADER 20

Unloaded Mass – 15,500 lbs. (7,050 Kg)
Loaded Mass – 57,100 lbs. (26,000 Kg)



OVERALL LENGTH		OVERALL HEIGHT		OVERALL WIDTH		BOX INSIDE WIDTH		HITCH HEIGHT		LOADING HEIGHT		BOX INSIDE LENGTH		BOX INSIDE HEIGHT	
A		B		C		D		E		F		G		H	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
355	9017	122	3100	128	3251	72.5	1842	19	483	92.5	2360	227	5766	45	1143

INSTALLING BIOSPREADER EXTENSIONS

TOOLS REQUIRED:

- ¾" Wrench
- ¾" Socket wrench
- 2-4 Vice clamps
- 9/16" metal drill bit
- Drill
- 8 Ft Ladder

BIOSPREADER EXTENSIONS

Side extensions are available from Degelman Industries for the Degelman BioSpreader 14 and 20. These side extensions are retrofittable to existing 14 and 20 BioSpreader. The extensions add a volume of about 90 cubic feet to the 14 and about 130 cubic feet to the 20. The extra volume results in increased weight on the axles and a draw bar. Customers wishing to add the extensions to a unit need to be aware of the change in increased stopping distance, tractor operational characteristics and draw bar loading.

Tractor Requirement

A 175 HP tractor with a category 3 hitch is recommend for use of a 14 and a 20 BioSpreader with side extensions kit DUT54161 and DUT74161, respectively.

Load Rating

BIOSPREADER 14

MAX. WEIGHT ON AXLE	36,000 LBS
MAX. WEIGHT ON HITCH	6,000 LBS
TARE WEIGHT	14,000 LBS
MAX. NET WEIGHT	28,000 LBS
MAX. GROSS WEIGHT	42,000 LBS

BIOSPREADER 20

MAX. WEIGHT ON AXLE	49,000 LBS
MAX. WEIGHT ON HITCH	8,200 LBS
TARE WEIGHT	15,600 LBS
MAX. NET WEIGHT	41,600 LBS
MAX. GROSS WEIGHT	57,200 LBS

Spreader Loading

It is best practice to load the rear of the spreader first to avoid unnecessary loading on the tractor draw bar.

