



OPERATION, MAINTENANCE, and PARTS MANUAL

DURASPREAD DRY FERTILIZER SPREADERS







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LIMITED WARRANTY

Fast Ag Solutions, LLC (Fast Ag Solutions) warrants to the buyer that the new machinery is free from defects in material and workmanship.

This warranty is only effective as to any new machinery which has not been altered, changed, repaired or treated since its delivery to the buyer, other than by Fast Ag Solutions or its authorized dealers or employees, and does not apply to accessories, attachments, tools or parts, sold or operated with the new machinery, if they have not been manufactured by Fast Ag Solutions.

Fast Ag Solutions shall only be liable for defects in the materials or workmanship attributable to faulty material or bad workmanship that can be proved by the buyer, and specifically excludes liability for repairs arising as a result of normal wear and tear of the new machinery or in any other manner whatsoever, and without limiting the generality of the foregoing, excludes application or installation of parts not completed in accordance with this operator's Manual, specifications, or printed instructions.

Written notice shall be given by registered mail, to the Manufacturer within seven (7) days after the defect shall have become apparent or the repairs shall have become necessary, addressed as follows:

Fast Ag Solutions, LLC
4130 Commerce Boulevard
Windom, MN 56101

This warranty shall expire one (1) year after the date of delivery of the new machinery.

If these conditions are fulfilled, Fast Ag Solutions shall at its own cost and at its own option either repair or replace any defective parts provided that the buyer shall be responsible for all expenses incurred as a result of repairs, labor, parts, transportation or any other work, unless Fast Ag Solutions has authorized such expenses in advance.

The warranty shall not extend to any repairs, changes, alterations, or replacements made to the new equipment other than by Fast Ag Solutions or its authorized dealers or employees.

This warranty extends only to the original owner of the new equipment.

Rubber parts (including tires, hoses, grommets) are not warranted.

This warranty is limited to the terms stated herein and is in lieu of any other warranties whether express or implied, and without limiting the generality of the foregoing, excluded all warranties, express or implied or conditions whether statutory or otherwise as to quality and fitness for any purpose of the new equipment. the Manufacturer disclaims all liability for incidental or consequential damages.

This Rotary Hoe is subject to design changes and Fast Ag Solutions shall not be required to retrofit or exchange items on previously sold units except at its own option.

Warranty void if not registered.



OPERATION, MAINTENANCE, & PARTS

DRY FERTILIZER SPREADER WARRANTY REGISTRATION & INSPECTION REPORT

Warranty Registration

This form must be filled out by the dealer and signed by both the dealer and the customer at the time of delivery.

Customer Name				
Address				
City		State		Zip
Phone				

Dealer Name				
Address				
City		State		Zip

Model Number				
Serial Number				
Delivery Date				

DEALER INSPECTION REPORT

- All Fasteners Tight
- Wheel Bolts Torqued
- Hydraulic Hoses and Fittings Free and Tight
- Fertilizer Hoses and Fittings Free and Tight
- Wheel Drive Turns Freely
- Lubricate Machine
- Check Tire Pressure
- Frame and Wings Level
- Monitors and Controllers Function
- Wiring Harness Connected

SAFETY

- Safety Chain Installed
- All Guards Installed
- All Safety Signs Installed
- Reflectors, SMV and Lights Clean
- Review Operating and Safety Instructions

I have thoroughly instructed the buyer on the above-described equipment which review included the Operator's Manual content, equipment care, adjustments, safe operation and applicable warranty policy.

Date _____
Dealer's Rep. Signature _____

The above equipment and Operator's Manual have been received by me and I have been thoroughly instructed as to care, adjustments, safe operation and applicable warranty policy.

Date _____
Owner's Signature _____

White - FAST
Yellow - Dealer
Pink - Customer



OPERATION, MAINTENANCE, & PARTS

DS-8, DS-8W, DS10, DS-10W, & DS2-10 DRY FERTILIZER SPREADERS

DURASPREAD SERIAL NUMBER _____

DATE PURCHASED _____ / _____ / _____

SPREAD WIDTH _____



General Information

All rights, especially copying and distribution rights are reserved. No part of this publication may be reproduced in any form or by any means, electronic or mechanical, including photocopying, without express written permission from Fast Ag Solutions.

Parts information in this Manual represents components installed when product was manufactured based upon the best available information. Modifications made subsequent to initial delivery are not included. Always verify the parts and color required when ordering parts.

If you have any questions, please contact your Fast Ag Solutions Parts and Service Department.

Parts Ordering Guide

1. Provide the Serial Number of your Chassis or System when ordering.
2. Use the Part Number and Description when ordering parts.
3. Provide the Page Title and Page Number if required.

Parts Searching Guide

To search this PDF by keyword, name, description or part number, use **ctrl + f** for simple searches or **ctrl + shift + f** for advanced searches.

Explanation of Parts Lists

The parts lists are broken down sub-assemblies and listed in 4 columns:

- **ITEM** - These numbers are found on the illustration associated with the parts list.
- **NS** - This item is NOT SHOWN, included for reference.
- **QTY.** - This is the quantity of parts needed in an assembly.
- **AR** - The quantity of this item is AS REQUIRED for the location.
- **PART NO.** - These are the part numbers associated to the ITEM.
- **DESCRIPTION** - This is the description of the part.

INTRODUCTION



Read this Manual carefully before operating your Fast Ag Solutions (Fast) equipment. The information presented will prepare you to safely operate and service your machine.

Require all operators to read this Manual carefully and be acquainted with all the operating and adjustment procedures before attempting to operate. Failure to follow the information in this Manual and on decals may result in personal injury or equipment damage.

This Manual should be considered a permanent part of this equipment and should remain with the equipment when you sell it. Replacement manuals can be obtained from your Fast dealer.

This equipment has been engineered and manufactured to provide dependable and satisfactory use. Like all mechanical products, it will require cleaning and upkeep. Inspect your equipment before putting it into service. Your authorized Fast dealer has trained mechanics, genuine Fast service parts, and the necessary tools and equipment when service is needed. Use only genuine Fast parts for service or repairs. Substitute parts will void the warranty and may not meet standards for safe and satisfactory operation.

Warranty is provided as part of Fast's support program for customers who operate and maintain their equipment as described in this Manual. The warranty is explained on the warranty certificate you should have received from your dealer. This warranty provides you with the assurance that Fast will back its products where defects appear within the warranty period. Should the equipment be abused, or modified to change its performance beyond the original factory specifications, the warranty will become void.

These instructions have been compiled from 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. However, due to

possible in-line 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.

FOREWORD

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 and safety signs on your machine may also be available in other languages.

THIS MANUAL SHOULD BE CONSIDERED a permanent part of your machine and should remain with the machine when you sell it.

MEASUREMENTS in this Manual are given in both metric and customary U.S. unit equivalents. Use only correct replacement parts and fasteners. Metric and inch fasteners may require a specific metric or inch wrench.

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

WRITE PRODUCT IDENTIFICATION NUMBERS (P.I.N.) in the [Specification](#) section. Accurately record all numbers to help in tracing machine should it be stolen. Your dealer also needs these numbers when you order parts. File identification numbers in a safe place off machine.

BEFORE DELIVERING THIS MACHINE, your dealer performed a pre-delivery inspection.

THIS DRY FERTILIZER SPREADER IS DESIGNED SOLELY for use in customary agricultural or similar operations for the purpose of applying crop inputs ("INTENDED USE"). Use in any other way is considered as contrary to the intended use. The manufacturer accepts no liability for damage or injury resulting from this misuse, and these risks must be borne solely by the user. Compliance with and strict adherence to the conditions of operation, service and repair as specified by the manufacturer also constitute essential elements for the intended use.

THIS DRY FERTILIZER SPREADER SHOULD BE OPERATED, serviced and repaired only by persons familiar with all its particular characteristics and acquainted with the relevant safety rules (accident prevention). The accident prevention regulations, all other generally recognized regulations on safety and occupational medicine and the road traffic regulations must be observed at all times. Any arbitrary modifications carried out on this DRY FERTILIZER SPREADER will relieve the manufacturer of all liability for any resulting damage or injury.



OPERATION, MAINTENANCE, & PARTS

WARRANTY is provided as part of Fast's 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 assurance that Fast will back its products where defects appear within warranty period. In some circumstances, by Fast also provides field improvements, often without charge to customer, even if product is out of warranty. Should equipment be abused or modified to change its performance beyond original factory specifications, warranty will become void and field improvements may be denied. Setting fuel delivery above specifications or otherwise overpowering machines will result in such action.

TIRE MANUFACTURER'S warranty applicable to your machine may not apply outside U.S.

If you are not the original owner of this machine, it is in your interest to contact your local Fast dealer to inform them of this unit's serial number. This will help Fast notify you of any issues or product improvements.



Pre-Delivery

After the machine has been completely assembled, inspect to be sure it is in good running order before delivering to the customer. The following checklist is a reminder of points to inspect. Check off each item as it is found satisfactory or after proper adjustment is made.

- SMV emblem installed; protective shipping tape removed from reflectors and lights are installed.
- All grease fittings have been lubricated. (See [LUBRICATION AND MAINTENANCE](#) section in this Manual.)
- Inspect to be sure all nuts have been tightened to proper torque and all cotter pins spread.
- Tires are properly inflated. Tighten wheel bolts to specified torque.
- Make sure fertilizer coulters are properly adjusted.
- Warning lights are properly installed and operational.
- Make sure all customer-ordered attachments have been installed or are available for delivery.
- Any parts scratched in shipment have been touched up with paint.
- Remove all shipping decals.
- This machine has been thoroughly checked and to the best of my knowledge is ready for delivery to the customer.
- Verify transport pins are inserted in transport hole.

Signed: _____

Date: _____



Delivery

At the time the machine is delivered, following checklist is a reminder of information which should be conveyed directly to the customer. Check off each item as it is fully explained to customer.

- Tell customer to use proper tools.
- Explain to customer that life expectancy of this or any other machine depends on regular lubrication as directed in operator's Manual.
- Give operator's Manual to customer and explain all operating adjustments.
- Make customer aware of all safety precautions that must be followed while using this machine.
- When machine is transported on a road or highway at night or during day, accessory lights and devices should be used for adequate warning to operators of other vehicles. In this regard, tell customer to check local governmental regulations.
- To the best of my knowledge, this machine has been delivered ready for field use and customer has been fully informed as to proper care and operation.

Signed: _____

Date: _____



After-Sale

The following is a suggested list of items to be checked at a dealer-customer mutually agreeable time during the first operating season.

- Check with customer as to performance of machine. Make certain proper operating adjustments are understood.
- If possible, operate machine to see that it is functioning properly.
- Acquaint customer with any special attachment which will help do a better job.
- Go over entire machine for loose or missing hardware.
- Check for broken or damaged parts.
- Ask customer if recommended periodic lubrication has been performed.
- Review operator's Manual with customer and stress importance of proper lubrication and safety precautions.

Signed: _____

Date: _____

SAFETY

The most important safety device on this equipment is a safe operator. It is the operator's responsibility to read and understand and follow all safety and operating instructions in this Manual.

As the operator, you are responsible for the safe operation and maintenance of this equipment. You must ensure that you and anyone else who is going to operate, maintain or work around the machine is familiar with the operating and maintenance procedures and related safety information contained in this Manual.

You are the key to safety. Good safety practices protect you and people around you. Be certain that everyone operating this equipment is familiar with the recommended operating and maintenance procedures and follows all safety precautions. Do not risk injury or death by ignoring good safety practices.

Safety Alert Symbols and Signal Words

Throughout this Manual, the terms Caution, Warning, and Danger are used along with the safety alert symbol to indicate the degree of personal safety hazard. The term Important is used to indicate that failure to observe the hazard can cause damage to the equipment.



SAFETY ALERT SYMBOL

A SAFETY ALERT SYMBOL means there is a hazard. Become Alert! Your Safety is Involved!



CAUTION

The word CAUTION indicates a potentially hazardous situation that if not avoided may result in minor or moderate injury.



DANGER

The word DANGER indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.

IMPORTANT

The word IMPORTANT indicates that failure to observe can cause damage to equipment.



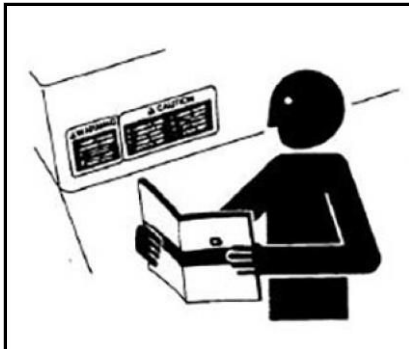
WARNING

The word WARNING indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.

NOTE

The word NOTE indicates helpful information.

General Safety



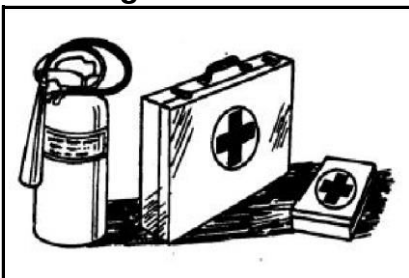
Carefully read and follow all safety messages in this Manual and safety signs (decals) on equipment.

A safety sign may contain more than one hazard message and more than one avoidance panel.

Keep the equipment in proper working condition. Unauthorized modifications to the equipment 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 Fast dealer.

Prepare for Emergencies



Keep a fire extinguisher and first aid kit handy. Know how to use them.

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

Keep the Poison Control emergency telephone number for your area on equipment before using chemicals.

Have the chemical container and SDS available when seeking medical attention.

Personal Protection Equipment (PPE)



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

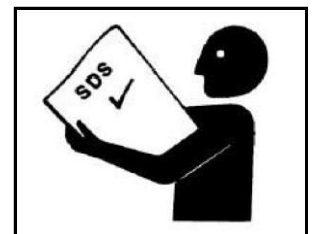
Wear the appropriate protective clothing and devices as described on the chemical SDS sheet.

Handle Chemicals Safely

Direct exposure to hazardous chemicals can cause serious injury.

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

Read the chemical manufacturers warning, instructions and procedures before starting and follow them exactly.



Potentially hazardous chemicals are used with Fast equipment include such items as lubricants, coolants, paints, and adhesives.

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

Keep Riders Off Machine

Do not allow riders on the equipment or the tractor during operation or transport.

Riders are subject to injury from being struck by foreign objects, exposure to chemicals, and being thrown off the machine.



Riders obstruct the operator's view resulting in the machine being operated in an unsafe way.

Riders are subject to exposure to chemicals as they are being applied which could create a health hazard.

Maintenance Safety

Understand service procedures before starting work.

Keep service area clean and dry.

Never lubricate, service or adjust machine while it is moving. Keep hands, feet and clothing from power-driven parts.

Lower equipment to the ground.

Relieve pressure before serving or disconnecting from the tractor.

Stop the engine. Remove the key. Allow the machine to cool.

Securely support all machine elements that must be raised for service work. Use tools, jacks, and hoists of sufficient capacity for the job.

Clear area of bystanders when making adjustments, servicing or repairing the equipment.

Use adequate lighting for the job.

Keep all parts in good condition and properly installed. Fix damaged components immediately. Replace worn and broken parts.

Remove any build-up of grease, oil, or debris.

Remove paint and any residue from solvents before welding or heating.

Waste Disposal Safety

Improper disposal of waste can threaten the environment and ecology. Potentially harmful waste used with Fast equipment includes oil, coolant, brake fluid, filters, and batteries.

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

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

Follow instructions on chemical containers or SDS sheets for disposal of chemicals, containers, and water used for cleaning the equipment.

Safety Signs (Decals) Keep safety signs in good condition.

Replace missing or damaged safety signs.

Be sure new equipment components and repair parts include the current safety signs.

Replacement signs are available from your Fast dealer.

Storage Safety

Do not disconnect implement from tractor with material remaining in box.

Store equipment away from human activity.

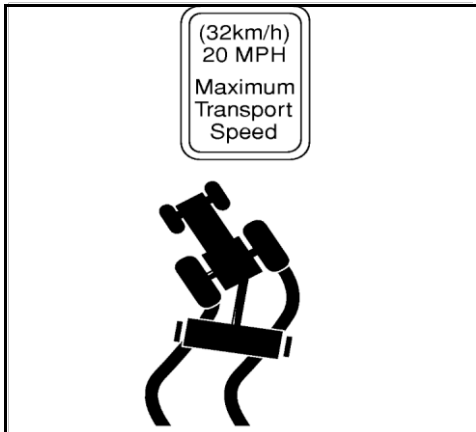
Do not allow children to play on or around the stored machine.

Securely block implement wheels before disconnecting implement from tractor.

Transportation Safety

Obey all applicable laws and regulations for transporting equipment.

Observe Maximum Transport Speed



CAUTION: Be sure all bystanders are clear of applicator.

IMPORTANT: Transport applicator only with tank **EMPTY** to prevent applicator damage.

This spreader is not equipped with service or parking brakes.

The maximum transport speed for this implement is 20 mph (32 km/h).

Some tractors are capable of operating at speeds that exceed the maximum transport speed of this implement. Regardless of the maximum speed capability of the tractor being used to tow this implement, do not exceed the implement's maximum transport speed.

Exceeding the implement's maximum transport speed can result in:

Loss of control of the tractor/implement combination

Reduced or no ability to stop during braking
Implement tire failure

Damage to the implement structure or its components

Use additional caution and reduce speed when towing under adverse surface conditions, when turning, and when on inclines.

For transport, the weight of your **EMPTY** spreader must not be more than 1.5 times the weight of the tractor. However, for safe field operation, the minimum towing tractor weight is strongly recommended to be selected based of the fully-loaded weight of your DuraSpread spreader.

Never tow this implement with a motor vehicle. Tow only with a properly ballasted tractor.

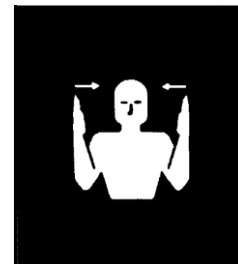
EC Compliance Notification

**MACHINE DOES NOT COMPLY WITH
MACHINERY DIRECTIVE 2006/42/EC
NOT FOR EUROPEAN MARKET**

WARNING: Environmental transportation hazard. A loaded machine driven on public roads has a high risk of tire failure. Do not use the machine for transporting product on public roads.

Never transport with the spreader bin(s) filled with fertilizer or any other product.

Use a Signal Person



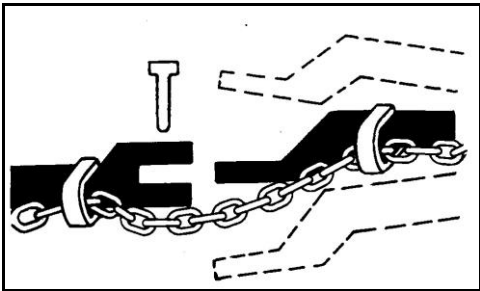
Use a signal person to direct movement of the tractor/fertilizer cart combination, whenever the tractor operator's view is obstructed.

Designate one individual as **THE** signal person. Always have signal person stand in clear view. Be sure signal person stays a safe distance away from the machine when it is moving.

Prior to starting the tractor, discuss hand signals and what each signal means to avoid misunderstandings and confusion which could result in a serious injury or fatal accident for someone.

Keep all bystanders away whenever the machine is moved.

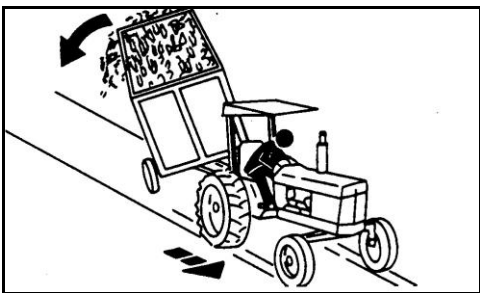
Use a Safety Chain



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.

Tow Loads Safely



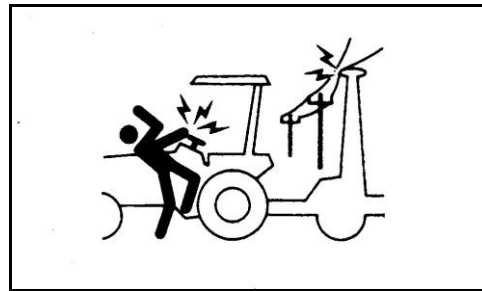
Stopping distance increases with speed and weight of towed loads, and on slopes. Towed loads with or without brakes that are too heavy for the tractor or are towed too fast can cause loss of control. Consider the total weight of the equipment and its load.

