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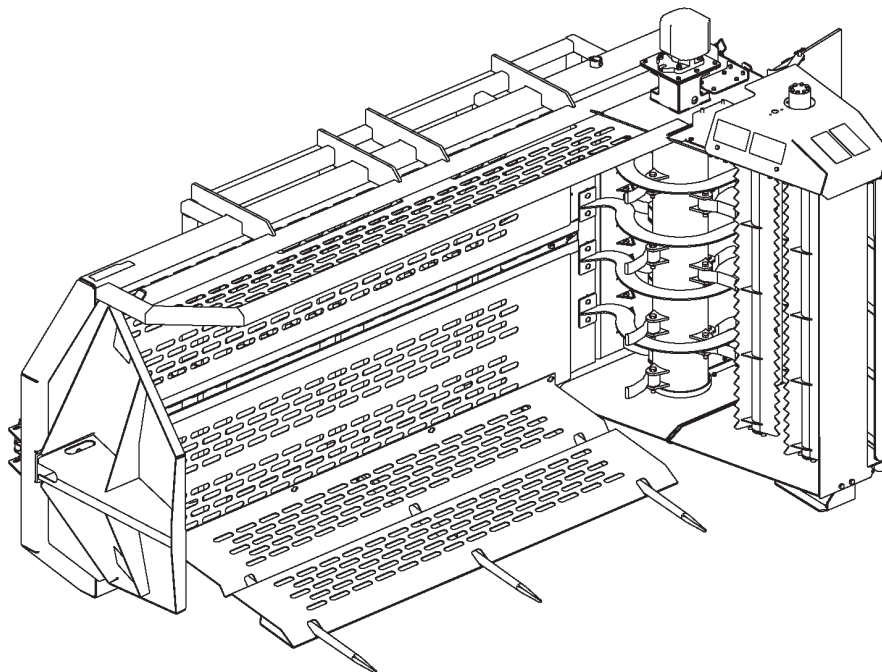
Owner's Manual

Keep this manual with the machine at all times.



Bale Processor

Boss 4920



Owner's Manual

Thank you for choosing the Tubeline Boss 4920 Series Bale Processor.

Our hope is that it will give you many years of productive service.

Please read and understand this manual and the machine before operation.

Warranty and Limitation of Liability

All equipment is sold subject to mutual agreement that it is warranted by the company to be free from defects of materials and workmanship. But the company shall not be liable for special, indirect or consequential, damages of any kind under this contract or otherwise. The company's liability shall be limited exclusively to replacing or repairing without charge, at its factory or elsewhere, at its discretion.

Any material, or workmanship defects which become apparent within one year from the date on which the equipment was purchased, and the company shall have no liability for damages of any kind. The buyer by the acceptance of the equipment will assume all liability for any damages, which may result from the use or misuse by his employees or others.

Warranty coverage is null and void unless Warranty Registration form has been completely filled in and is on file at Tubeline Manufacturing Ltd.

Serial Plate Location

The implement serial number is located underneath the flail drum motor, *see below*. This number helps us to track changes and improvements and must be mentioned when ordering parts or requesting service. For your convenience, a space has been provided inside the front cover of this manual to record the serial number, model number, purchase date, and dealer name.

Model No: _____ Boss 4920 _____

Serial No: _____

Date Purchased: _____

Dealer Name: _____

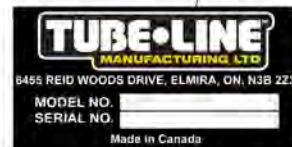
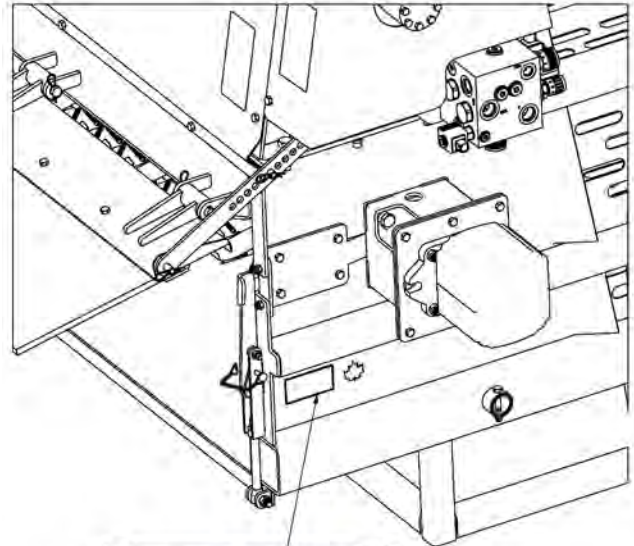