Warranty

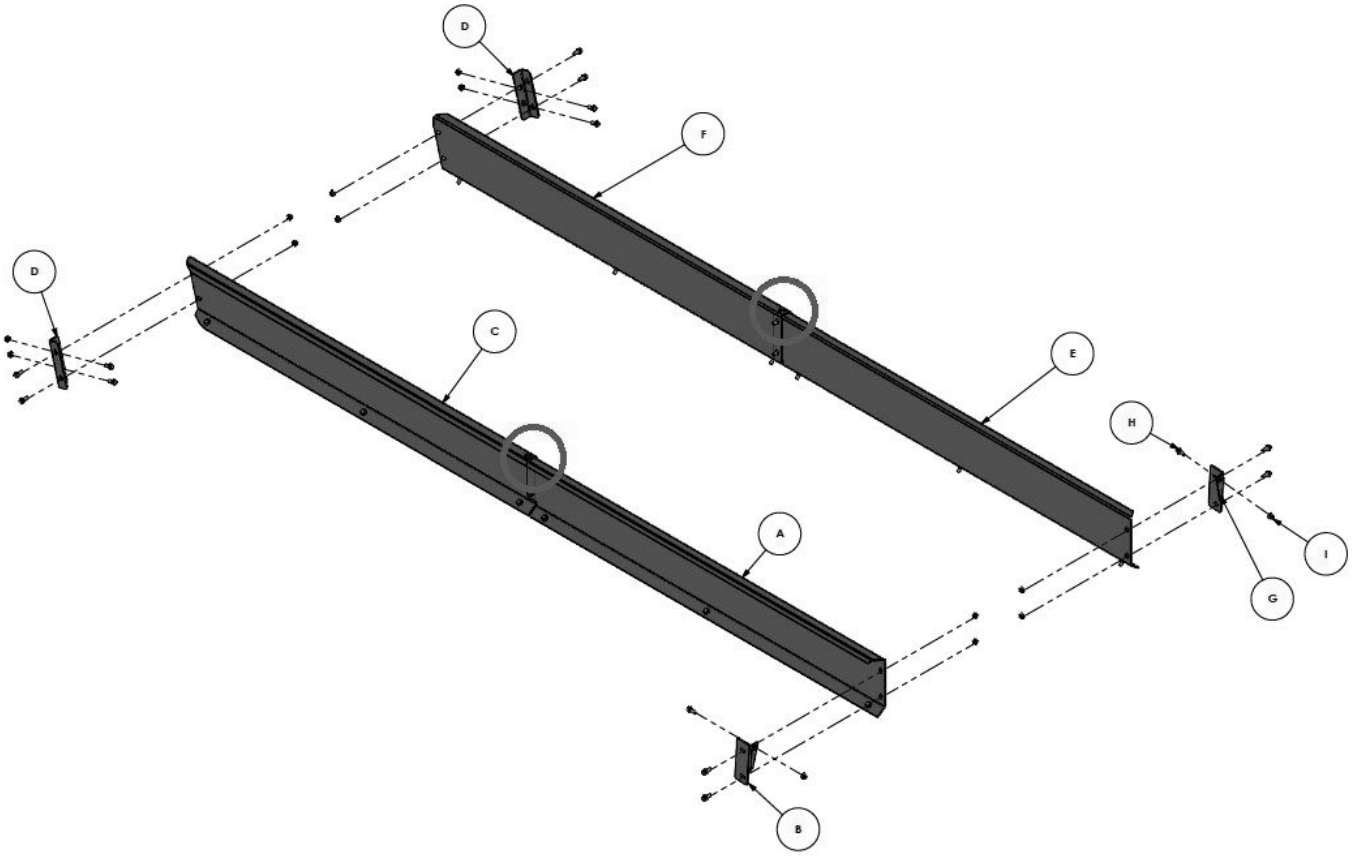
Degelman Industries does not assume any liabilities or make warranties regarding the performance or structure of the tractor. Modification to the 14 and 20 BioSpreader or side extension kit (DUT54161 and DUT74161) to add additional capacity beyond the level of a 14 and a 20 BioSpreader with extension kit DUT54161 and DUT74161, respectively, will void warranty. Not installing the side extension kit per installation instructions will void warranty.

17. EXTENSION KIT PARTS

BIOSPREADER 14 EXTENSIONS - 54161			
ITEM	QTY.	PART NO.	DESCRIPTION
A	1	DUT51239	PFLF,0.188,44W,9.00,EXTENSION LEFT BACK
B	1	DUT51240	PFLF,0.188,44W,0.10,EXTENSION LEFT BACK
C	1	DUT51241	PFLF0.188,44W,9.00,EXTENSION HALF L FRT
D	2	DUT51242	PFLF,0.188,44W,0.30,EXTENSION FRNT ANGLE
E	1	DUT51243	PFLF,0.188,44W,9.00,EXTENSION RIGHT BACK
F	1	DUT51244	PFLF,0.188,44W,9.00,EXTENSION R FRONT
G	1	DUT51245	PFLF,0.188,44W,0.30,EXTENSION R REAR ANG
H	32	DUTHHW12114PLC5	FLANGE BOLT, 1/2 X 1 1/4
I	32	DUTFN12PL	FLANGE NUT, 1/2

BIOSPREADER 20 EXTENSIONS - 74161			
ITEM	QTY.	PART NO.	DESCRIPTION
A	1	DUT71239	PFLF,0.188,44W,13.125.20T EXTENSION LEFT BACK
B	1	DUT71240	PFLF,0.188,44W,0.10,20T EXTENSION L REAR ANG
C	1	DUT71241	PFLF,0.188,44W,13.125,20T EXTENSION HALF L FRT
D	2	DUT71242	PFLF,0.188,44W,0.30,20T EXTENSION FRNT ANGLE
E	1	DUT71243	PFLF,0.188,44W,13.125,20T EXTENSION, RIGHT BACK
F	1	DUT71244	PFLF,0.188,44W,13.125,20T EXTENSION HALF R FRT
G	1	DUT71245	PFLF,0.188,44W,0..10,20T EXTENSION R REAR ANG
H	40	DUTHHW12114PLC5	FLANGE BOLT 1/2 x 1 1/4
I	40	DUTFN12PL	FLANGE NUT, 1/2