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

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

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

Avoid Overhead Power Lines



CAUTION: Keep away from overhead power lines. Serious injury

or death may result. Proceed cautiously under overhead power lines and around utility poles. Know the transport height of your machine. Electrocutation can occur without direct contact with overhead electrical lines.

Prepare for Transport

CAUTION: Avoid serious injury or death to your or others. Never tow machine behind a truck or other motor vehicle. This machine is designed only to be towed with a properly sized and ballasted tractor.

Use a tractor large enough to maintain control. Properly ballast tractor for towing your machine. Refer to tractor operator's Manual and this Manual to ensure that machine can be safely transported with your tractor.

Be aware of height and width restrictions to avoid collision with overpasses or other road users.

Always fold wings fully. If wing fold cylinders are removed, chain wings together to prevent accidental lowering.

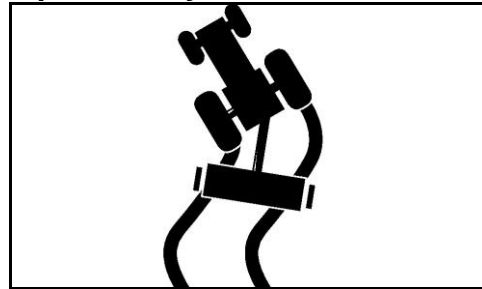
Fully raise frame, close hydraulic lock-up valve (if equipped) and install transport/ service locks before transporting. Latch the tractor brakes together.

Attach proper size safety chain for load being towed. Refer to USE A SAFETY CHAIN (in this section).

IMPORTANT: Do not transport on a roadway unless machine is equipped with proper functioning lights and reflective marking/emblems. Ensure that the lights and reflective marking/emblems are clean and visible. Contact your Fast dealer for lights and lighting harnesses.

Always follow local and national regulations for equipment size, lighting and marking before driving on public roadways. You are responsible for understanding and complying with all requirements regarding roadway transport. Refer to USE SAFETY LIGHTS AND DEVICES (in this section).

Transport Safely



IMPORTANT: When transporting, always travel at a reasonable and safe speed which permits adequate control of steering and stopping. Reduce speed considerably when traveling over rough ground. Be certain everyone is clear of machine.

Refer to OBSERVE MAXIMUM TRANSPORT SPEED (in this section).

Do not exceed weight and speed guidelines (in this section).

Towed loads can swerve, upset or cause loss of control. Refer to TOW LOADS SAFELY (in this section).

Shift tractor into a lower gear when transporting down steep slopes or hills; never coast. Stop slowly.

Wide turns may be required with machine in tow. Use caution in traffic and in congested areas.

To improve stability when traveling through the field, wings should be unfolded from transport position as soon as possible after leaving the roadway.

IMPORTANT: When transporting machine on a roadway, ALWAYS USE appropriate lamps and devices for adequate warning to operators of other vehicles.

Refer to USE SAFETY LIGHTS AND DEVICES (in this section).



Operation Safety

Read and understand this Operator's Manual and all safety signs before using.

Before each use inspect the entire machine. Check tightness of nuts and bolt and fittings.

Keep hands, feet, hair, and clothing away from all moving parts.

Do not allow riders on the equipment or tractor.

Make sure everyone is clear of the machine before filling equipment tank, starting tractor engine or beginning operation.

Read chemical or fertilizer manufacturers warnings, instructions, and procedures before starting and follow them exactly.

Do not breathe, touch, or ingest chemicals or fertilizers. Always wear protective clothing and follow safe handling procedures.



OPERATION, MAINTENANCE, & PARTS

SPECIFICATIONS

FEATURE	DS-8	DS-10	DS2-10 50/50	DS2-10 60/40
Capacity (Weight)	8 Tons (7.25 Tonne)	10 Tons (9.07 Tonne)		
Hopper Length	120" (3.05 m)	148" (3.76 m)		
Hopper Width	93" (2.36 m)			
Hopper Capacity (Volume)	200 ft ³ (5.66 m ³)	270 ft ³ (7.64 m ³)	135 ft ³ /135 ft ³ (3.82 m ³ /3.82 m ³)	162 ft ³ /108 ft ³ (4.59 m ³ /3.06 m ³)
Overall Length	230" (5.84 m)	250" (6.35 m)		
Overall Width	120" (3.05 m)			
Empty Weight	4,900 lbs. (2.22 Tonne)	5,900 lbs. (2.68 Tonne)		
Ground Clearance	45" under spinners / 37" under frame (1.14 m / 0.94 m)			
Spread Pattern	DS-8: 60' (18.3 m) DS-8W: 90' (27.4m)	DS-10: 60' (18.3 m) DS-10W: 90' (27.4m)	90' (27.4m)	
Hopper Construction	409 Stainless Steel			
Spinner Drive System	Std: 540/1000 PTO Option: Hydraulic	Hydraulic		
Spinners	Dual Gearbox Driven			
Jack	5,000 lbs. (2.27 Tonne)			
Hitch	Std: HD Clevis Opt.: CAT4 Bull Pull	CAT4 Bull Pull		
Axle	Adjustable 80" - 120" (2.03 m – 3.05 m)			
Conveyor Drive	Std: 2 SPD Ground Opt.: Hydraulic	Hydraulic		
SRT Roll tarp	Standard			
Tires & Wheels	380/90R46 Singles	380/90R46 Singles, Opt.: Duals or Floaters		
Light Kit	Standard			
Variable Rate Ready	Optional	Standard		
Scale Kit with Monitor	Optional			
Standard Powder Coat Paint Colors	Gunmetal Gray			



PREPARING MACHINE

Before attempting to use or operate the spreader it is important to be thoroughly familiarized with the contents of this Manual. Then the machine should be checked using the following check list:

1. Ground drive tire inflated to 22 PSI. Tires inflated to manufacturing specifications.
2. All bearings lubricated and tightly mounted with collars securely locked. (See lubrication schedule page 5.)
3. Conveyor chains, drive chain & ground drive chain adjusted to correct tension. Conveyor chain should be flush or just below the bottom of the trough in the area approximately 2' behind the front roller.
4. Sprockets tightened & in proper alignment.
5. Inspect entire machine for loose bolts, especially in the spinner assembly and drive line area.
6. Distributor fan blades set properly. (See spread adjustment and application rates)
7. Place 1/2" material on top of chain, lower gate to material, set pointer at 1".
8. Tighten wheel bolts daily – 95 foot-pounds single axle spreaders.
9. Check drive line for ease of operation by turning shaft by hand. If the foregoing inspection reveals that additional lubrication or adjustment is required, refer to the proper section of this Manual for detailed instructions.
10. Ground drive wheel and universal joint shear pins in place and tight.
11. Check both spinner gear boxes for oil; fill to level of pipe plug with SAE No. 90 non-detergent oil.



OPERATION, MAINTENANCE, & PARTS

LUBRICATION & MAINTENANCE

DAILY LUBRICATION SCHEDULE	DRIVELINE	ALL MODELS	(4) BEARINGS (2) U-JOINTS
		GROUND DRIVE	(1) BEARING (4) U-JOINTS (2) TELESCOPING TUBES
	CONVEYOR DRIVE	ALL MODELS	(6) BEARINGS
	GROUND DRIVE	ALL MODELS	(2) SHAFT HOUSINGS (2) U-JOINTS TELESCOPING TUBE (2) SQUIRTS OF SAE 90 OIL INTO JACK CRANK OIL CAP

Pay particular attention to the daily cleaning and greasing of the telescoping tube assembly.

WEEKLY LUBRICATION SCHEDULE	CHAINS	OIL	LUBRICATE PIN JOINTS WITH SAE 80-90
	PTO SHAFT	GREASE	(2) U-JOINTS AND SLIP TUBE
	SPINNER GEARBOX	GREASE	UNIVERSAL GREASE ON EACH FITTING UNDER SPINNER HUB

MONTHLY LUBRICATION SCHEDULE	DRIVE SHAFT SPLINES	COAT WITH GREASE OR ANTI-SEIZE COMPOUND
	SPINNER GEAR BOX	CHECK TO SEE THAT OIL LEVEL IS UP TO OIL LEVEL PLUG. USE SAE 90 OIL

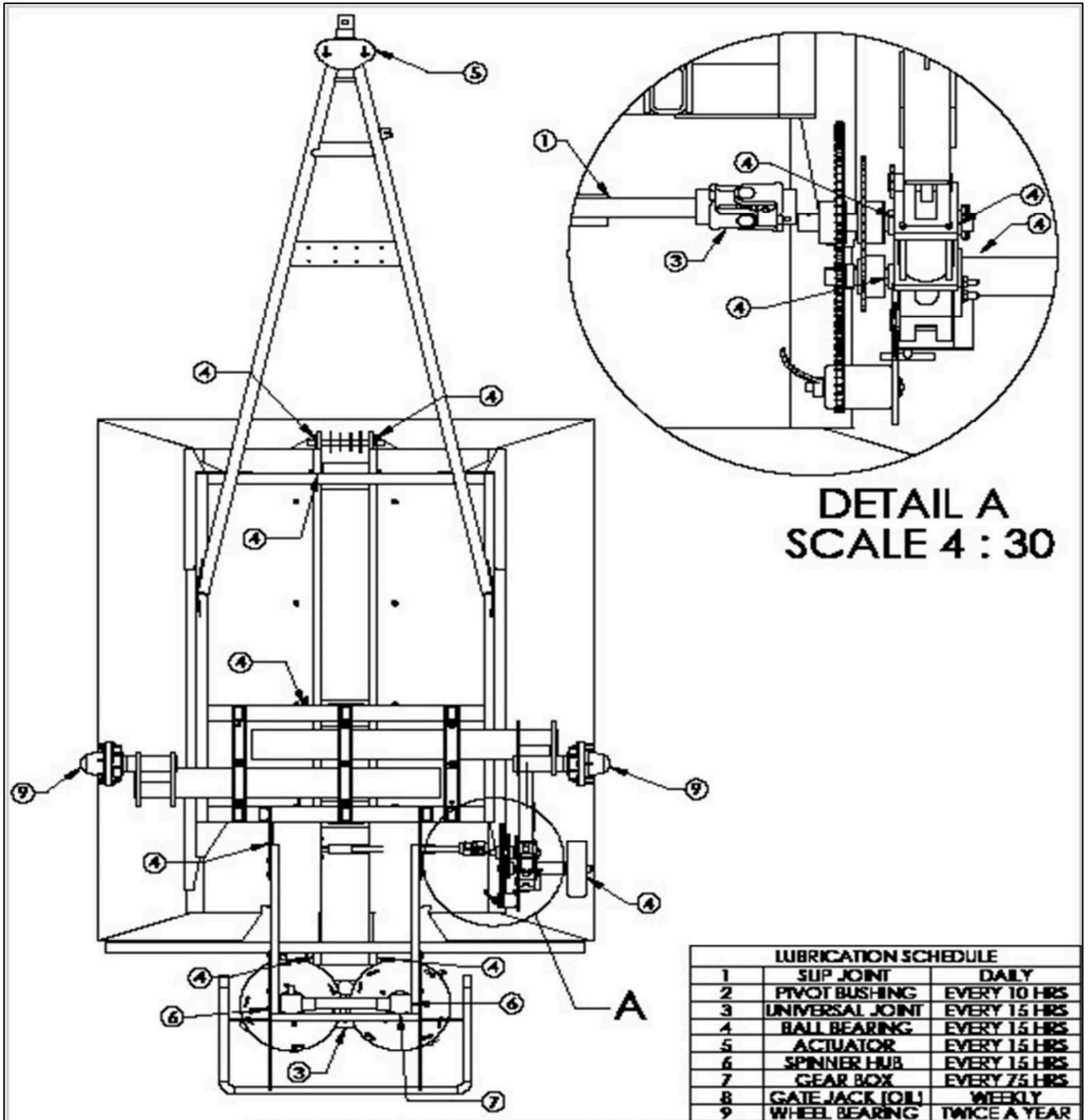
ANNUAL LUBRICATION SCHEDULE	WHEEL BEARINGS	REPACK
	GEAR BOXES	DRAIN, FLUSH, AND REFILL WITH SAE 90 OIL

MAINTENANCE SCHEDULE

WEEKLY	WASH SPREADER
	CHECK GROUND DRIVE TIRE INFLATION (22 PSI)
	CORRECT BELT TENSION
	ADJUST TENSION OF CONVEYOR AND DRIVE CHAINS (SEE MACHINE CHECKOUT)

SEMI-ANNUALLY	TIGHTEN LOOSE BOLTS
	REPLACE WORN OR FAILED PARTS
	TOUCH-UP PAINT

LUBRICATION DIAGRAM



OPERATION & ADJUSTMENT

SPREAD ADJUSTMENT AND APPLICATION RATES

For accurate and precise spreading rates, it is necessary that you know the weight in pounds per cubic foot of the material to be spread. If this is not known, the weight can be quickly and accurately determined by the following method:

1. Weigh an empty one-gallon container.
2. Fill level-full with the material to be used.
3. Weigh container and material, and then subtract the weight of the container to obtain the weight of the material.
4. Multiply the weight of the material by 7.5 to obtain the weight of the material in pounds per cubic foot.

Example: Typical Material-Potash

1)	Weight of empty one gallon container	1.00 lbs.
2)	Weight of filled container	10.35 lbs.
3)	Weight of container (net)	9.35 lbs.
4)	$9.35 \times 7.48 =$	69.938 lbs. /cu ft.

You would therefore use the column on the Spread Chart headed 70 to determine the proper gate opening for the desired application rate.

Your DuraSpread Spreader, with its heavy-duty distributor discs and blades, will apply most materials in a 50 foot wide swath. An operational characteristic of this type of machine is the possibility of overloading the distributors at high rates of application. Such an overload results in an alteration of the spread pattern to a narrower swath with heavier application at the center. This can be avoided by reducing speed when using high application rates.

IMPORTANT: DURASPREAD DISTRIBUTORS ARE DESIGNED FOR A MAXIMUM APPLICATION RATE OF 1500 POUNDS PER MINUTE OF AVERAGE 60 POUND PER CUBIC FOOT MATERIAL.



Caution: Be extra careful to check your spread pattern when using high application rates. Adjust your driving pattern to the actual delivered spread swath, the adjustment of the machine, and the material being used. Recommended ground or travel speed for most application rates (up to 700 pounds per acre) is 8 mph. When application rates are in excess of 700 pounds per acre, the ground speed should be proportionately reduced, (for example, at 1400 pounds per acre, maximum ground speed should be 4 mph.)

We recommend that for very high application rates, to insure uniformity of application, that two lighter application passes be made preferably placing your second pass over the lap lines of the first pass. This also is recommended practice when spreading under very windy conditions or with a material that segregates easily. If your effective spread pattern is more than 50 feet wide the Metering Gate setting should be increased proportionately, according to the

percentage of your spread width in excess of 50 feet. The gate setting should likewise be decreased if your effective spread pattern is less than 50 feet.

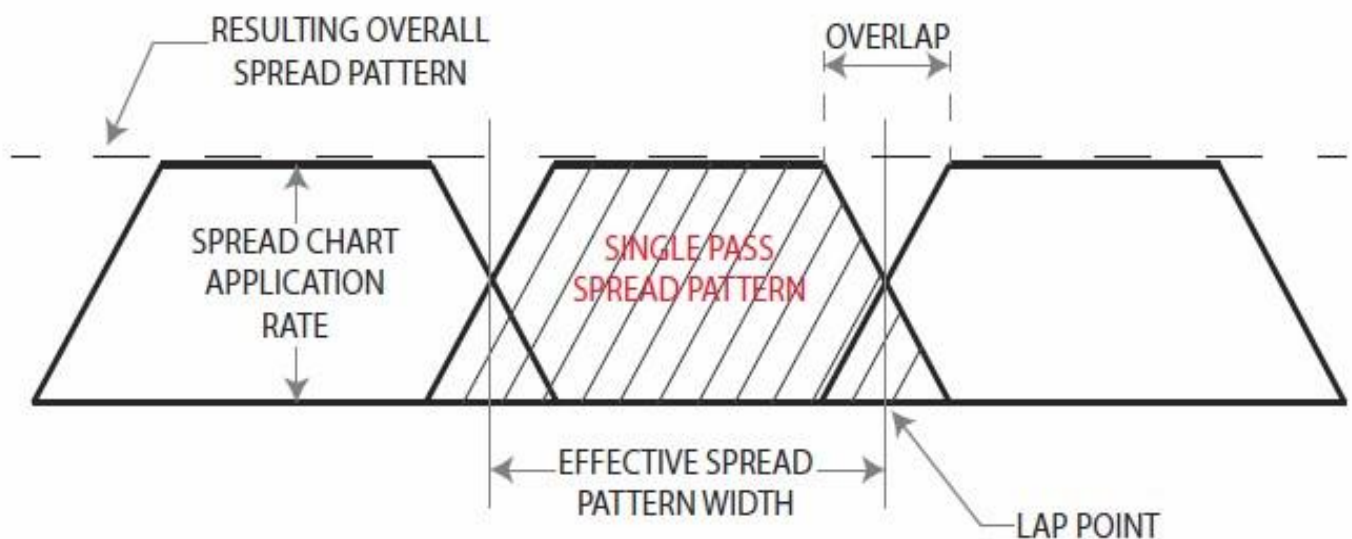
EXAMPLE: 60 foot effective spread width—increase gate setting from Spread Chart by 20%; 40 foot effective spread pattern width—decrease your gate setting from Spread Chart setting by 20%. Your spread pattern can be checked accurately and visually on a freshly worked, level area of ground. Such an area is also ideally suited to adjusting and fine tuning your machine. The following diagram graphically illustrates a typical spread pattern.



Caution: Do not operate your spreader with less than one and a half (1 1/2) inch of metering gate opening as material will compact against metering gate and cause failure of the conveyor chain.

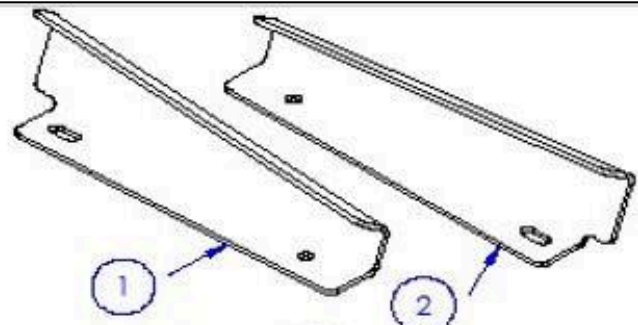
Note: On the illustration below that the lap point occurs at the point where the application rate is one-half of the spread chart rate. The profile of the spread pattern tapers at both edges and has a wide uniform area in the center.

By careful attention to the lap point during application, a very uniform and even spread rate can be attained. The DuraSpread Spreaders have been designed to provide this good and uniform tapered profile to make spread width less critical. However, excessive or insufficient overlap of passes will result in a poor application pattern in the lap area of the total spread pattern. If you can attain this spread pattern and pay careful attention to the lap points, the dotted line on the illustration will represent your actual overall spread pattern.