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Section 1 - Introduction

The **Boss 4920** is carefully designed and manufactured to give you many years of dependable service. You or any other person, who will be assembling, operating, maintaining or working with this product, are required to read and completely understand the information and instructions contained in this manual. If anyone does not fully understand every part of this manual, please obtain further assistance by contacting the dealer from which this product was purchased or by contacting Tube-Line at the telephone number or address listed on the previous page of this manual. Keep this manual available for reference whenever this product is being handled or used. Provide this manual to any new owners and/or operators.

Bale Sizes

Tubeline Boss 4920 machines can load and shred all types of forage in large square bales.

Maximum bale weight is 2600lbs (1180 kg).

Maximum length of bales is 96" (244 cm) X 48" (122 cm) X 48" (122 cm).

Uses

The Tubeline Boss 4920 has many uses, including:

- Laying windrows in open fields.
- Filling feed bunks - fence line, circular, etc.
- Spreading forage for livestock bedding.
- Spreading mulch over perennial plants such as strawberries and mushrooms.

General Information

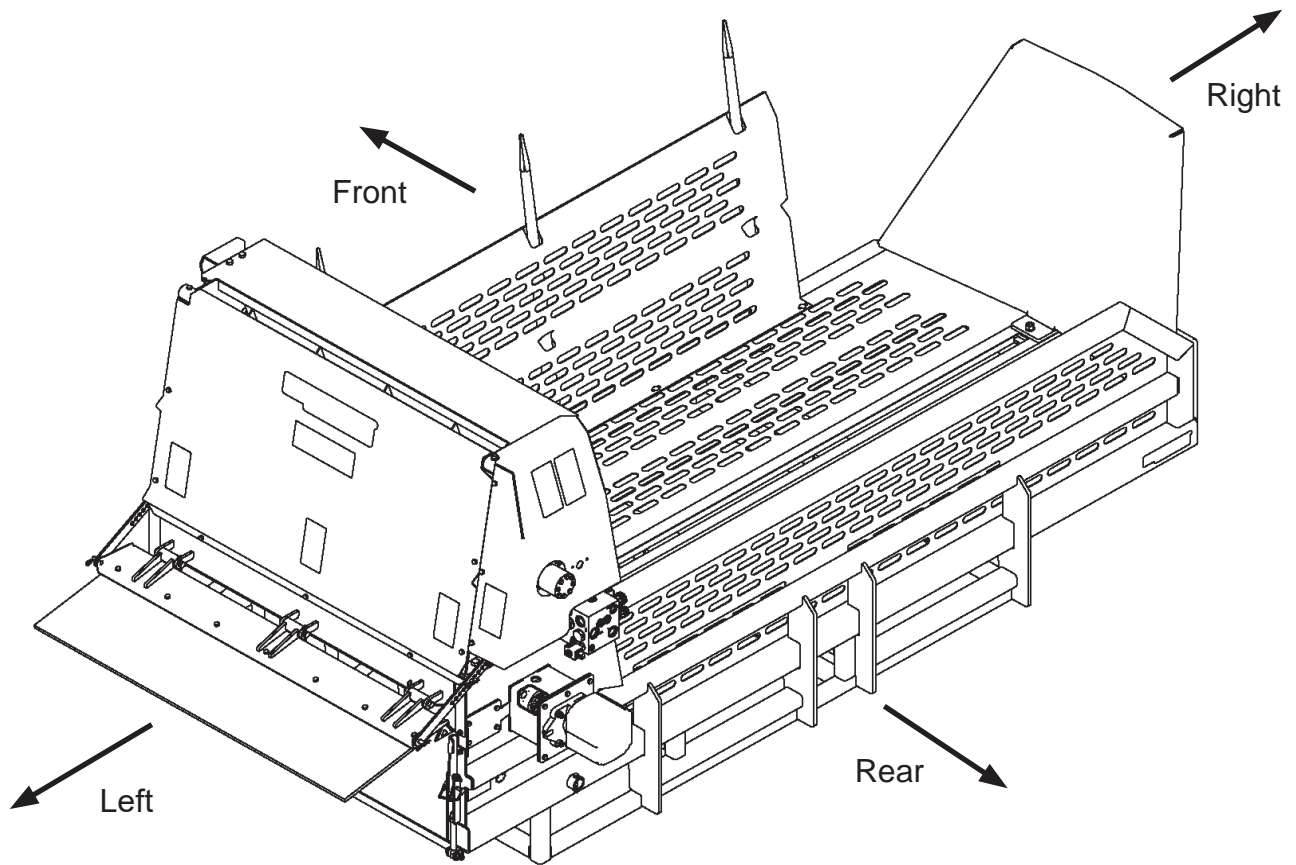
The purpose of this manual is to assist you in safely assembling, mounting, operating and maintaining your Boss 4920. Read this manual carefully to obtain valuable information and instructions that will help you achieve safe and dependable service. The illustrations and data used in this manual were current at the time of printing, but due to possible engineering and/or production changes, this product may vary slightly in detail. Tube-Line reserves the right to redesign and/or change components as necessary without notification.