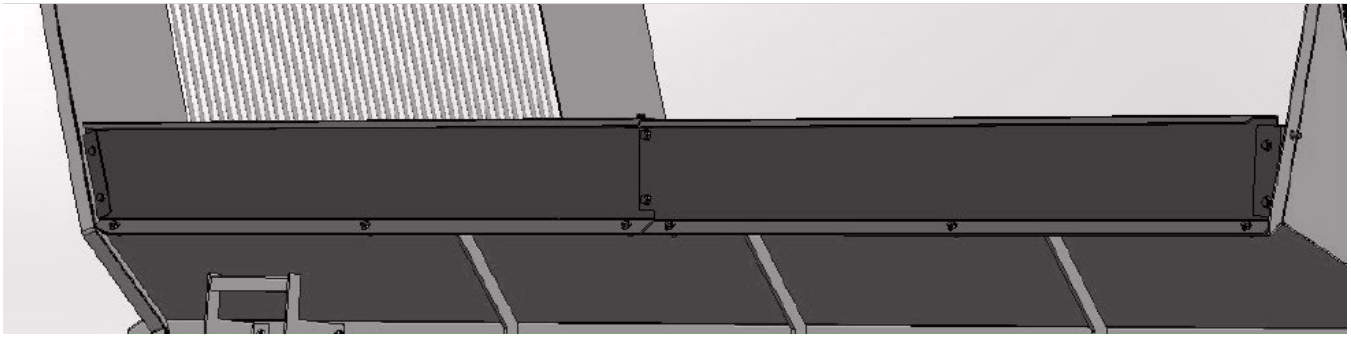
18. EXTENSION INSTALLATION INSTRUCTIONS

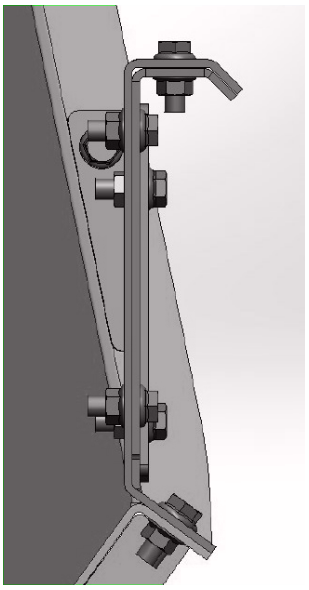


1. Assemble A, B, C, and D on ground using supplied hardware H and I. (Figure 1).
   a. Hand tighten only.
   b. Panel C should overlap panel A.
   c. Do not install middle top hardware. Location circled.
   d. Position angle brackets B, D on outer face of side panels A, B.

2. Assemble D, E, F, and G on ground using supplied hardware H and I (Figure 1).
   a. Hand tighten only.
   b. Panel F should overlap panel E.
   c. Do not install middle top hardware. Location circled.
   d. Position angle brackets D, G on outer face of side panels F, G.

3. Lift into place on spreader. Each bolted side extension weighs approx. 142 LB, engage other people to help or use appropriate lifting equipment.