BLADE SETTINGS – 60 FT SPREAD PATTERN

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	4431277-L	SPINNER BLADE, 11 INCH, LH	6
2	4431277-R	SPINNER BLADE, 11 INCH, RH	6

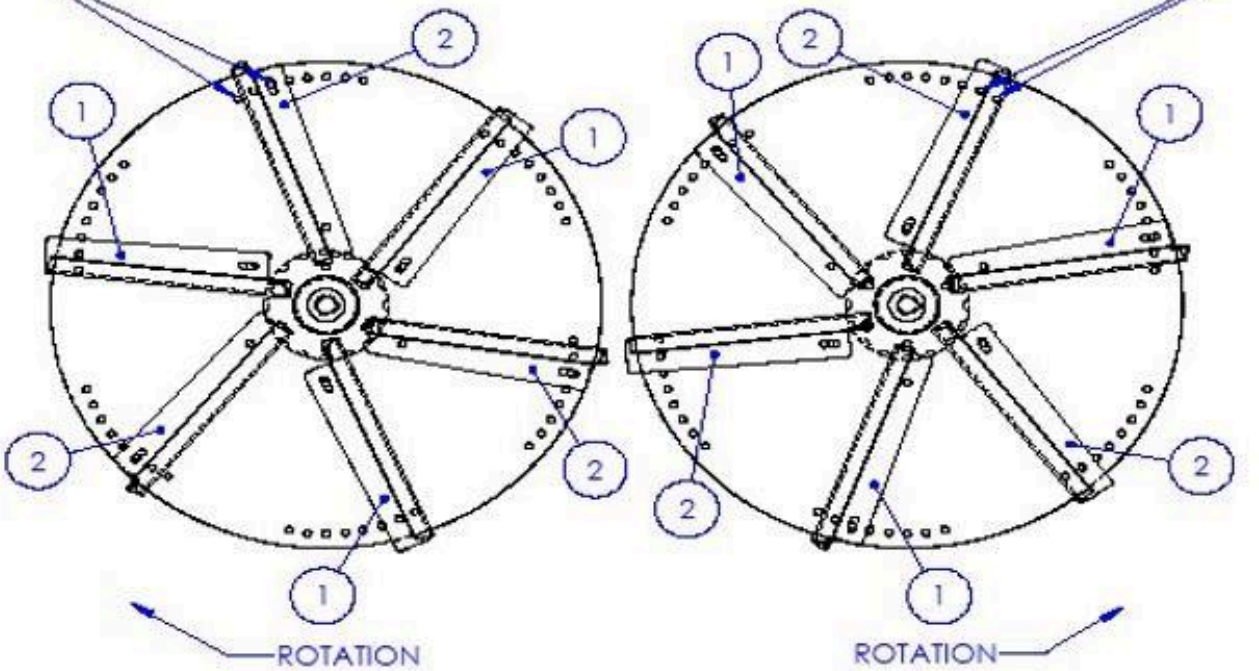


BLADES LABELLED **1** SET TO 2ND HOLE FROM LEFT SIDE OF PATTERN, VIEWED FROM THE CENTER OF THE DISC.

BLADES LABELLED **2** SET TO 3RD HOLE FROM LEFT SIDE OF PATTERN, VIEWED FROM THE CENTER OF THE DISC.

BLADES LABELLED **2** SET TO 2ND HOLE FROM RIGHT SIDE OF PATTERN, VIEWED FROM THE CENTER OF THE DISC.

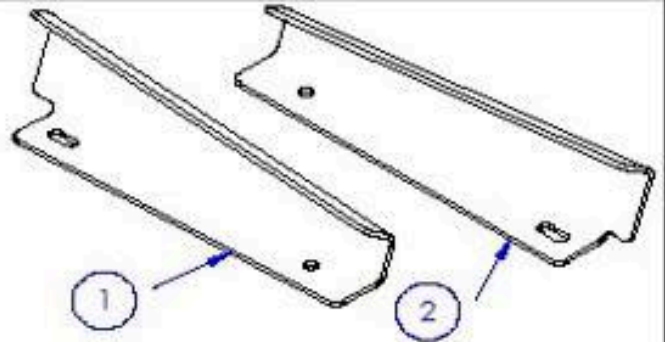
BLADES LABELLED **1** SET TO 3RD HOLE FROM RIGHT SIDE OF PATTERN, VIEWED FROM THE CENTER OF THE DISC.



VIEWED FROM BACK OF SPREADER

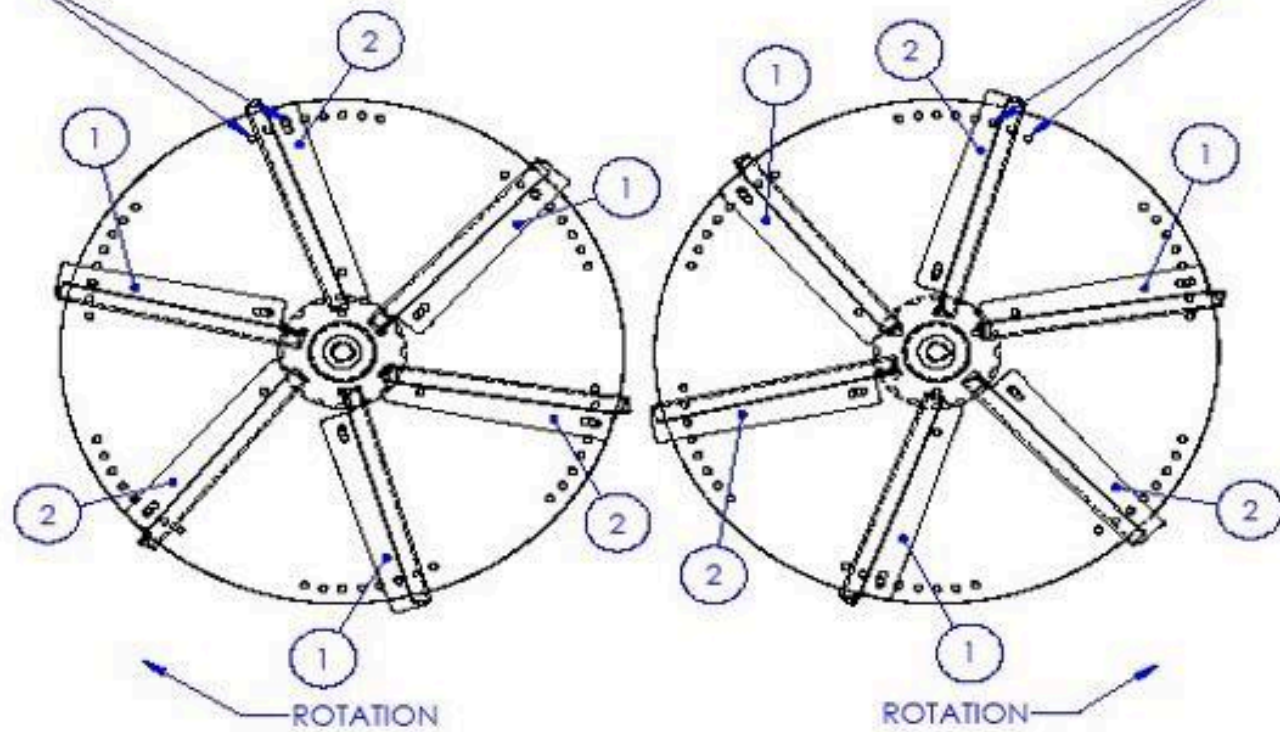
BLADE SETTINGS – 90 FT SPREAD PATTERN

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	4431277-L	SPINNER BLADE, 11 INCH, LH	6
2	4431277-R	SPINNER BLADE, 11 INCH, RH	6



ALL BLADES SET TO 3RD HOLE FROM LEFT SIDE OF PATTERN, VIEWED FROM THE CENTER OF THE DISC

ALL BLADES SET TO 3RD HOLE FROM RIGHT SIDE OF PATTERN, VIEWED FROM THE CENTER OF THE DISC



VIEWED FROM BACK OF SPREADER



FINE TUNING OF DISTRIBUTOR AND BLADE SETTINGS

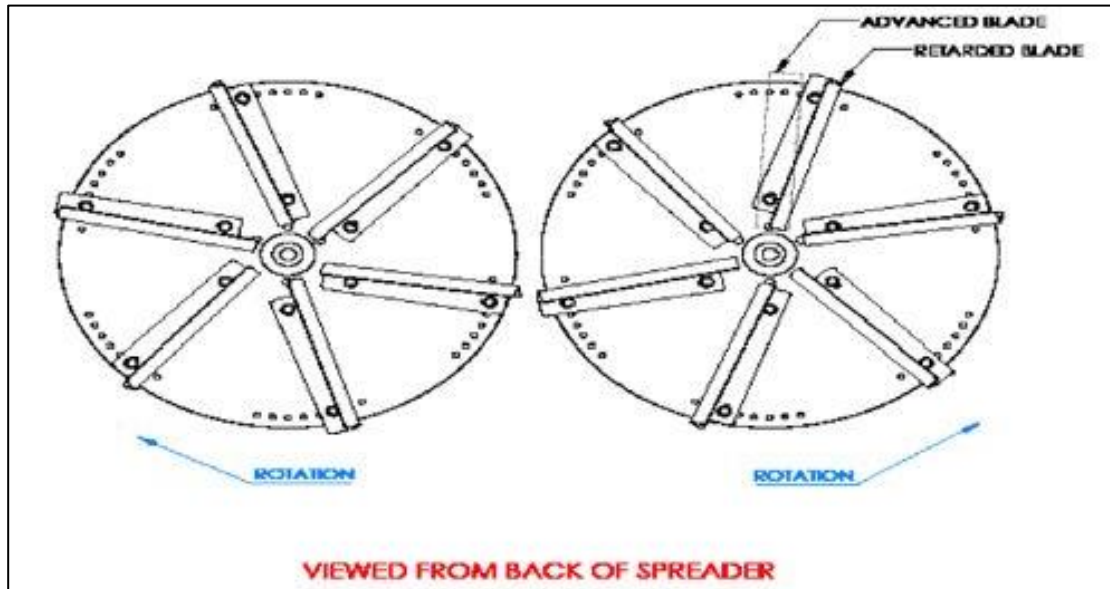
All DuraSpread Spreaders are given an average standard factory setting of distributor blades. Such a setting, of course, cannot be perfect for all field conditions and materials. The following information will be helpful in adjusting the distributor blades on your machine to give optimum performance for your specific conditions.

Your spread pattern will be affected by 1) the material used, 2) the distributor blade setting, and 3) the rotation speed of the distributors. The distributors are designed to be operated at 750 RPM (540 tractor P.T.O. RPM). A plus or minus 10% change in distributor RPM will increase or decrease spread pattern width accordingly. An increase in PTO RPM will tend to deposit less material at the center of the spread pattern, while a decrease will deposit more material at the center.

The physical characteristics of the materials being spread, which are important to the spread pattern, include bulk density, particle size, particle shape, physical strength and rugosity or surface roughness. For best performance, it is recommended that you fine tune your machine to the material being used.

The spreading profile and spread swath width can be changed drastically by alteration of the setting of the distributor blades. The drawing on the next page shows had blades may be extended from or retracted toward the center of the disc. Also, the angle of blade intersection with a radius of the disc may be altered. They may be advanced toward coincidence with the disc radius or retarded away from it. Further, blade lengths are not all equal. These adjustments affect the spread pattern in the following ways:

1. Advance long blades--more material to the outside of spread pattern; this will also increase spread pattern width.
2. Retard long blades--opposite effect of above.
3. Advance short blades—helps eliminate problem of streaking in the middle of spread pattern.
4. Retard short blades—puts more material in the center of spread pattern.
5. Extend blades away from center of spinner—increases spread width somewhat.
6. Retract blades (more towards center of spinner)—opposite effect of above.
7. Moving flow divider (or chute) toward the front of spreader will tend to put more material in center of spread pattern. This is because material is deposited on outer edge of spinner causing it to leave earlier.
8. Moving divider toward the rear of the spreader has the opposite effect.



CALCULATE THE SPREADER CONSTANT VALUE

The Spreader Constant value can be calculated in one of two ways: by performing a mathematical calculation, or by performing a “catch test” by applying and measuring the product used.

NOTE: The Spreader Constant value must be recalculated every time the gate opening dimensions are changed.

Formula Calculation:

First, use a tape measure to measure the following dimensions on the machine:

- Gate height (GH) in inches (cm)
- Gate width (GW) in inches (cm). Measured from the floor to bottom of gate (conveyor chain is $\frac{3}{4}$ ”)
- Distance of travel (D) in inches (cm) of the conveyor chain per one revolution of the encoder

Second, determine the number of pulses emitted by the encoder per one revolution of the encoder.

1. Enter a METER CAL value of 10
2. Enter a TOTAL VOL value of 0
3. Turn the encoder exactly one revolution. The value in the TOTAL VOLUME is the number of pulses per revolution of the encoder. A tag on the encoder will also state the number of pulses per revolution of the encoder. The number on the tag and what you measured should agree.

Third, determine the cubic feet (cubic cm) of the discharge per one revolution of the encoder by multiplying the distance the conveyor chain traveled in inches (cm) per one revolution of the encoder by the gate height in inches (cm) and then by the gate width in inches (cm). Then divide that cubic inches number by 1728 to get cubic feet per revolution of the encoder. Do not divide the cubic cm number by 1728.

Example:

Distance conveyor chain traveled per one revolution of the encoder (D) = 13 inches (33 cm)

Gate Height (GH) = 3 inches (7.62 cm) from floor to bottom of gate

Gate Width (GW) = 8 inches (20.32 cm)



OPERATION, MAINTENANCE, & PARTS

Number of encoder pulses per one revolution = 360 pulses

$$\frac{13 \times 3 \times 8}{1728} = .181 \text{ cubic feet per one revolution of the encoder}$$

Fourth and final, calculate the Spreader Constant value using the number just calculated and the pulses per revolution of the encoder:

$$\text{Spreader Constant value} = \frac{360 \text{ pulses/revolution}}{.181 \text{ ft}^3/\text{revolution}} = 1989 \text{ pulses per ft}^3$$

TABLE - SPREADER CONSTANTS for 360 Pulse Encoder

Gate Hgt (H)	2"	2.5"	3"	3.5"	4"	4.5"	5"
Spreader Constant	3000	2392	1989	1714	1494	1328	1200

CHART – APPROX RATE RANGE AT GATE HEIGHT

Hydraulic Spinners set at 750 RPM

GATE OPENING	APPROXIMATE RATE
2	50 - 200
3	100 - 300
4	200 - 400
5	300 - UP

APPLICATION RATE EXPRESSED IN POUNDS PER ACRE

BLADES MUST BE SET FOR SPREAD WIDTH

CHART – RATE AT GATE SETTINGS – 60 FT

Hydraulic Spinners set at 750 RPM



OPERATION, MAINTENANCE, & PARTS

LOW RANGE 12 to 72 T.

GATE OPENING	MATERIAL WEIGHT IN POUNDS PER CUBIC FOOT							
	40	45	50	55	60	65	70	75
1	87	92	98	104	110	116	122	128
1½	95	101	107	113	119	125	131	137
2	103	109	115	121	127	133	139	145
2½	111	117	123	129	135	141	147	153
3	119	125	131	137	143	149	155	161
3½	127	133	139	145	151	157	163	169
4	135	141	147	153	159	165	171	177
4½	143	149	155	161	167	173	179	185
5	151	157	163	169	175	181	187	193

HIGH RANGE 24 to 48 T.

GATE OPENING	MATERIAL WEIGHT IN POUNDS PER CUBIC FOOT							
	40	45	50	55	60	65	70	75
1	110	124	137	152	165	179	193	207
1½	165	186	207	227	247	268	290	310
2	220	247	275	302	330	358	387	415
2½	275	309	343	378	412	448	483	517
3	330	372	412	454	496	537	579	620
3½	385	433	481	529	577	627	676	723
4	440	496	550	605	660	717	772	827
4½	495	557	619	681	742	807	868	928
5	550	619	687	757	825	896	965	1033

APPLICATION RATE EXPRESSED IN POUNDS PER ACRE

BLADES MUST BE SET FOR SPREAD WIDTH

CHART – RATE AT GATE SETTINGS – 90 FT

Hydraulic Spinners set at 750 RPM



OPERATION, MAINTENANCE, & PARTS

LOW RANGE 12 to 72 T.

GATE OPENING	MATERIAL WEIGHT IN POUNDS PER CUBIC FOOT							
	40	45	50	55	60	65	70	75
1	25	28	31	34	37	40	43	46
1½	37	41	45	51	55	60	65	69
2	49	55	61	67	73	79	85	91
2½	61	69	76	84	91	99	107	115
3	73	83	91	101	110	119	128	138
3½	85	96	107	118	128	139	150	159
4	98	110	122	135	147	159	171	183
4½	110	124	138	151	165	179	193	206
5	122	138	153	168	183	199	214	229

HIGH RANGE 24 to 48 T.

GATE OPENING	MATERIAL WEIGHT IN POUNDS PER CUBIC FOOT							
	40	45	50	55	60	65	70	75
1	73	83	91	101	110	119	129	138
1½	110	124	138	151	165	179	193	207
2	147	165	183	201	220	239	258	275
2½	183	206	229	252	275	299	322	345
3	220	248	275	303	330	358	386	414
3½	257	289	321	353	385	418	451	482
4	293	330	367	404	440	478	515	552
4½	330	372	413	454	495	538	579	620
5	367	413	458	505	550	598	644	689

APPLICATION RATE EXPRESSED IN POUNDS PER ACRE

BLADES MUST BE SET FOR SPREAD WIDTH

WHEEL BEARING ADJUSTMENT

After repacking or when inspecting wheel bearings, the following adjustment procedure should be followed. Place flat washer and spindle nut on spindle. Turn hub as you tighten nut. When a pronounced drag is felt in the bearings, back off nut one complete slot. If necessary, continue to back off the nut until the next slot aligns with the cotter pin hole and install cotter pin and dust cap.

CONVEYOR CHAIN ADJUSTMENT

Loosen chain take-up locking nuts on outside of front end of trough. Adjust take-up bolts evenly until chain clears main frame members and axle tube by ¾" ½". Inspect shaft bearing mounting bolts and shaft locking collars for tightness of set screws (6 places). Reset take-up locking nuts.

STORAGE

Before storing the spreader for more than a few days, the machine should be emptied completely and thoroughly washed both inside and out. This precaution will minimize the severity of fertilizer acid corrosion, extend the useful life of the machine, and prevent damage to drive line and conveyor chain from fertilizer compaction and caking. We further recommend that the machine be thoroughly greased after washing.



OPERATION, MAINTENANCE, & PARTS

Before operating the machine after extended periods of storage, re-lubricate the entire spreader in accordance with the [lubrication](#) section of this Manual. Also check the entire spreader, following the [New Machine Checkout Procedure](#) to be found in the foregoing section of the Manual.

Remember that oil and grease are your least expensive corrosion inhibitors.



ILLUSTRATED PARTS LIST

The following illustration and parts list should be used to order parts for repairs. When ordering parts, match the item number in the illustration with the item number on the parts list, and then order using the part number following the item number in the parts list. When ordering, have your equipment serial number available, if applicable.

Explanation Of Parts Lists

The parts lists are broken down sub-assemblies and listed in 4 columns:

- ITEM - These numbers are found on the illustration associated with the parts list.
 - NS- This item is NOT SHOWN, included for reference.
 - QTY. - This is the quantity of parts needed in an assembly.
 - AR- The quantity of this item is AS REQUIRED for the location.
 - PART NO.- These are the part numbers associated to the ITEM.
- DESCRIPTION - This is the description of the part.