Throughout this manual, references may be made to :

Power Unit	The engine-driven machine to which this product must be attached, ie; front loader, telehandler, tractor, etc.
Right, Left, Front, Rear	Directions which are determined in relation to the operator of the equipment when seated in the normal operating position.
IMPORTANT	Precautions that must be followed to prevent damage to equipment.
NOTICE	Precautions that must be followed to prevent substandard performance.

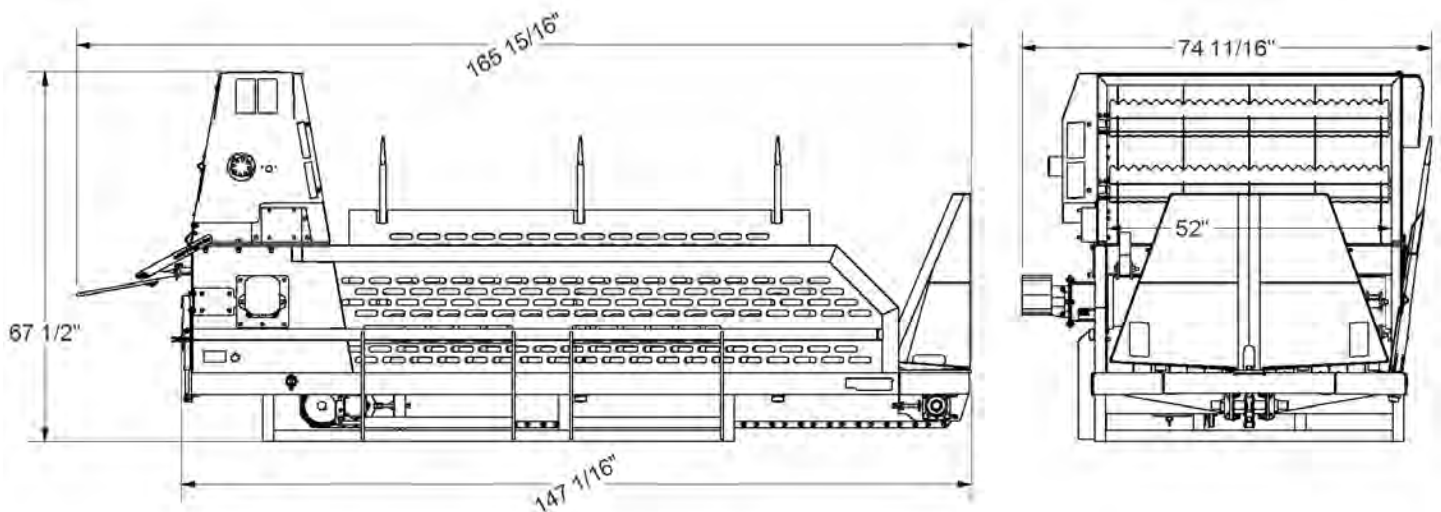
Orientation

Directional references in this manual are dependant on the operator's position while this machine is mounted to its forward facing loading arms.