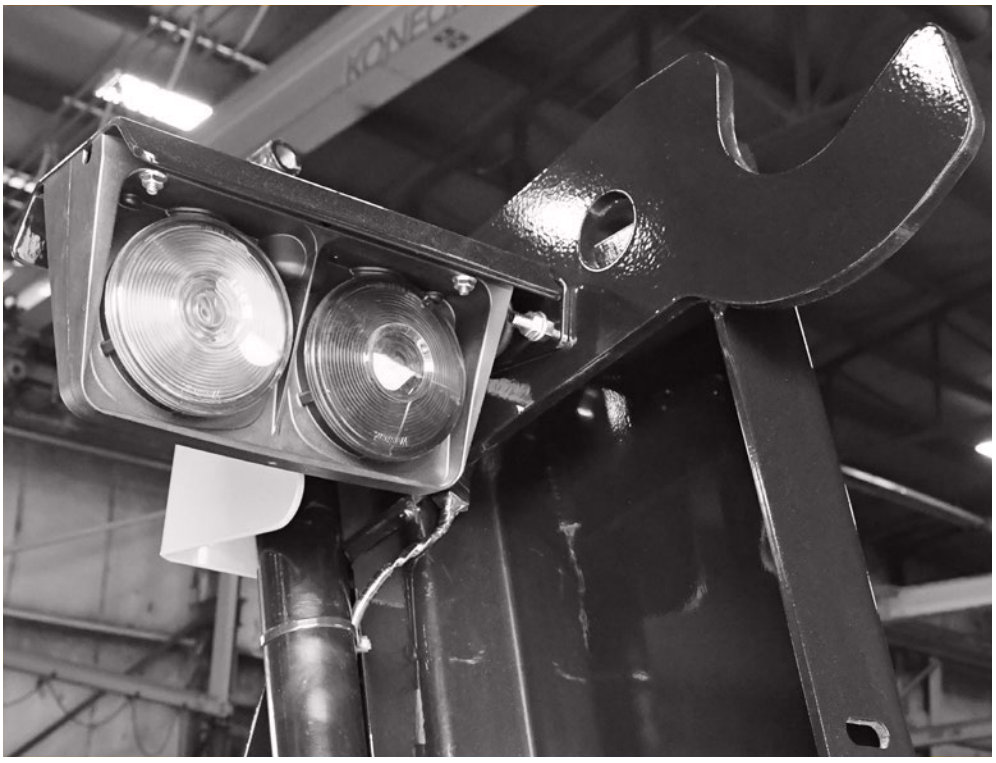


4. Clamp in place with vice clamps.
   a. Extensions should line up flush with edge of the BioSpreader wall lip. (Figure 2, 3).
5. If model does not have bolt holes in side walls, mark each hole location and drill using a 9/16" drill bit. 9 holes per side.
6. Use supplied hardware H and I to secure the extensions to spreader body. (Figure 3).
7. Replace eye bolt used in step 3 with H- DUTHHW12114PLC5 ½" x 1 ¼" Flange bolt.
8. Tighten all hardware, and torque to 57 ft - lbs approximately.
9. Repeat for other side.

INSTALLING LIGHTS

TOOLS NEEDED:

- 3/8″ Socket wrench
- 7/16″ Wrench
- 9/16″ Socket and Wrench
- 16 Ft Fishing tape
- 8 Ft Ladder



19. LIGHT PACKAGE INSTALLATION INSTRUCTIONS

Assemble lights to light bracket before installing onto machine.

1. Insert two 3/8 ″ x 1 1/2" bolts into each light bracket.
2. Using 1/4 ″ x 1" bolts and nuts, attach each light to the light bracket.
3. Install light each bracket with the 3/8″ nuts and the previous 3/8″ bolts. Ensure the wiring is inset into the lighting housing facing towards the machine.
4. Yellow lights should be on the outside. Red lights should be visible from the rear. (Figure 4).
5. Run supplied wiring harness.
   a. Wires are labelled LEFT and RIGHT. Follow hydraulic hoses from front to back.
   b. Start by inserting LEFT and RIGHT wires through the top hole of the hydraulic plate. (Figure 5).
   c. Fish wires through each side of the spreader and follow up hydraulic rams to each light. (Figure 6, 7).
   d. Zip tie wiring to hydraulic ram. (Figure 7).
   e. All extra length should be in the front and secured.