DS-8 FRAME & DRIVELINE

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED

STANDARD:
 4420532-HD CLEVIS
 153002 BOLT, 1" X 7"
 150061 NUT, 1" CENTERLOCK

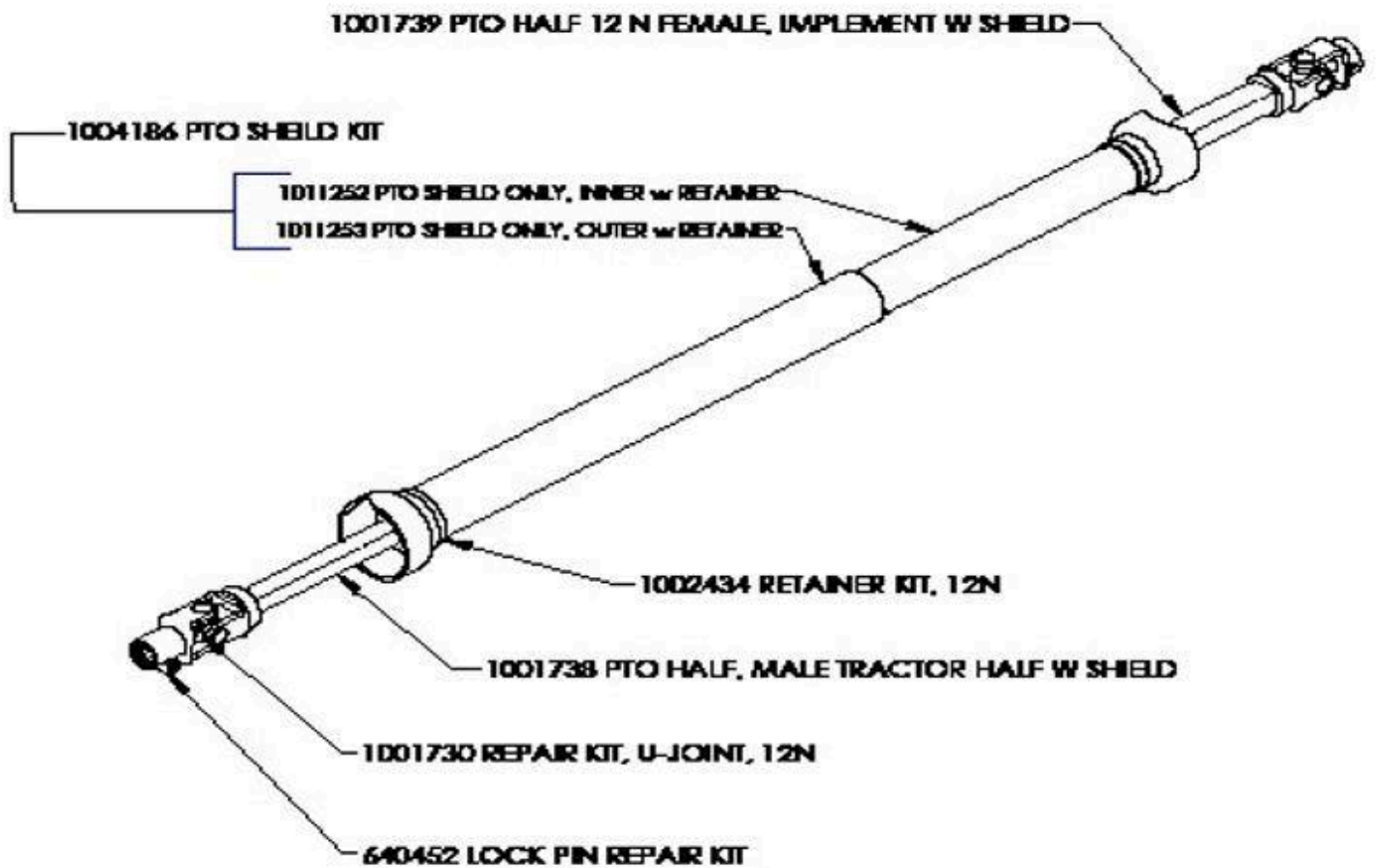
OPTIONAL:
 4440918 BULL PULL HITCH, CAT 4
 4441048 BULL PULL PIN

HITCH:
 4421004 BOLT ON

#	PART NUMBER	Q
1	6 TON & 8 TON FRAME	1
2	151805 BOLT, .375 NC x 1.25, PLTD	23
3	151806 BOLT, .375 NC x 1.5, G-5, PLTD	10
4	640511 PILLOW BLOCK BEARING	4
5	1004197 SHAFT	1
6	2001052 BEARING ARM, FRONT	1
7	1008456 SPLIT POLY BEARING & HOUSING	2
8	1009336 SPLIT POLY INSERT ONLY	2
9	2001124 SHIELD, MOUNTING BRACKET, RH	1
10	2001125 SHIELD, MOUNTING BRACKET, LH	1
11	150214 FLAT WASHER, .375 SS	4
12	150214 FLAT WASHER, .375 SS	88
13	150046 NUT, .375 NC SS	49
14	2001126 SHAFT, FRONT, 1x133, 8TON	1
15	4440827 PULLEY, 4.75 DIA FOR 1000 PTO	1
16	4440830 PULLEY, 6.75 DIA FOR 540 PTO	1
17	4440828 PULLEY, 8.25 DIA FOR 1000 PTO	1
18	4440829 PULLEY, 6.25 DIA FOR 540 PTO	1
19	1009228 PTO COMPLETE, 540 12N	1
	4440853 1000 RPM PTO HALF SHAFT	1
20	1007099 BELT	1
21	641667 U-JOINT, DRIVE SHAFT	2
22	2001127 SHAFT, BACK, 1 x 21, 8 TON	1
23	4420418 PTO SHIELD	2
24	4440234 TALL 5000 LBS JACK	1
25	1001865 CARRIAGE BOLT, .4375 x 6	2
26	1001636 SPRING	2
27	158039 LOCK NUT, .4375	2
28	4420532-HD HITCH CLEVIS	1
288	4440918 BULL PULL HITCH, CAT 4	1
29	150248 LOCK WASHER, .375 STD SS	54

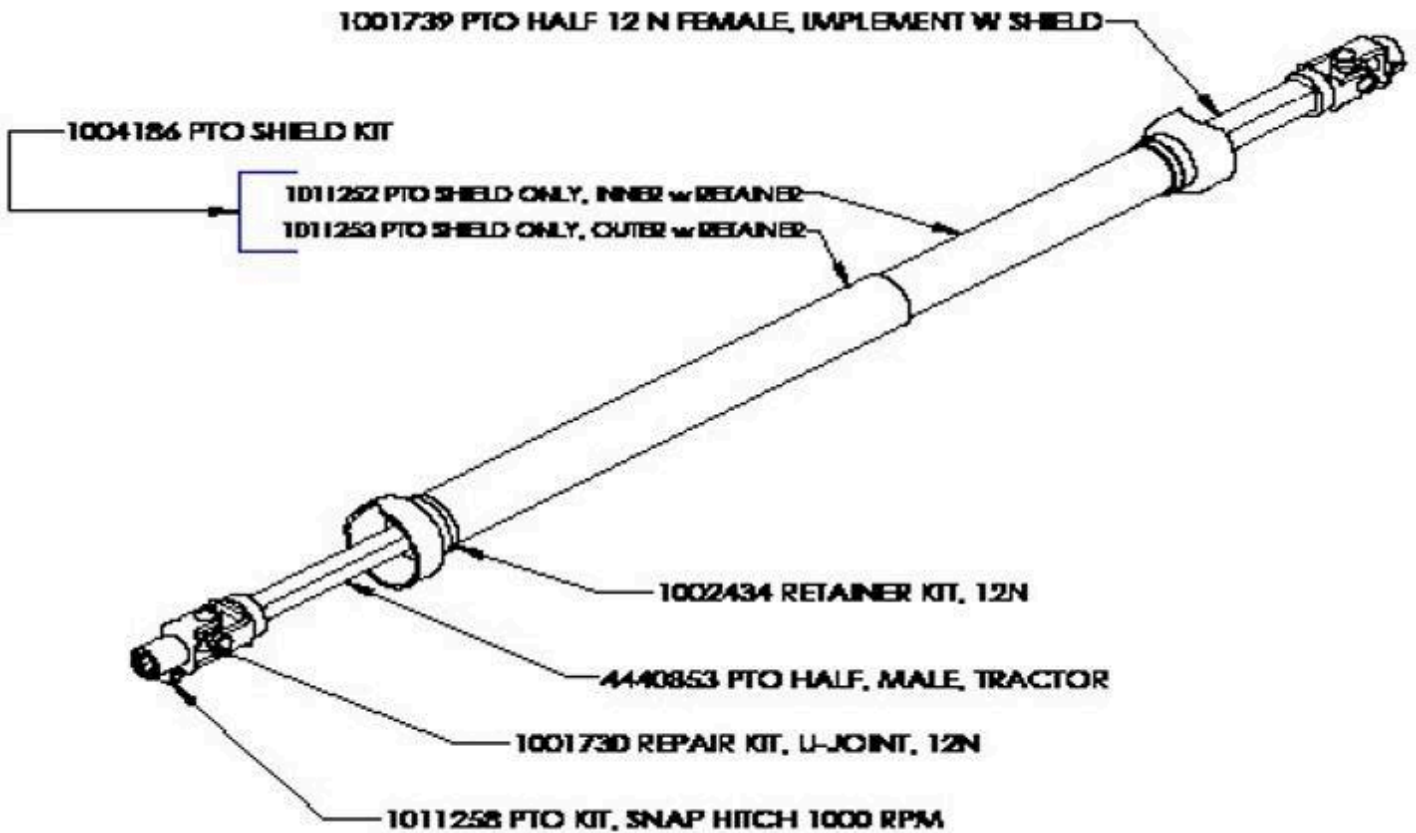
540 RPM PTO Driveline

1009228 PTO COMPLETE, 540 12N

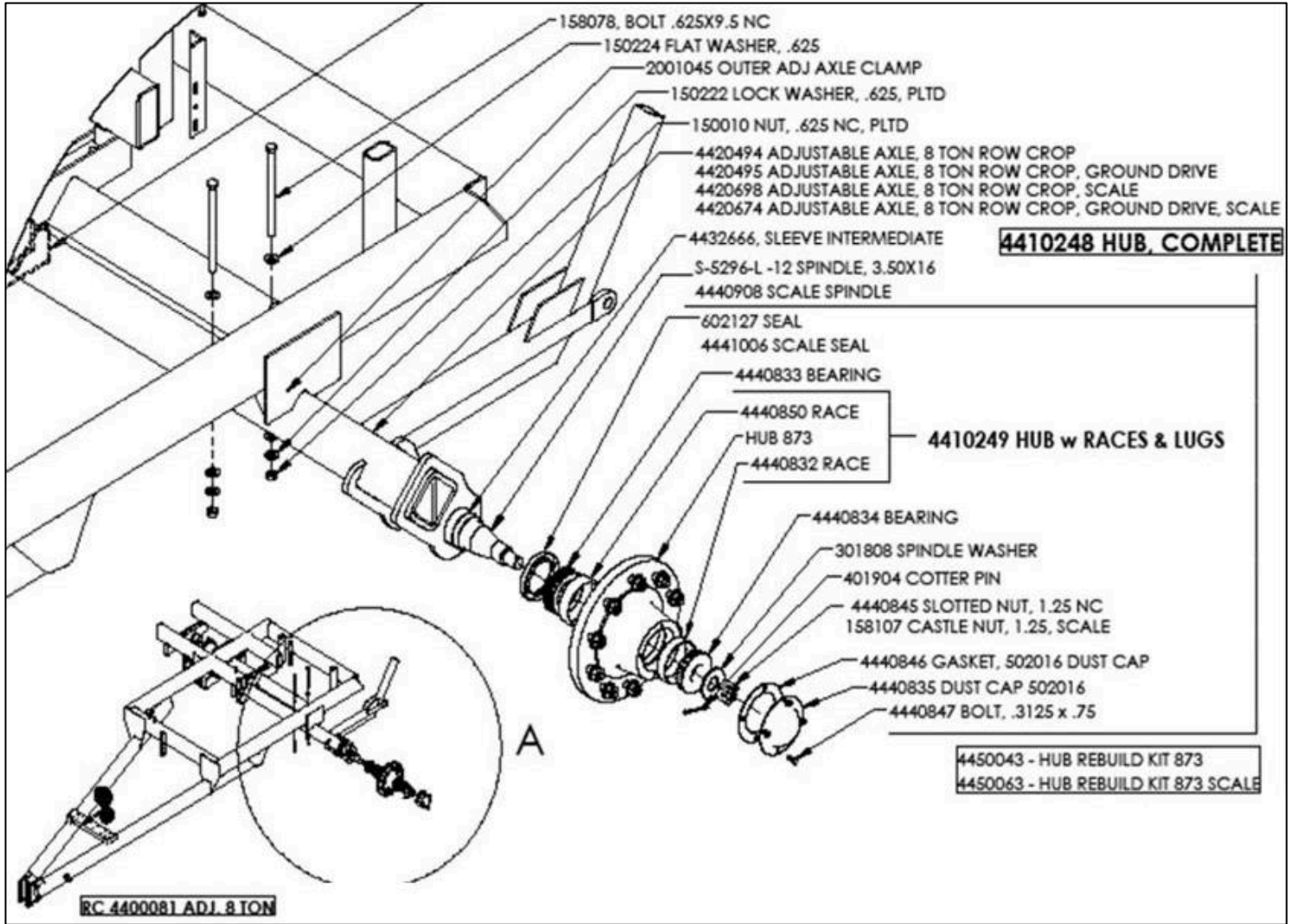


1000 RPM PTO Driveline

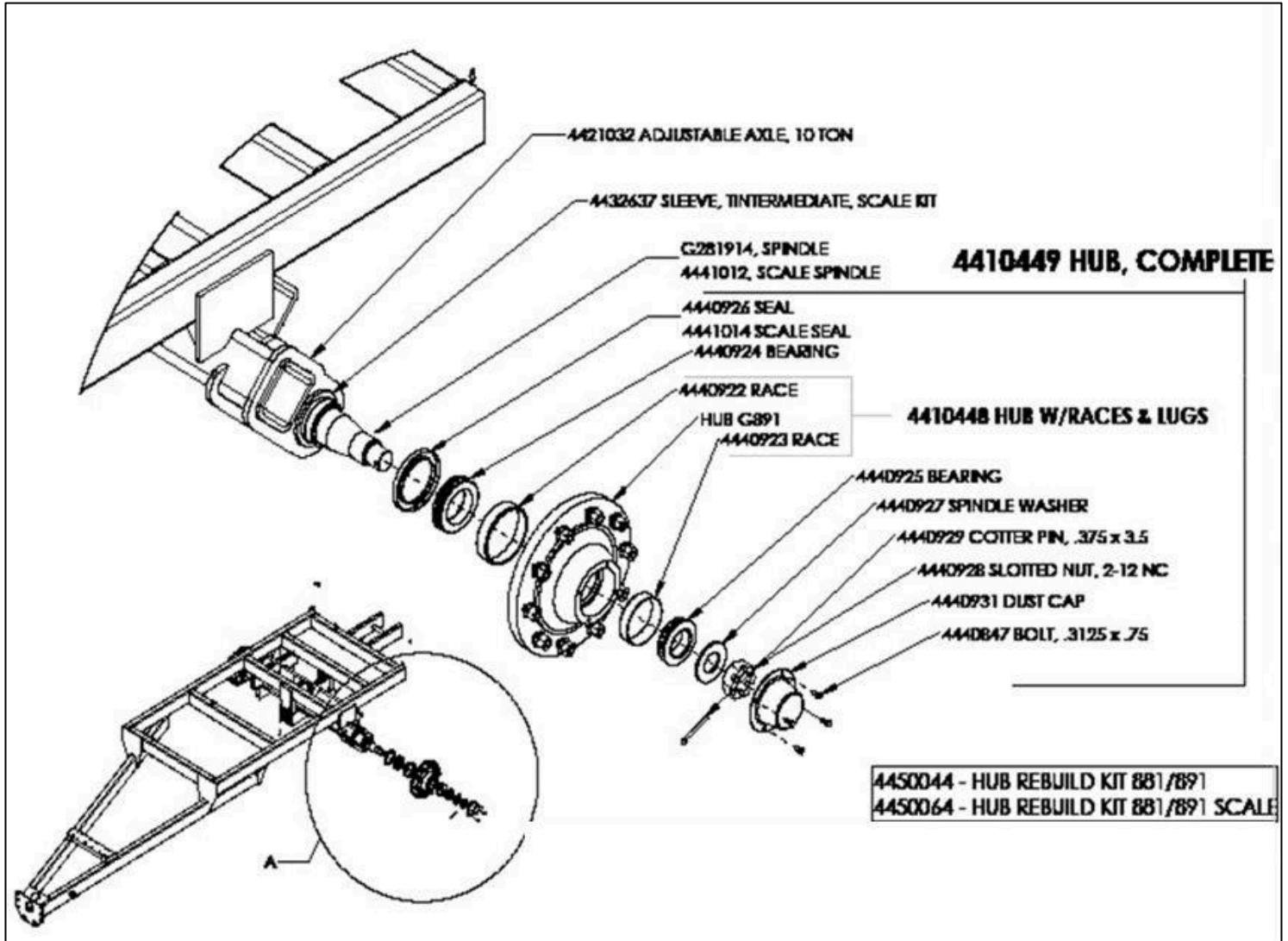
4440854 1000 RPM PTO SHAFT



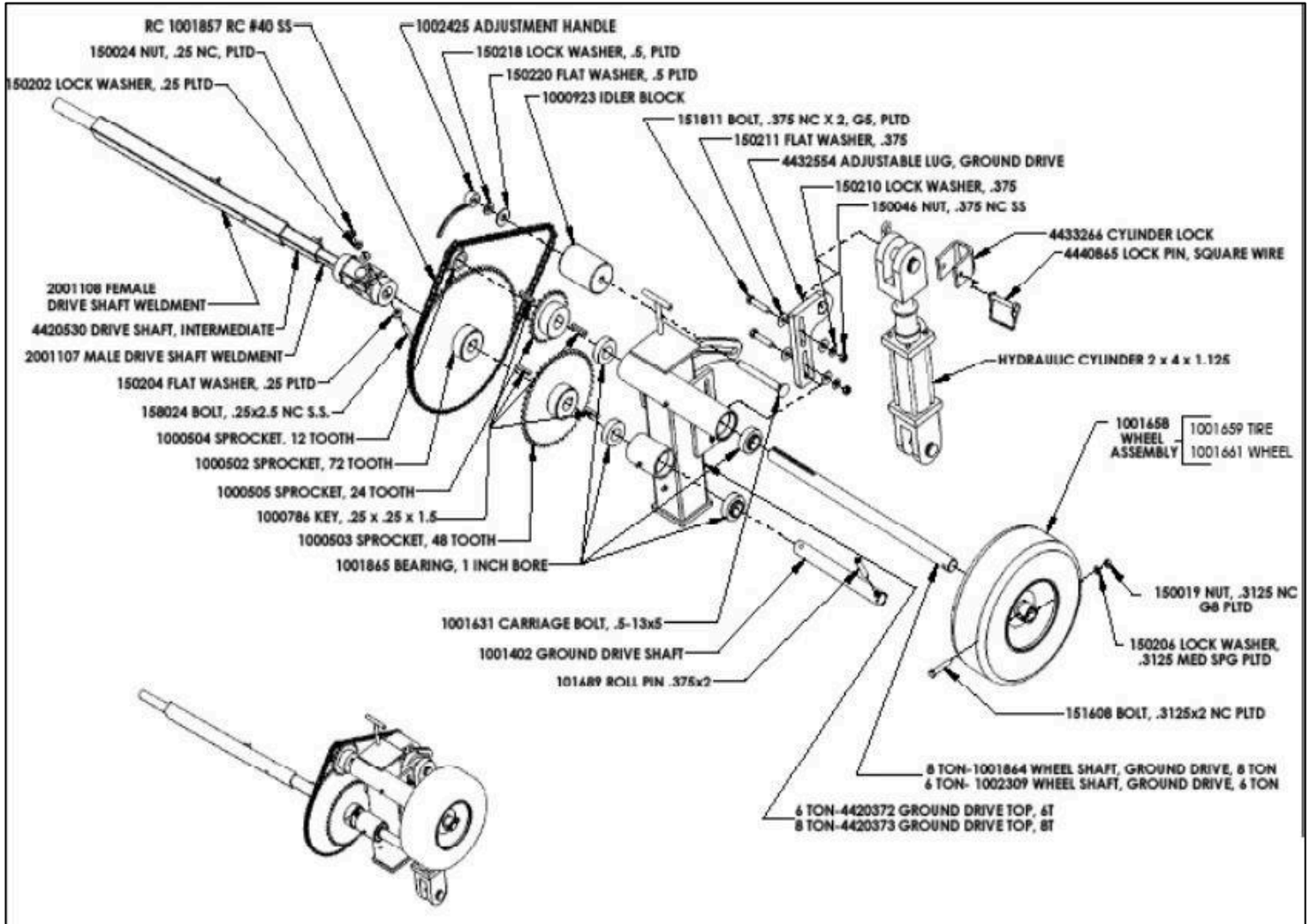
8 TON ADJUSTABLE AXLE & HUBS



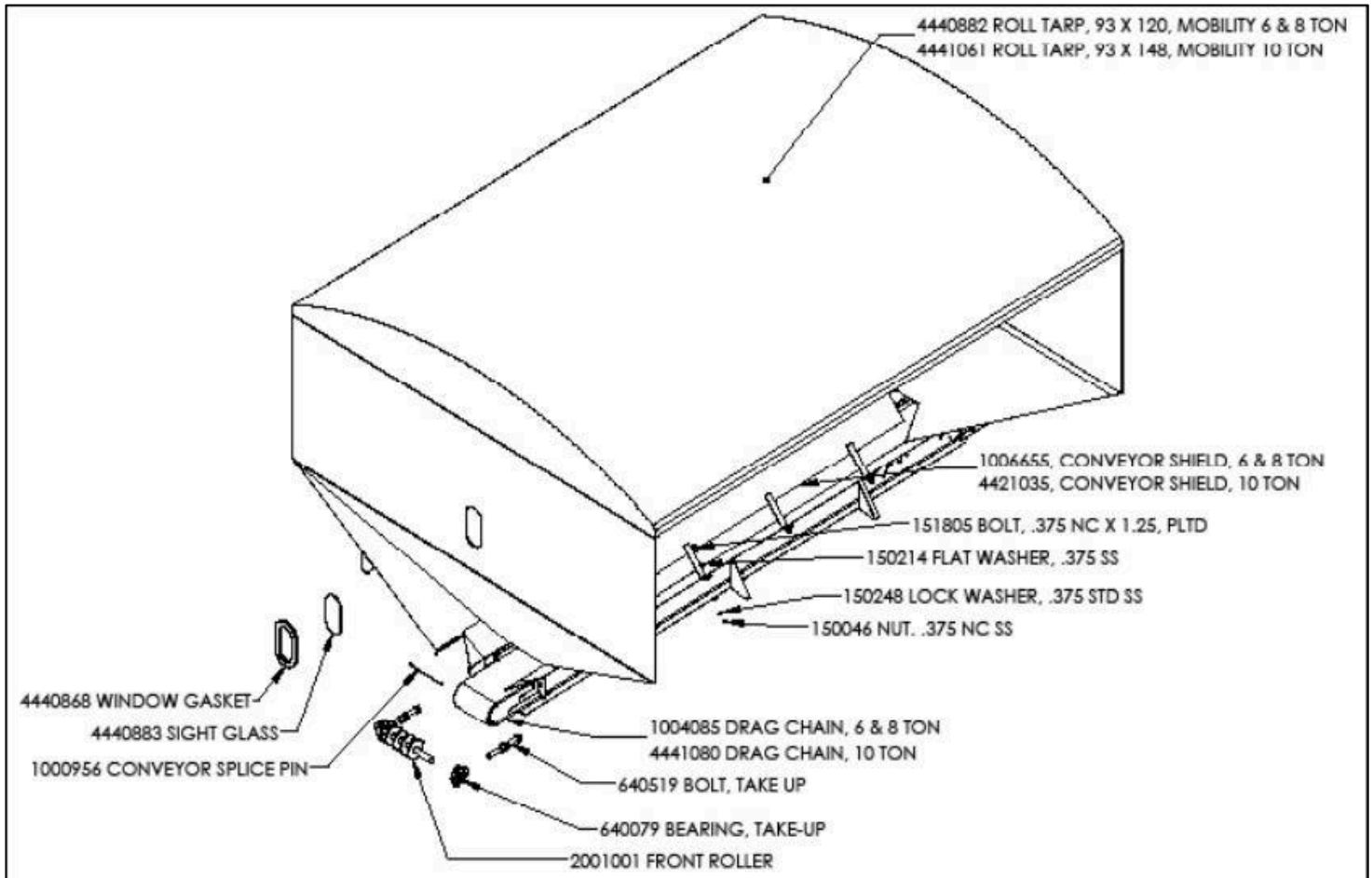
10 TON ADJUSTABLE AXLE & HUBS



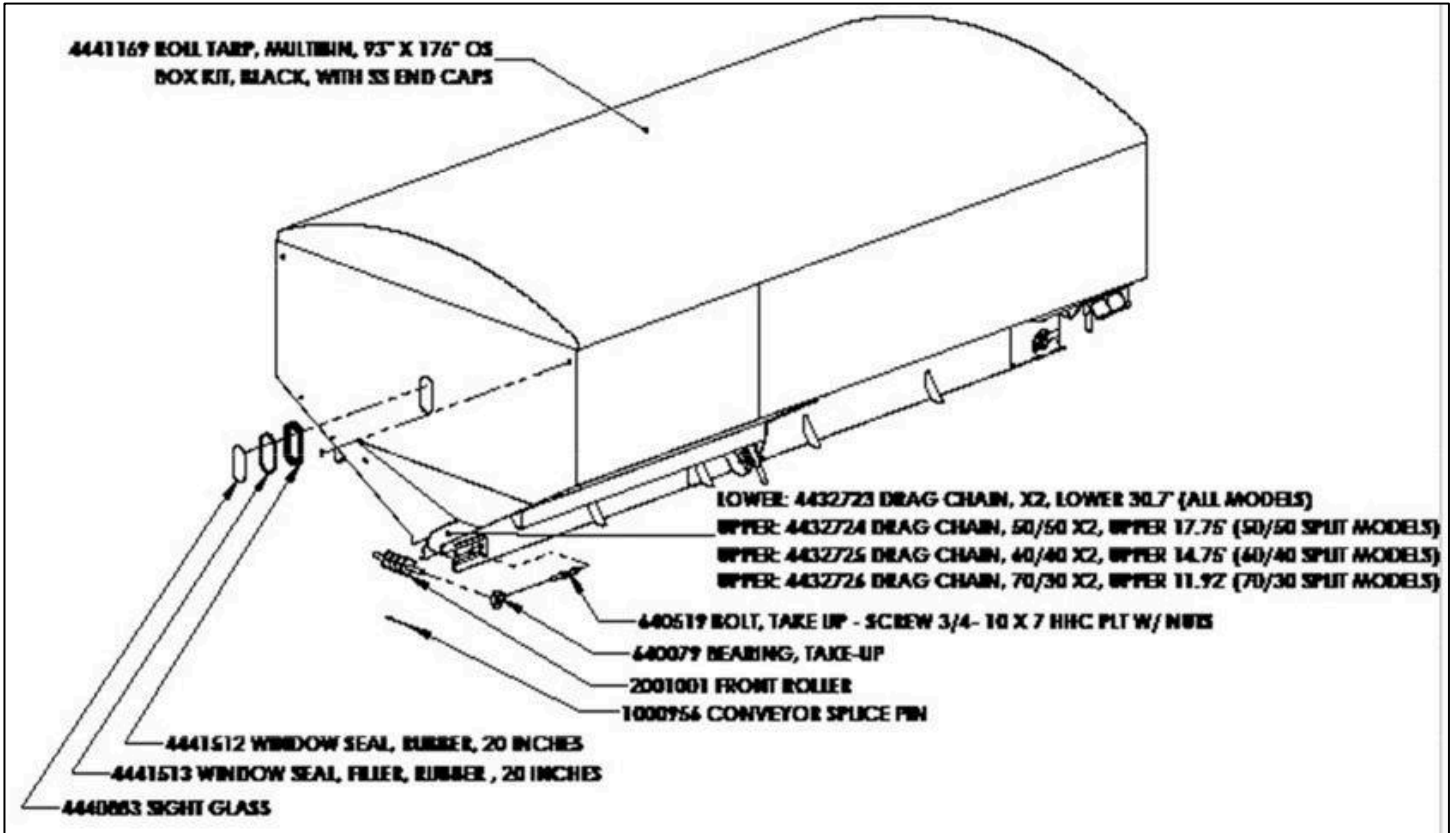
GROUND DRIVE ASSEMBLY – 8 TON ONLY



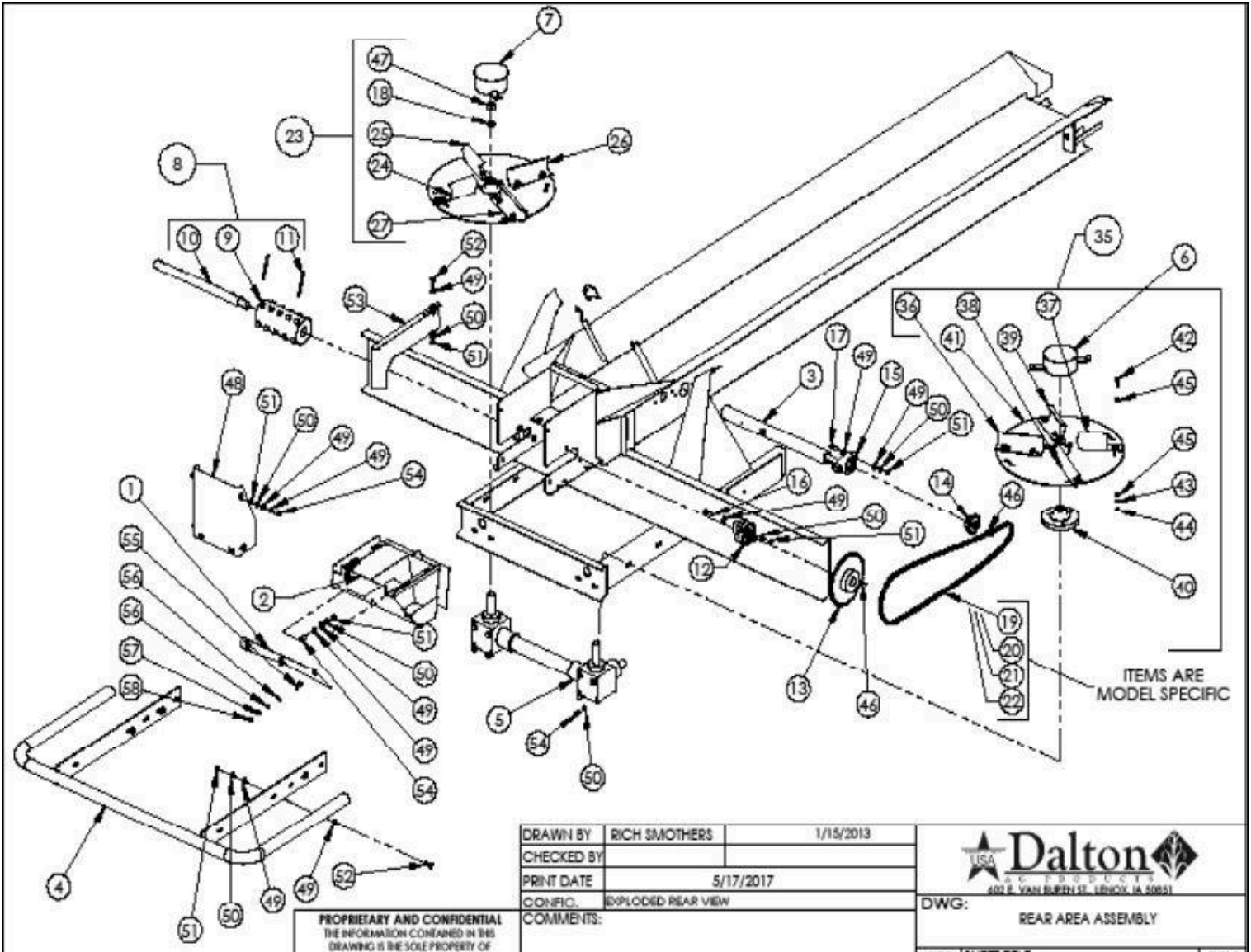
TANK ASSEMBLY – SINGLE BIN



TANK ASSEMBLY – DUAL BIN



REAR AREA ASSEMBLY 60. FT



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DWG: REAR AREA ASSEMBLY



OPERATION, MAINTENANCE, & PARTS

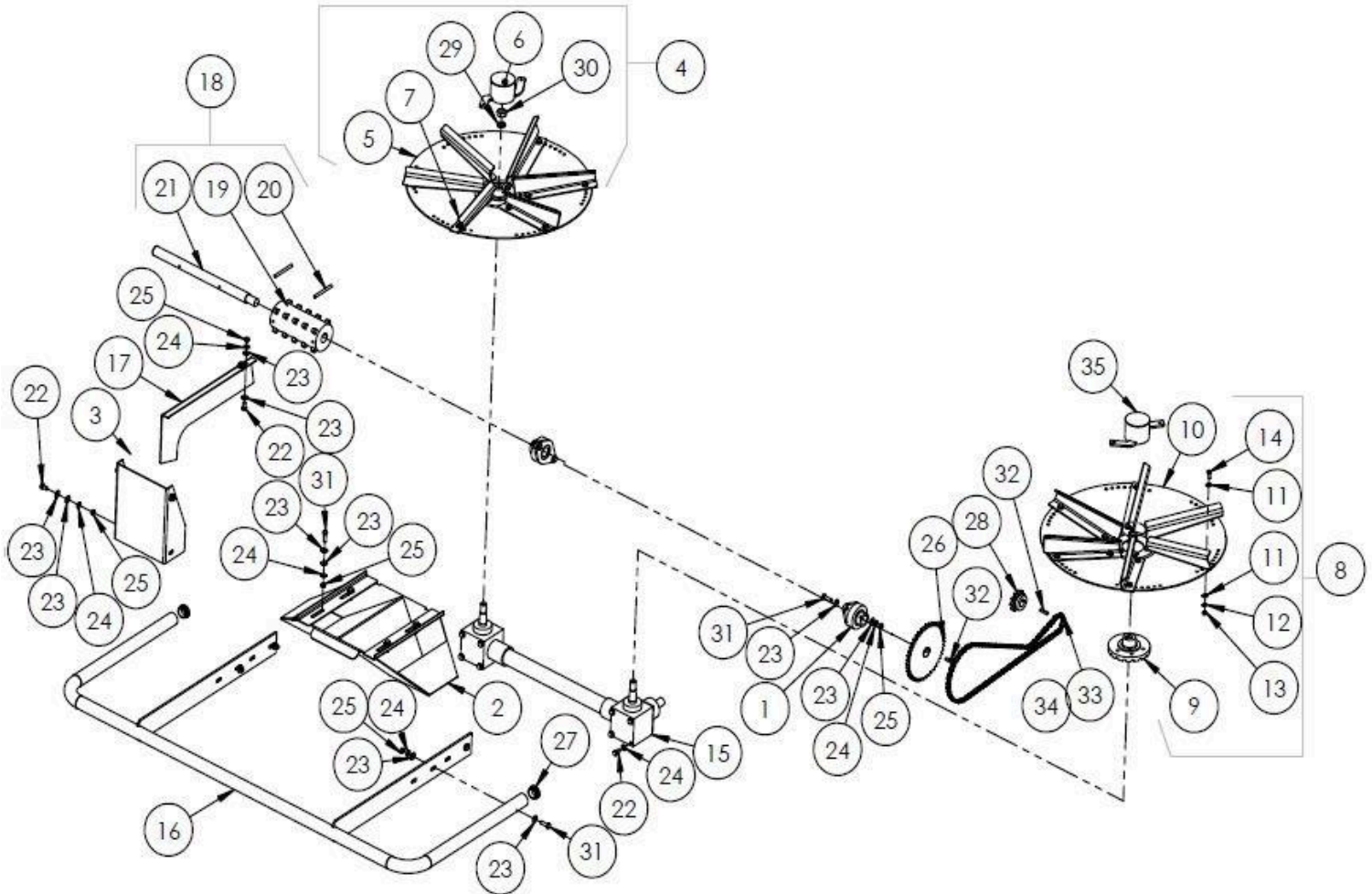
REAR AREA ASSEMBLY 60 FT. PARTS LIST

#	PART NUMBER	Q
1	MS 1001501 DIVIDER	1
2	MS 1001379 DIVIDER WELDMENT	1
3	2001108 WLD, FEMALE 0.5, DRIVE SHAFT	1
4	1008033 BUMPER WELDMENT	1
5	1003737 GEAR BOX SET	1
6	1001717 DISC CAP WELDMENT R.H.	1
7	1001716 DISC CAP WELDMENT L.H.	1
8	1000838 DRIVE SPROCKET ASSEMBLY	1
9	1000684 CAST SPROCKET, MACHINED	1
10	1000644 SPROCKET SHAFT	1
11	158035 ROLL PIN .3125 x 3.5	2
12	1000646 BEARING, 1.25 BORE 2-BOLT FLANGE	2
13	1000507 SPROCKET 50B36	1
14	1000506 SPROCKET, 50B12	1
15	640034 BEARING, 1 INCH BORE 2-BOLT	1
16	151806 BOLT, .375 NC x 1.5, G5, PLTD	4
17	151805 BOLT, .375 NC x 1.25, PLTD	3
18	150226 LOCK WASHER, .75, PLTD	2
19	4432166-108 STAINLESS #50 CHAIN, 108 PITCH w/ CONNECTOR (8 TON GROUND DRIVE)	1
20	4432166-125 STAINLESS #50 CHAIN, 125 PITCH w/ CONNECTOR (6 TON GROUND DRIVE)	1
21	641218 LINK	1
22	641319 1/2 LINK (OFFSET) (6 TON)	1
23	1003733 DISTRIBUTOR DISC ASSEMBLY, L.H.	1
24	MS 1001925 4.375 DISTRIBUTOR BLADE, LEFT	1
25	MS 1001927 DISTRIBUTOR BLADE, 5.5, LEFT	1
26	MS 1001719 7 INCH DISTRIBUTOR BLADE, LEFT	1
27	MS 1001705 EXTRA LONG DISTRIBUTOR BLADE, 8, LEFT	1
28	1003727 DISTRIBUTOR DISC	1
29	1003709-VR SPINNER HUB, VARIABLE RATE, MACHINED	1
30	158053, LOCK WASHER, .3125 SS	12
31	158054 WASHER, .3125 SS	16
32	151615 BOLT, .3125 x .75 SS	10
33	150007 NUT, .3125 NC SS	12
34	151610 .3125x1 NC SS	2
35	1003734 DISTRIBUTOR DISC ASSEMBLY, RH	1
36	MS 1001718 7 INCH DISTRIBUTOR BLADE, RIGHT	1
37	MS 1001924 4.375 DISTRIBUTOR BLADE, RIGHT	1

#	PART NUMBER	Q
38	MS 1001662 EXTRA LONG DISTRIBUTOR BLADE, 8, RIGHT	1
39	MS 1001926 DISTRIBUTOR BLADE, 5.5, RIGHT	1
40	1003709 SPINNER HUB, STANDARD	1
41	1003727 DISTRIBUTOR DISC	1
42	151610 .3125x1 NC SS	12
43	158053, LOCK WASHER, .3125 SS	12
44	150007 NUT, .3125 NC SS	12
45	158054 WASHER, .3125 SS	16
46	641653 KEY, .25 x .25 x 1.25	2
47	150124 NUT, NF, SS	2
48	1001390 TROUGH EXTENSION BACK	1
49	150214 FLAT WASHER, .375 SS	32
50	150248 LOCK WASHER, .375 STD SS	26
51	150046 NUT, .375 NC SS	18
52	151804 BOLT, .375 x 1 NC SS	5
53	MS 2001004 PARTER PLATE	1
54	151834 BOLT .375 x .75 NC SS	14
55	151610 .3125x1 NC SS	3
56	158054 WASHER, .3125 SS	6
57	158053, LOCK WASHER, .3125 SS	3
58	150007 NUT, .3125 NC SS	3