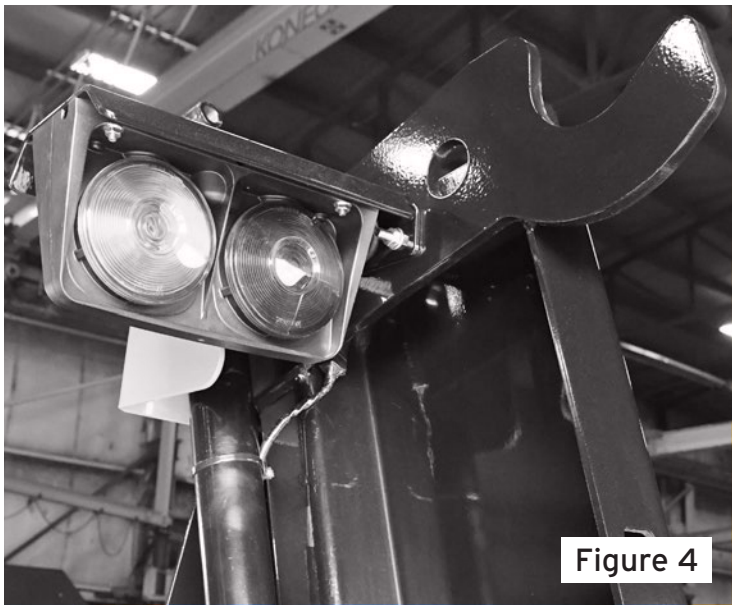


Figure 4

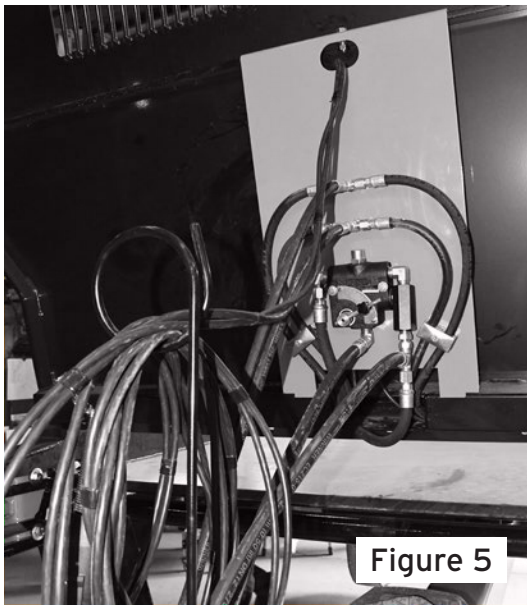


Figure 5

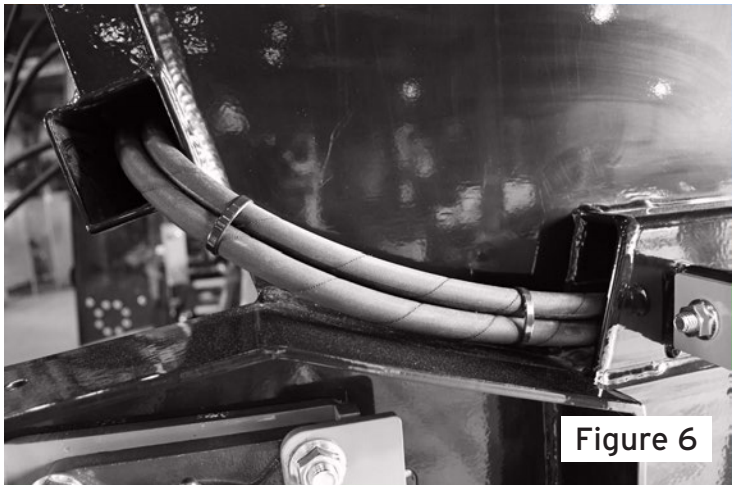


Figure 6

Figure 7

WARRANTY

Retail Customer's Responsibility Under Degelman Warranty.

It is the retail customer and/or Operator's responsibility to read the Operator's Manual, to operate, lubricate, maintain and store the equipment in accordance with all instructions and safety procedures. Failure of the operator to read the operators manual is a misuse of this equipment.

It is the retail customer and/or operators responsibility to inspect the product and to have any part(s) repaired or replaced when continued operation would cause damage or excessive wear to other parts or cause safety hazard.