****1004466 DISTRIBUTOR BLADE SET
INCLUDES BOTH RIGHT SIDE
AND LEFT SIDE BLADES.**

REAR AREA ASSEMBLY 90 FT. WIDE-SPREAD

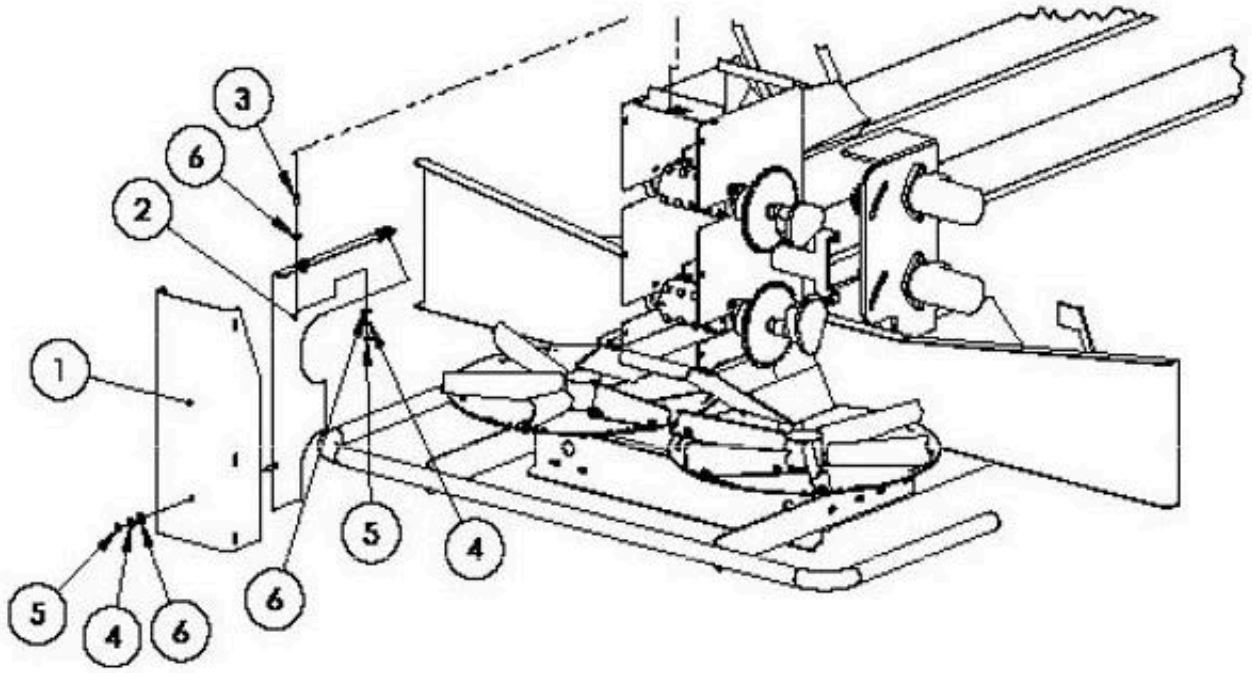


REAR AREA ASSEMBLY 90 FT. WIDE-SPREAD PARTS LIST

ITEM NO.	PART NUMBER
1	1000646 BEARING, 1.25 BORE
2	4421684 DIVIDER, WELDMENT, WIDE SPREAD
3	1001390 TROUGH EXTENSION BACK
4	4410815-L SPINNER ASSEMBLY, LH
5	4432820L SPINNER PLATE
6	4421685 DISC CAP WELDMENT L.H.
7	4431277 SPINNER BLADE, 11 INCH
8	4410815-R SPINNER ASSEMBLY, RH
9	1003709-VR SPINNER HUB, VARIABLE RATE, MACHINED
10	4432820R SPINNER PLATE
11	158054 FLAT WASHER, .3125, SS
12	158053 LOCK WASHER, .3125, SS
13	150007 NUT, .3125 NC, SS
14	151615 BOLT, .3125 X .75 SS
15	4441174 GEAR BOX SET, 26.375 CENTERLINE
16	4421647 REAR BUMPER, RC, WIDE SPREAD
17	4432469 PARTER PLATE, WIDE SPREAD
18	1000838 DRIVE SPROCKET ASSEMBLY
19	1000684 CAST SPROCKET, MACHINED
20	158035 ROLL PIN .3125 X 3.5
21	4432598 REAR ROLLER, SHAFT
22	151834 BOLT .375 X .75 NC, SS
23	150214 FLAT WASHER, .375 SS
24	150248 LOCK WASHER, .375, SS
25	150046 NUT, .375 NC, SS
26	1000507 SPROCKET 50B36
27	4441075 1.25 PIPE CAP
28	640012 SPROCKET, 50B12
29	150225 LOCK WASHER, .75, SS
30	150013 NUT, .75 NC
31	151815 BOLT, .375 X 1.25 NC, SS
32	641653 KEY, .25 X .25 X 1.25
33	4432166-86 CHAIN, #50 SS, 86 PITCH (PWM DRIVE)
34	4432166-108 CHAIN, #60 SS, 108 PITCH (GROUND DRIVE)
35	4421686 DISC CAP WELDMENT R.H.

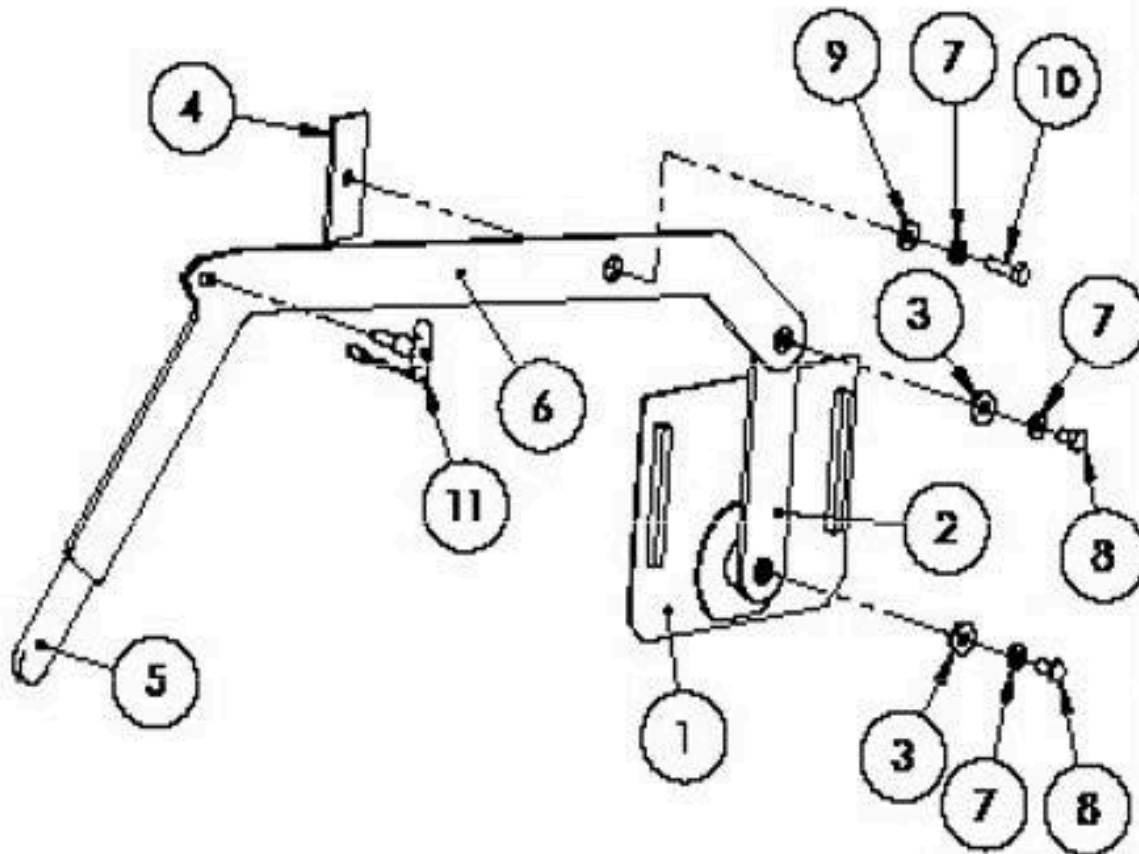
REAR SHIELD ASSEMBLY – DUAL BIN

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	4432718	TROUGH EXTENSION BACK	1
2	4421722	DIVIDER PLATE, DISCHARGE, WELDMENT, X2	1
3	151834	BOLT .375 X .75 NC, SS	4
4	150248	LOCK WASHER, .375, SS	5
5	150246	NUT, .375 NC, SS	5
6	150214	FLAT WASHER, .375 SS	9



GATE ASSEMBLY – REAR_DUAL BIN

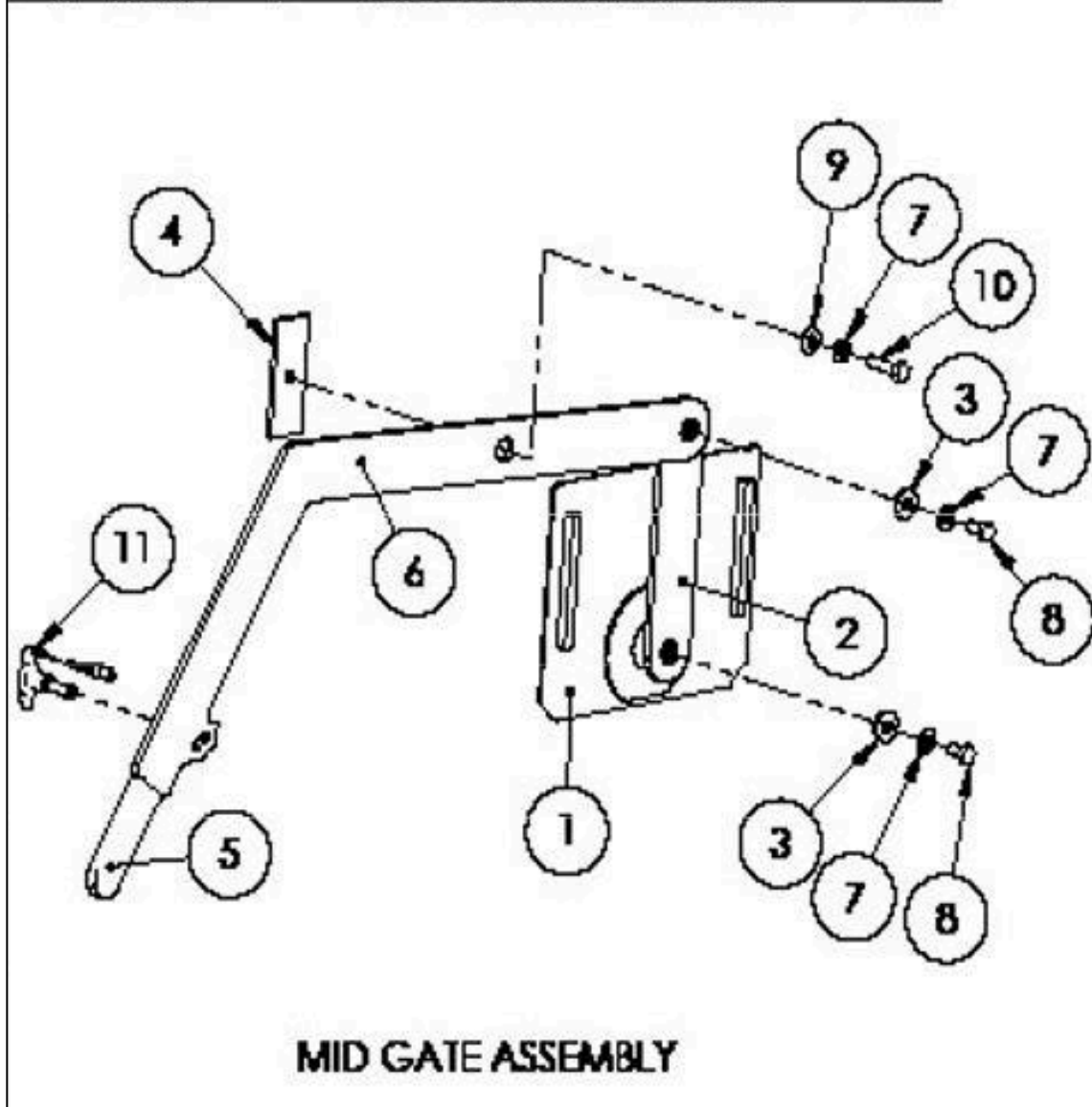
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	4421264	4421264 METERS/GATE WELDMENT	1
2	4421818	JACK ARM LINK WELDMENT	1
3	188289	3/8" FLAT WASHER, 18-8 SS, 1" OD	2
4	4421268	WELDMENT, RETENTION PLATE, METERS/GATE LEVER	1
5	4441671	HANDLE CAP, RED, 1/4" X 1.25" X 4", ROUND END	1
6	4432733	JACK ARM, REAR	1
7	188248	LOCK WASHER, 375 SS	3
8	181884	BOLT, 3/8" X .75" NC, SS	2
9	188214	FLAT WASHER, 375 SS	1
10	181806	BOLT, 3/8" X 1.5" NC, SS	1
11	4441672	T-HANDLE LOCKING QUICK RELEASE PIN	1



REAR GATE ASSEMBLY

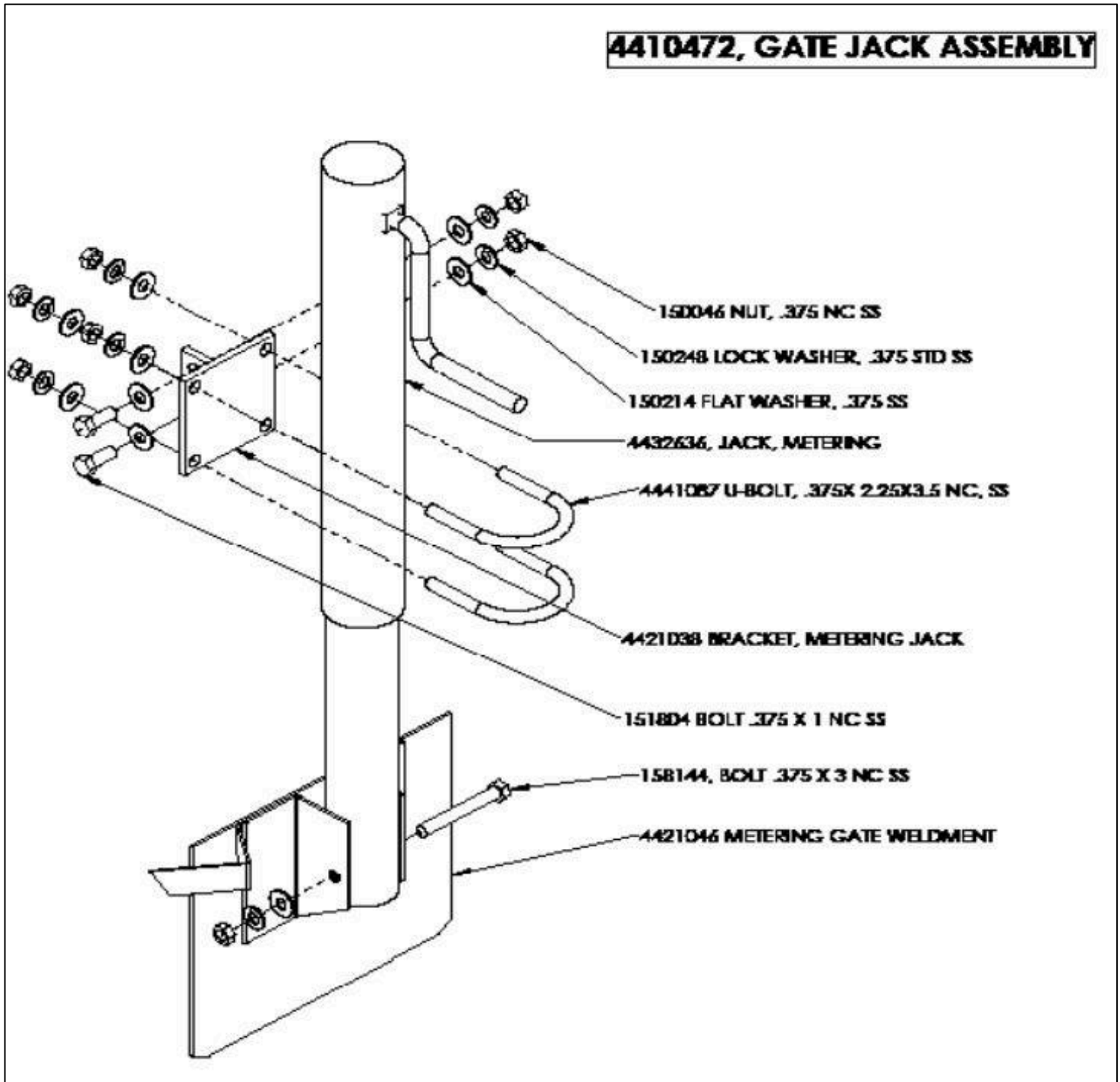
GATE ASSEMBLY – MID_DUAL BIN

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	4421264	4421264 METERS GATE WELDMENT	1
2	4421313	JACK ARM LINK WELDMENT	1
3	180290	3/16" FLAT WASHER, 30-4 SS, 1" OD	2
4	4421738	WELDMENT, RETENTION PLATE, METERS GATE LEVER	1
5	4441671	HANDLE CAP, RED, 1/4" X 1.25" X 4", ROUND END	1
6	4432738	JACK ARM, FRONT	1
7	180248	LOCK WASHER, 375 SS	2
8	151654	BOLT, 3/8" X 2.0" NC 36	2
9	180214	FLAT WASHER, 375 SS	1
10	151606	BOLT, 3/8" X 1.0" NC 36	1
11	4441672	T-HANDLE LOCKING QUICK RELEASE PIN	1