It is the retail customer's responsibility to deliver the product to the authorized Degelman dealer, from whom he purchased it, for service or replacement of defective parts, which are covered by warranty. Repairs to be submitted for warranty consideration must be made within forty-five days of failure.

It is the Retail Customer's responsibility for any cost incurred by the dealer for hauling of the product for the purpose of performing a warranty obligation or inspection.

WARRANTY INFORMATION

Make certain the warranty registration card has been forwarded to:

Degelman Industries LP
Box 830 - 272 Industrial Dr.
Regina, SK, Canada
S4P 3B1

Always give your dealer the serial number of your Degelman product when ordering parts or requesting service or other information.

In the space provided record the model number, the serial number and the date of purchase to assist your dealer in providing you with prompt and efficient service.

SERIAL NUMBER: _____

MODEL NUMBER: _____

DATE OF PURCHASE: _____

2 Year
Limited Warranty - Agricultural Products

Degelman Industries LP ("Degelman") warrants to the original purchaser of any new Degelman equipment, purchased from an authorized Degelman dealer, that the equipment will be free from defects in material and workmanship for a period of two (2) years from the date of delivery, for non-commercial use (including farm, institutional, government, and municipality) and (1) year from the date of delivery for commercial use. The obligation of Degelman to the purchaser under this warranty is limited to the repair or replacement of defective parts in the first year and to the provision, but not the installation of replacement parts in the second year. Degelman reserves the right to inspect any equipment or parts which are claimed to have been defective in material or workmanship.

This warranty limits its replacement or repair coverage to what is consistent with the warranty of Degelman's suppliers of purchased components.

Replacement or repair parts installed in the equipment covered by this limited warranty are warranted for ninety (90) days from the date of delivery of such part or the expiration of the applicable new equipment warranty period, which ever occurs later. Warranted parts shall be provided at no cost to the user at an authorized Degelman dealer during regular working hours. Warranted replacement parts will either be replaced or rebuilt at Degelman's discretion.

Disclaimer of implied warranties & consequential damages

This warranty shall not be interpreted to render Degelman Industries LP liable for injury, death, property damage or damages of any kind, whether direct, consequential, or contingent to property. Without limiting the generality of the foregoing, Degelman shall not be liable for damages resulting from any cause beyond its reasonable control, including, without limitation, loss of crops, any expense or loss of labour, supplies, rental machinery or loss of use.

No other warranty of any kind whatsoever, express or implied is made with respect to this sale; and all implied warranties of merchantability and fitness for a particular purpose which exceed the obligations set forth in this written warranty are hereby disclaimed and excluded from this sale. This exclusion shall not apply in any jurisdiction where it is not permitted by law.

This limited warranty shall not apply:

1. If, in the sole opinion of Degelman, the unit has been subjected to misapplication, abuse, misuse, negligence accident or incorrect off-site machine set-up.
2. To any goods that have sustained damage or deterioration attributable to a lack of routine maintenance (eg. Check and Re-torque of fastening hardware, Hydraulic fluid purities, drive train alignments, and clutch operation)
3. If parts not made or supplied by Degelman have been used in the connection with the unit, if, in the sole judgement of Degelman such use affects its performance, safety, stability or reliability.
4. If the unit has been altered or repaired outside of an authorized Degelman dealership in a manner which, in the sole judgement of Degelman, affects its performance, safety, stability or reliability.
5. To expendable or wear items such as (eg. Harrow tines, Rock Picker and Rock Rake wear teeth and replaceable bushings and pins.) and any other items that in the company's sole judgement are a wear item.

No employee or representative of Degelman Industries LP is authorized to change this limited warranty in any way or grant any other warranty unless such change is made in writing and signed by the Degelman Service Manager.

This limited warranty is subject to any future availability of supply, which may directly affect Degelman's ability to obtain materials or manufacture replacement parts.

Degelman reserves the right to make improvements in design or changes in specifications at any time, without incurring obligations to owners of equipment previously delivered.

This limited warranty is subject to compliance by the customer to the enclosed Retail Customer's Responsibility Under Degelman Warranty.