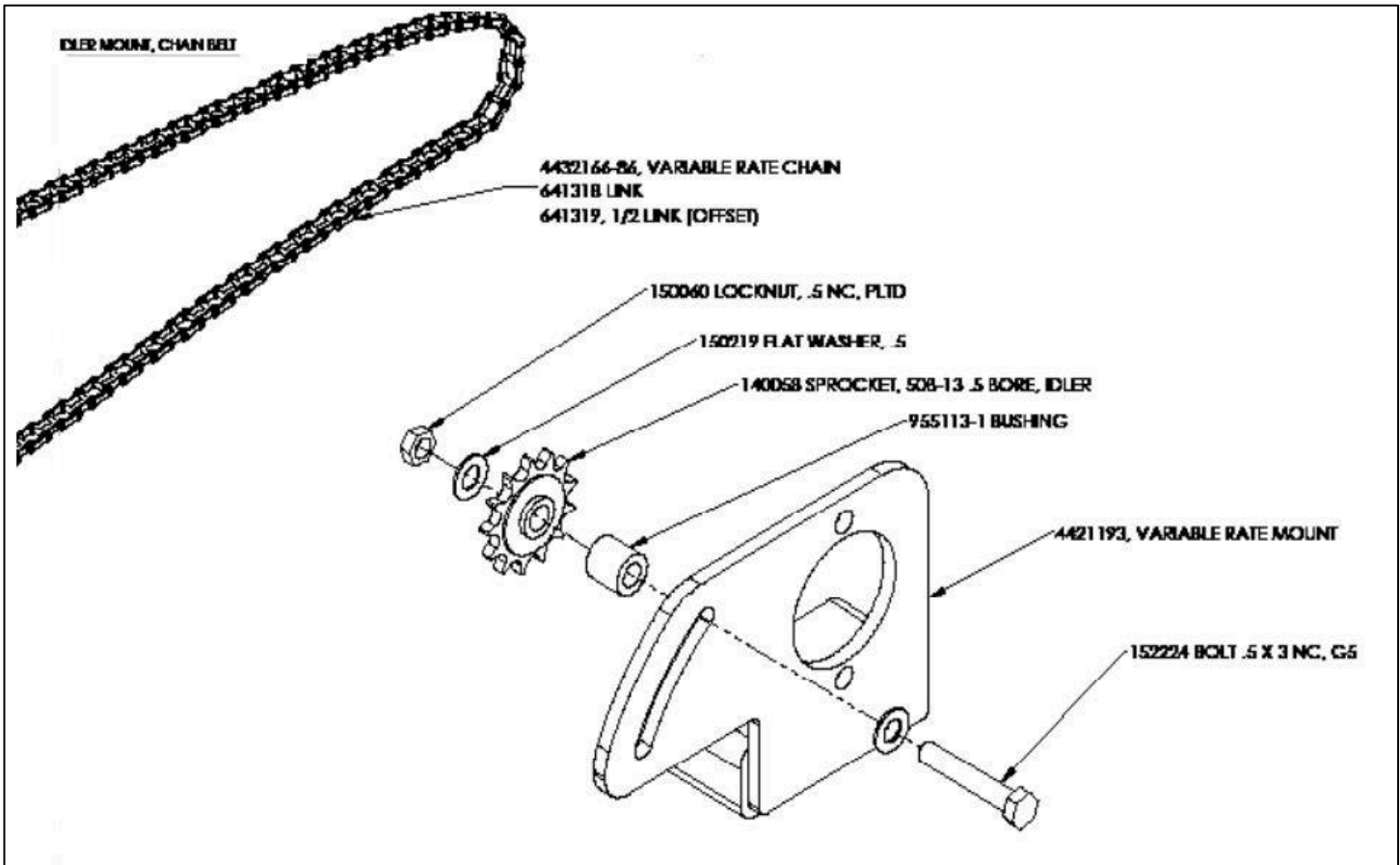


MID GATE ASSEMBLY

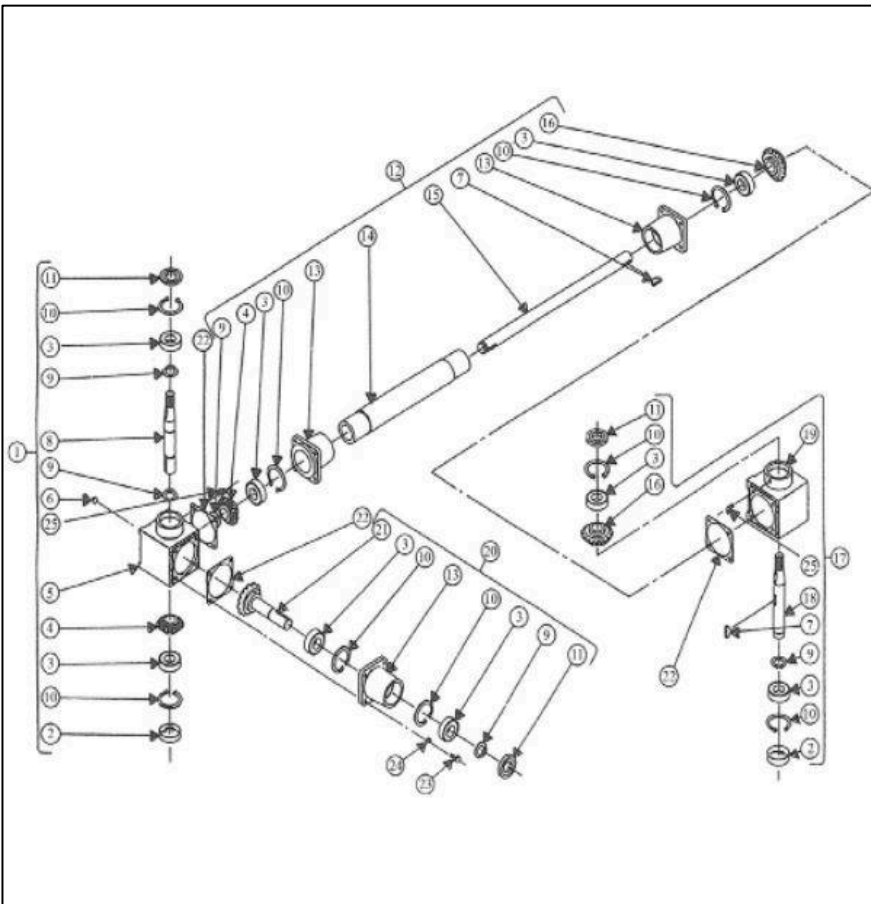
GATE JACK ASSEMBLY



IDLER - CHAIN DRIVE

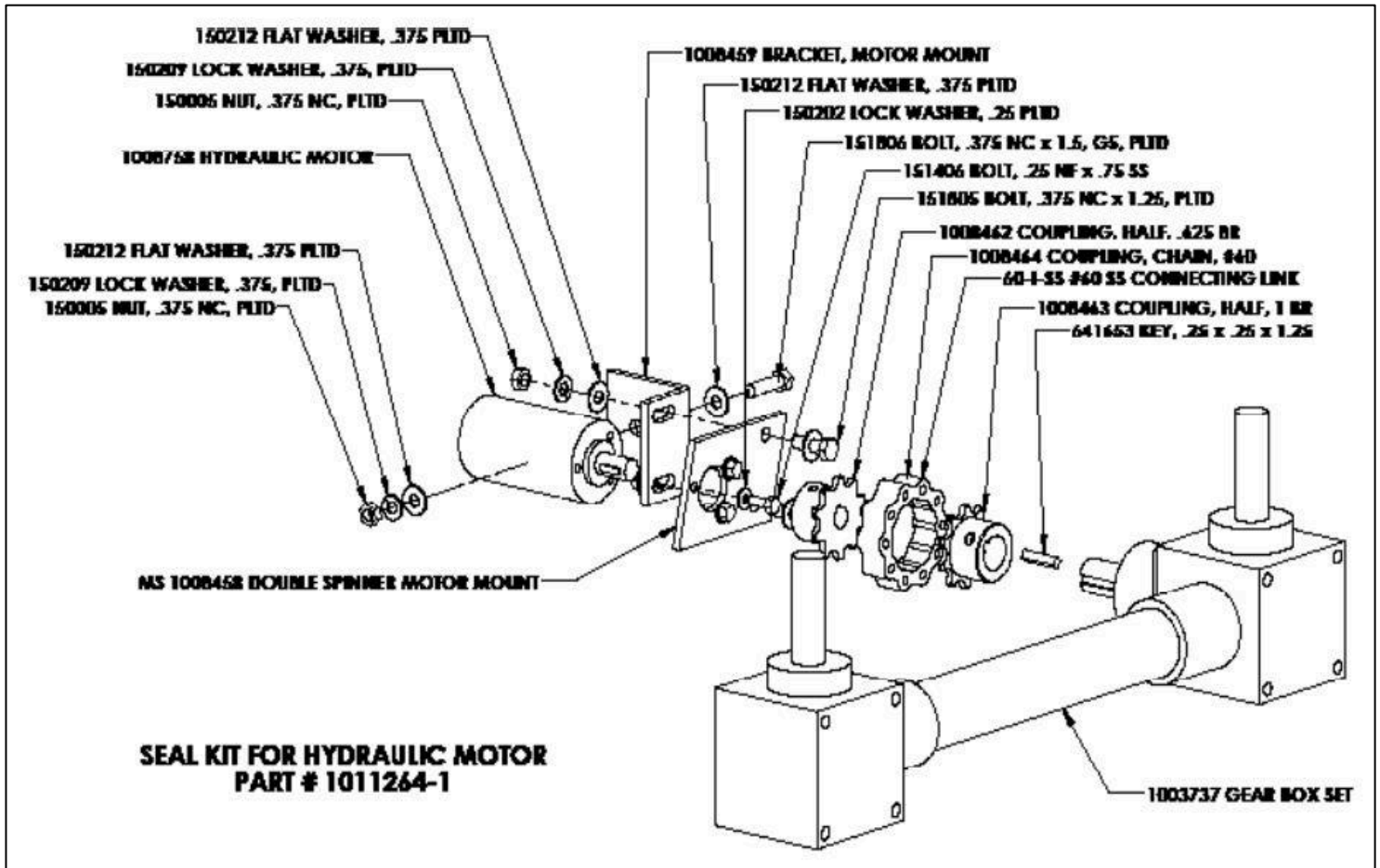


GEARBOX ASSEMBLY

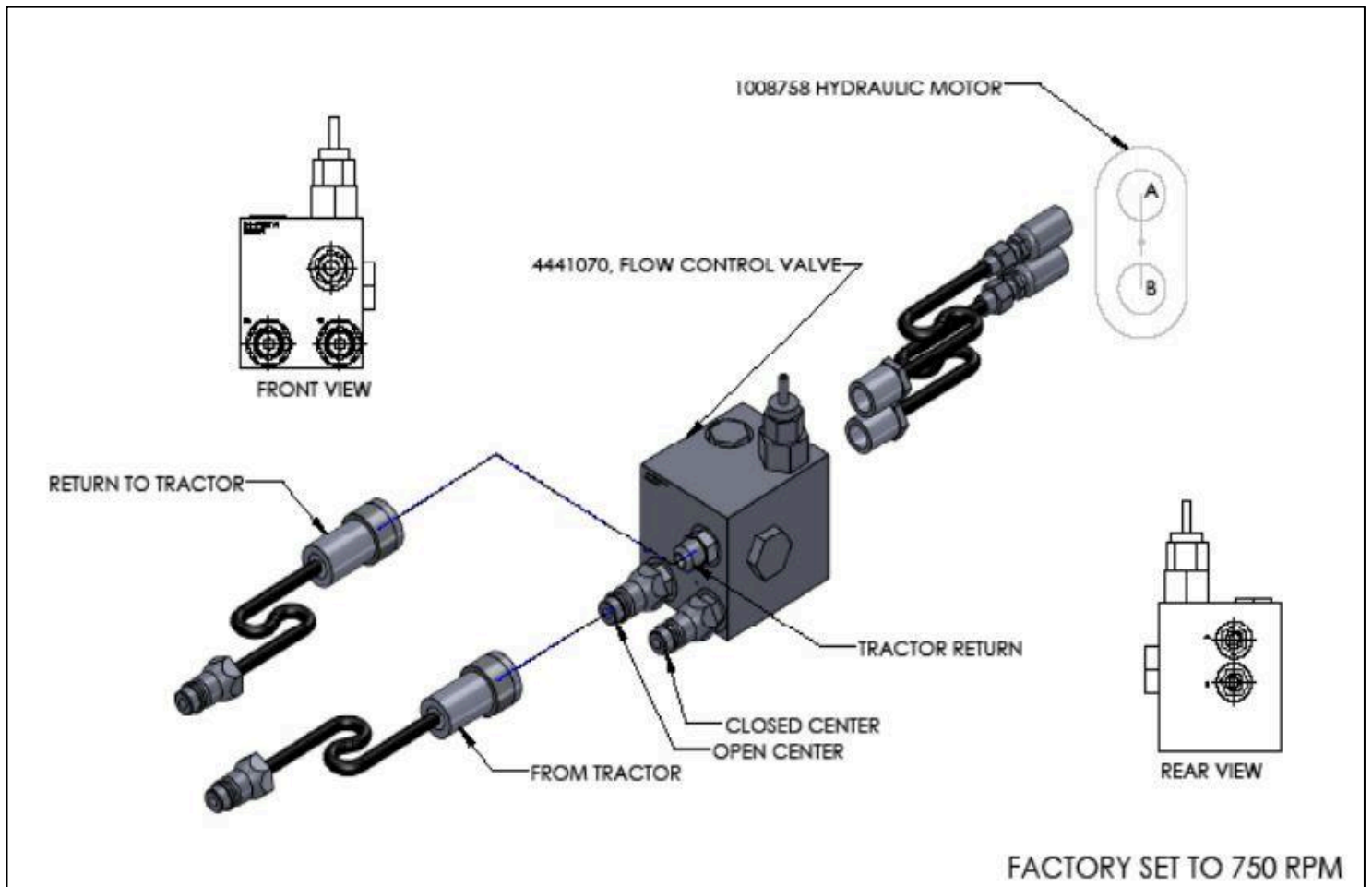


ITEM	PART #	DESCRIPTION	QTY
1	1003735	BOX ASSEMBLY, RH	1
2	1000938	PLUG, SOFT	2
3	1000932	BEARING	8
4	1002426	GEAR	2
5	1000936	HOUSING, RH	1
6	1006856	OIL PLUG	2
7	1000935	KEY, WOODRUFF	2
8	1003730	SHAFT, TAPERED	1
9	1000933	RETAINER RING	5
10	1000931	RETAINER RING	8
11	1000930	SEAL	3
12	1001206	TUBE ASSEMBLY	1
13	1000944	HOUSING BARREL	3
14	1000941	TUBE ASSEMBLY	1
15	1002417	SHAFT, TAPERED	1
16	1000945	PINION GEAR	2
17	1003736	BOX ASSEMBLY, LH	1
18	1003730	SHAFT, TAPERED	1
19	1000947	HOUSING, LH	1
20	1001205	BARREL ASSEMBLY	1
21	1000948	SHAFT & GEAR ASSEMBLY	1
22	1000940	GASKET	3
23	1000834	HHCS, 5/16-18 x 3/4"	12
24	1000836	LOCK WASHER, 5/16"	12
25	1003742	45 DEGREE GREASE ZERK	2

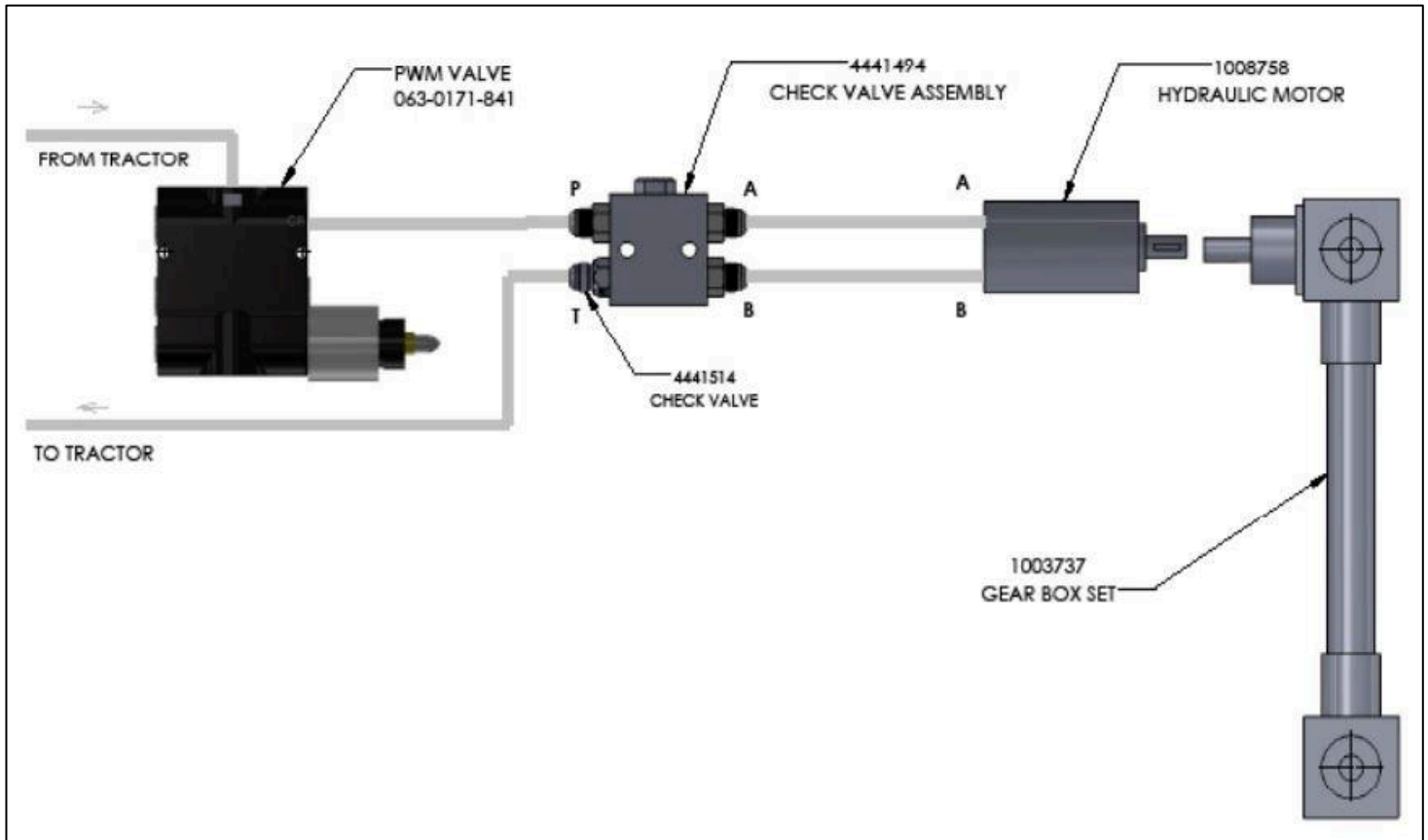
HYDRAULIC MOTOR ASSEMBLY – SPINNERS



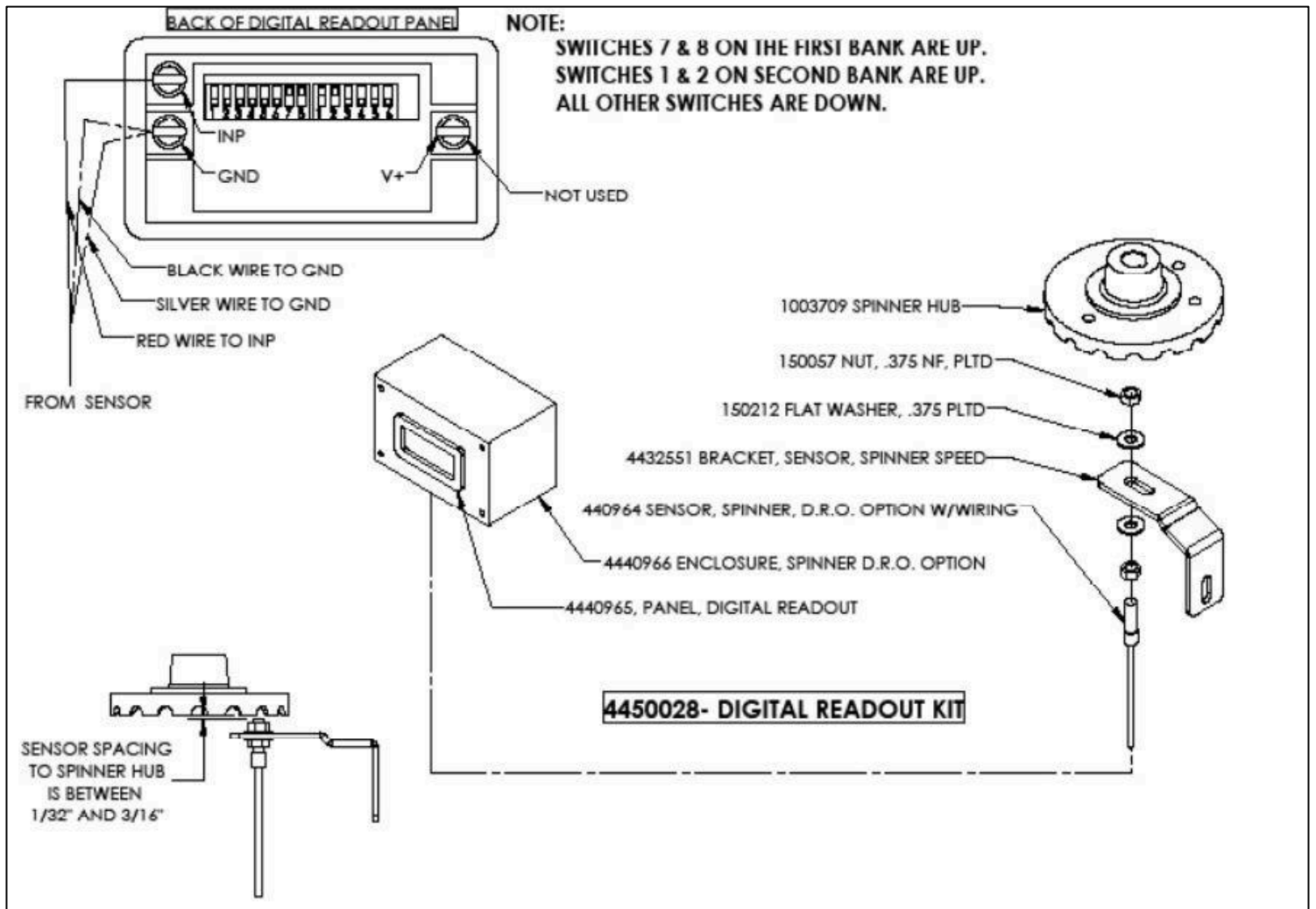
HYDRAULIC FLOW CONTROL VALVE ASSEMBLY – SPINNERS



HYDRAULIC SPINNER DRIVE LAYOUT

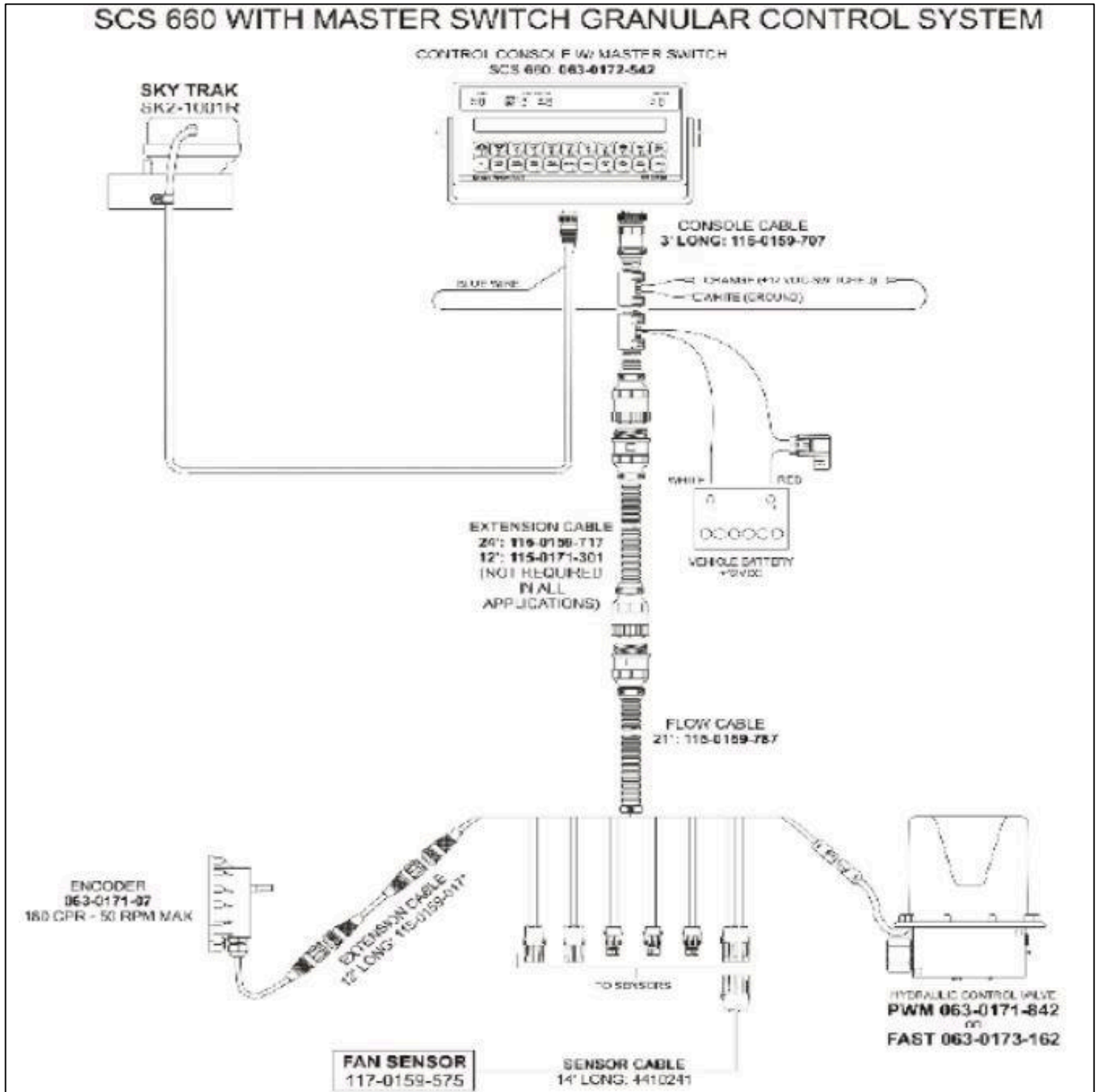


DIGITAL READOUT ASSEMBLY

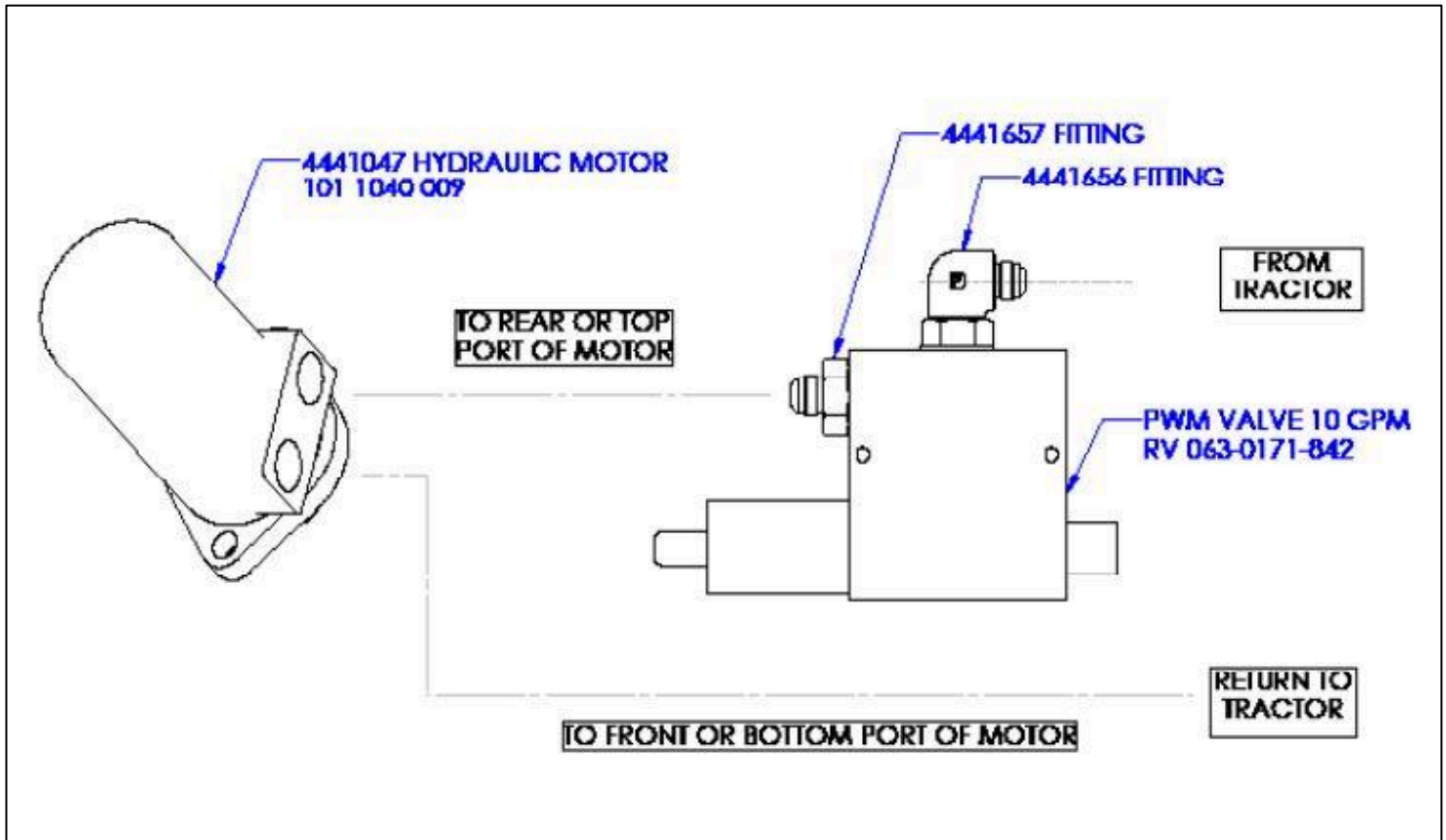


SCS 660 RATE CONTROLLER ASSEMBLY

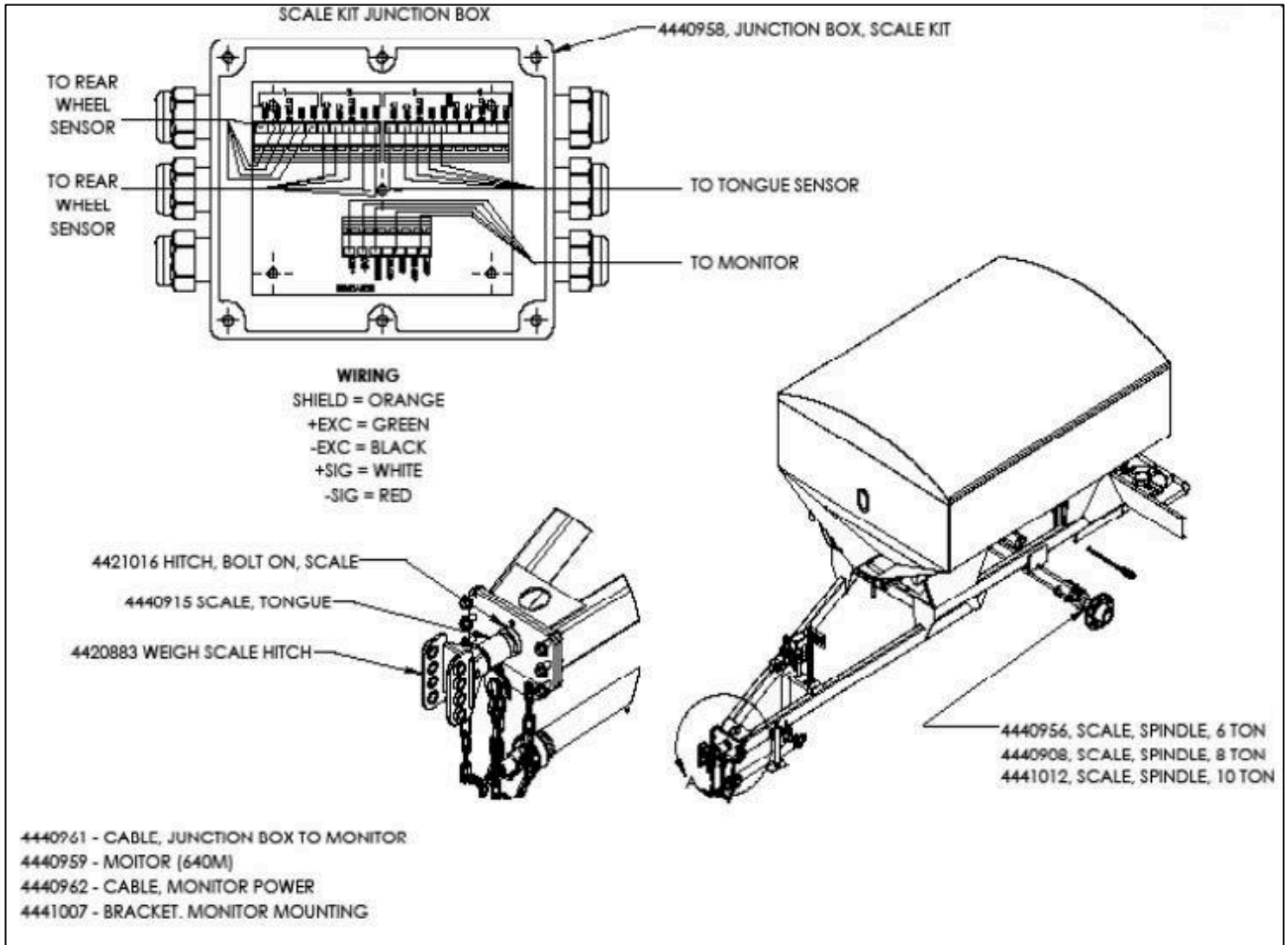
SCS 660 WITH MASTER SWITCH GRANULAR CONTROL SYSTEM



VARIABLE RATE CONTROL HYDRAULIC ASSEMBLY



SCALE KIT & JUNCTION BOX ASSEMBLY



DECAL LAYOUT

1000529-Y - DECAL, GATE HEIGHT MARKER, ALL MOBILITY MODELS

To replace decal (Mobility VR Model):

Place 1/2" material on top of chain, lower gate to material, set pointer at 1"

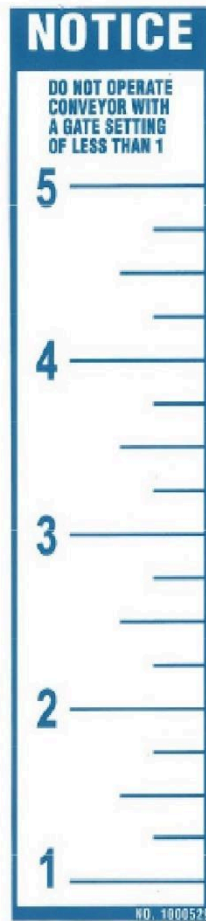






Table 1: per model Name decals

PN	Description
4441665	DECAL, FAST, DS-8
4441666	DECAL, FAST, DS-8W
4441663	DECAL, FAST, DS-10
4441667	DECAL, FAST, DS-10W
4441668	DECAL, FAST, DS2-1050
4441669	DECAL, FAST, DS2-1060
4441670	DECAL, FAST, DS2-1070



Table 2: per model Spread Chart decals

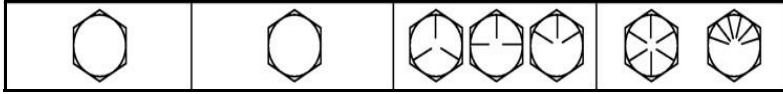
PN	Description
1001118-60-Y	DECAL, FAST, SPREAD CHART, 60 FT. SPREAD, 12 TO 72 T. & 24 T TO 48 T., YELLOW BORDER
1001118-90-Y	DECAL, FAST, SPREAD CHART, 90 FT. SPREAD, 12 TO 72 T. & 24 T TO 48 T., YELLOW BORDER
1001118-VR90-Y	DECAL, FAST, SPREAD CHART, 60'-90', VARIABLE RATE, YELLOW BORDER
1001118-Y	DECAL, FAST, SPREAD CHART, 50 FT. SPREAD, 12 TO 72 T. & 24 T TO 48 T., YELLOW BORDER



TIGHTENING HARDWARE

Check tightness of ALL BOLTS, U-BOLTS and CAP SCREWS after first 10-15 hours of operation and again at end of first week (50 hours) of operation. Tighten all bolts to torques specified in its applicable service section unless otherwise noted. Check tightness of hardware periodically.

Unified Inch Bolt and Screw Torque Values



Bolt or Screw Size	SAE Grade 1				SAE Grade 2 ¹				SAE Grade 5, 5.1 or 5.2				SAE Grade 8 or 8.2			
	Lubricated ²		Dry ³		Lubricated ²		Dry ³		Lubricated ⁴		Dry ³		Lubricated ²		Dry ³	
	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.
1/4	3.7	33	4.7	42	6	53	7.5	66	9.5	84	12	106	13.5	120	17	150
													N·m	lb.-ft.	N·m	lb.-ft.
5/16	7.7	68	9.8	86	12	106	15.5	137	19.5	172	25	221	28	20.5	35	26
									N·m	lb.-ft.	N·m	lb.-ft.				
3/8	13.5	120	17.5	155	22	194	27	240	35	26	44	32.5	49	36	63	46
			N·m	lb.-ft.	N·m	lb.-ft.	N·m	lb.-ft.								
7/16	22	194	28	20.5	35	26	44	32.5	56	41	70	52	80	59	100	74
	N·m	lb.-ft.														
1/2	34	25	42	31	53	39	67	49	85	63	110	80	120	88	155	115
9/16	48	35.5	60	45	76	56	95	70	125	92	155	115	175	130	220	165
5/8	67	49	85	63	105	77	135	100	170	125	215	160	240	175	305	225
3/4	120	88	150	110	190	140	240	175	300	220	380	280	425	315	540	400
7/8	190	140	240	175	190	140	240	175	490	360	615	455	690	510	870	640
1	285	210	360	265	285	210	360	265	730	540	920	680	1030	760	1300	960
1-1/8	400	300	510	375	400	300	510	375	910	670	1150	850	1450	1075	1850	1350
1-1/4	570	420	725	535	570	420	725	535	1280	945	1630	1200	2050	1500	2600	1920
1-3/8	750	550	950	700	750	550	950	700	1700	1250	2140	1580	2700	2000	3400	2500
1-1/2	990	730	1250	930	990	730	1250	930	2250	1650	2850	2100	3600	2650	4550	3350

Torque values listed are for general use only, based on the strength of the bolt or screw. DO NOT use these values if a different torque value or tightening procedure is given for a specific application. For plastic insert or crimped steel type lock nuts, for stainless steel fasteners, or for nuts on U-bolts, see the tightening instructions for the specific application. Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical grade.

Replace fasteners with the same or higher grade. If higher grade fasteners are used, tighten these to the strength of the original. Make sure fastener threads are clean and that you properly start thread engagement. When possible, lubricate plain or zinc plated fasteners other than lock nuts, wheel bolts or wheel nuts, unless different instructions are given for the specific application.

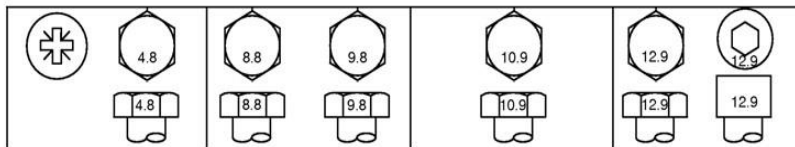
¹ Grade 2 applies for hex cap screws (not hex bolts) up to 6 in. (152 mm) long. Grade 1 applies for hex cap screws over 6 in. (152 mm) long, and for all other types of bolts and screws of any length.

² "Lubricated" means coated with a lubricant such as engine oil, fasteners with phosphate and oil coatings, or 7/8 in. and larger fasteners with JDM F13C, F13F or F13J zinc flake coating.

³ "Dry" means plain or zinc plated without any lubrication, or 1/4 to 3/4 in. fasteners with JDM F13B, F13E or F13H zinc flake coating.

⁴ "Lubricated" means coated with a lubricant such as engine oil, fasteners with phosphate and oil coatings, or 7/8 in. and larger fasteners with JDM F13C, F13F or F13J zinc flake coating.

Metric Bolt and Screw Torque Values



Bolt or Screw Size	Class 4.8		Class 8.8 or 9.8				Class 10.9				Class 12.9					
	Lubricated ¹		Dry ²		Lubricated ¹		Dry ²		Lubricated ¹		Dry ³		Lubricated ¹		Dry ²	
	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.
M6	4.7	42	6	53	8.9	79	11.3	100	13	115	16.5	146	15.5	137	19.5	172
									N·m	lb.-ft.	N·m	lb.-ft.	N·m	lb.-ft.	N·m	lb.-ft.
M8	11.5	102	14.5	128	22	194	27.5	243	32	23.5	40	29.5	37	27.5	47	35
			N·m	lb.-ft.	N·m	lb.-ft.	N·m	lb.-ft.								
M10	23	204	29	21	43	32	55	40	63	46	80	59	75	55	95	70
	N·m	lb.-ft.														
M12	40	29.5	50	37	75	55	95	70	110	80	140	105	130	95	165	120
M14	63	46	80	59	120	88	150	110	175	130	220	165	205	150	260	190
M16	100	74	125	92	190	140	240	175	275	200	350	255	320	235	400	300
M18	135	100	170	125	265	195	330	245	375	275	475	350	440	325	560	410
M20	190	140	245	180	375	275	475	350	530	390	675	500	625	460	790	580
M22	265	195	330	245	510	375	650	480	725	535	920	680	850	625	1080	800
M24	330	245	425	315	650	480	820	600	920	680	1150	850	1080	800	1350	1000



OPERATION, MAINTENANCE, & PARTS

M27	490	360	625	460	950	700	1200	885	1350	1000	1700	1250	1580	1160	2000	1475
M30	660	490	850	625	1290	950	1630	1200	1850	1350	2300	1700	2140	1580	2700	2000
M33	900	665	1150	850	1750	1300	2200	1625	2500	1850	3150	2325	2900	2150	3700	2730
M36	1150	850	1450	1075	2250	1650	2850	2100	3200	2350	4050	3000	3750	2770	4750	3500

Torque values listed are for general use only, based on the strength of the bolt or screw. DO NOT use these values if a different torque value or tightening procedure is given for a specific application. For stainless steel fasteners or for nuts on U-bolts, see the tightening instructions for the specific application. Tighten plastic insert or crimped steel type lock nuts by turning the nut to the dry torque shown in the chart, unless different instructions are given for the specific application.

Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical property class. Replace fasteners with the same or higher property class. If higher property class fasteners are used, tighten these to the strength of the original. Make sure fastener threads are clean and that you properly start thread engagement. When possible, lubricate plain or zinc plated fasteners other than lock nuts, wheel bolts or wheel nuts, unless different instructions are given for the specific application.

¹ "Lubricated" means coated with a lubricant such as engine oil, fasteners with phosphate and oil coatings, or M20 and larger fasteners with JDM F13C, F13F or F13J zinc flake coating.

² "Dry" means plain or zinc plated without any lubrication, or M6 to M18 fasteners with JDM F13B, F13E or F13H zinc flake coating.

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OPERATION, MAINTENANCE, & PARTS

NOTES



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