Dimensions

Weight: ~ 2750 lbs (1250kgs).



Section 2 - Safety

NOTICE: This safety alert symbol is found throughout this manual to call attention to instructions involving yourself and others working around the machine.

Failure to follow these instructions can result in injury or death.



This symbol means:

- **Attention!**
- **Become Alert!**
- **Your Safety is involved!**

Safety Signal Words / Safety Messages

CAUTION: Indicates a potentially hazardous situation that may result in injury.

WARNING: Indicates a potentially hazardous situation that could result in serious injury or death.

DANGER: Indicates a hazardous situation that needs to be avoided. Operator needs to be aware of these dangers. High probability of serious injury or death.

NOTICE: Indicates an informative non-safety related message.

Safety Guidelines

Take the necessary precautions to avoid injury or death. These include:

- Reading and understanding this manual before operating.
- Have training and train new operators.
- Review the safety instructions with all users annually.
- Know where safety decals are and what they convey.
- **DO NOT** paint over, remove or deface any safety signs or warning decals on your equipment.
- Replace damaged and/or missing safety decals.
- **DO NOT** operate without fully installed shields.
- Reinstall any removed shields **BEFORE** operating.
- Inspect machine before operating.
- **DO NOT** operate this machine while under the influence of drugs or alcohol.
- **DO NOT** let children ride or operate this machine.

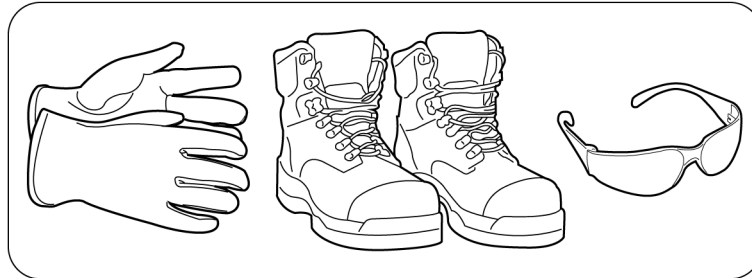
Personal Protective Equipment



WARNING: Wear work boots, gloves, and safety glasses when maintaining or repairing machine.

WARNING: Wear work boots and ear protection when operating machine.

DANGER: Secure loose clothing, hair, accessories before operating or maintaining the Boss 4920.



Maintenance Safety

Know and follow good work practices when assembling, mounting, maintaining, repairing, removing and storing this product:

- Work on a level surface in a clean, dry and well lit area.
- Use properly grounded electrical outlets and tools.
- Use the right tool for the job at hand.
- Make sure that your tools are in good condition to perform the necessary function.

WHEN YOUR POWER UNIT IS USED DURING ANY TYPE OF ASSEMBLY, OPERATION, MAINTENANCE OR OTHER WORK ON OR NEAR THIS PRODUCT:

Before leaving the operator's station or before beginning any type of work on this product, lower this product to the ground, apply your power unit's parking brake, stop the engine, remove the starter key, wait for all moving parts to stop and then relieve all pressure in the hydraulic lines.

NOTICE: Refer to your power unit's operator's manual for instructions on how to relieve hydraulic pressure in lines.

Know your loader's safe lifting and operating capacity and the weight of this product. See the specifications in this manual for the weight of this product and refer to your power unit's and loader's operator's manuals for safe operating limits. Lift capacity may be reduced if using a quick-attach.

Never allow anyone, except the operator, to be around the power unit or this product when either is in motion. Do not start up unless others are clear of the work area. Do not allow riders on this product or the power unit. Do not stand or climb on this product when raised. Do not place any part of your body under any part of this product unless this product is securely resting on adequate blocking or on the ground.

Do not use blocking made of concrete blocks, logs, buckets, barrels or any other material that could suddenly collapse or shift positions. Do not use wood or steel blocking that shows any signs of material decay. Never operate controls from the ground. Operate the controls only from the operator's

station. Never leave the equipment unattended with the engine running or with this product raised on the loader.

Transport Safety

- Be aware of the added weight and width of this product.
- Reduce travel speeds accordingly, especially when traveling over rough ground.
- Keep this product close to the ground and under control when transporting.
- When transporting, be sure processor does not block view of vehicle lights or road.

Hydraulic Safety

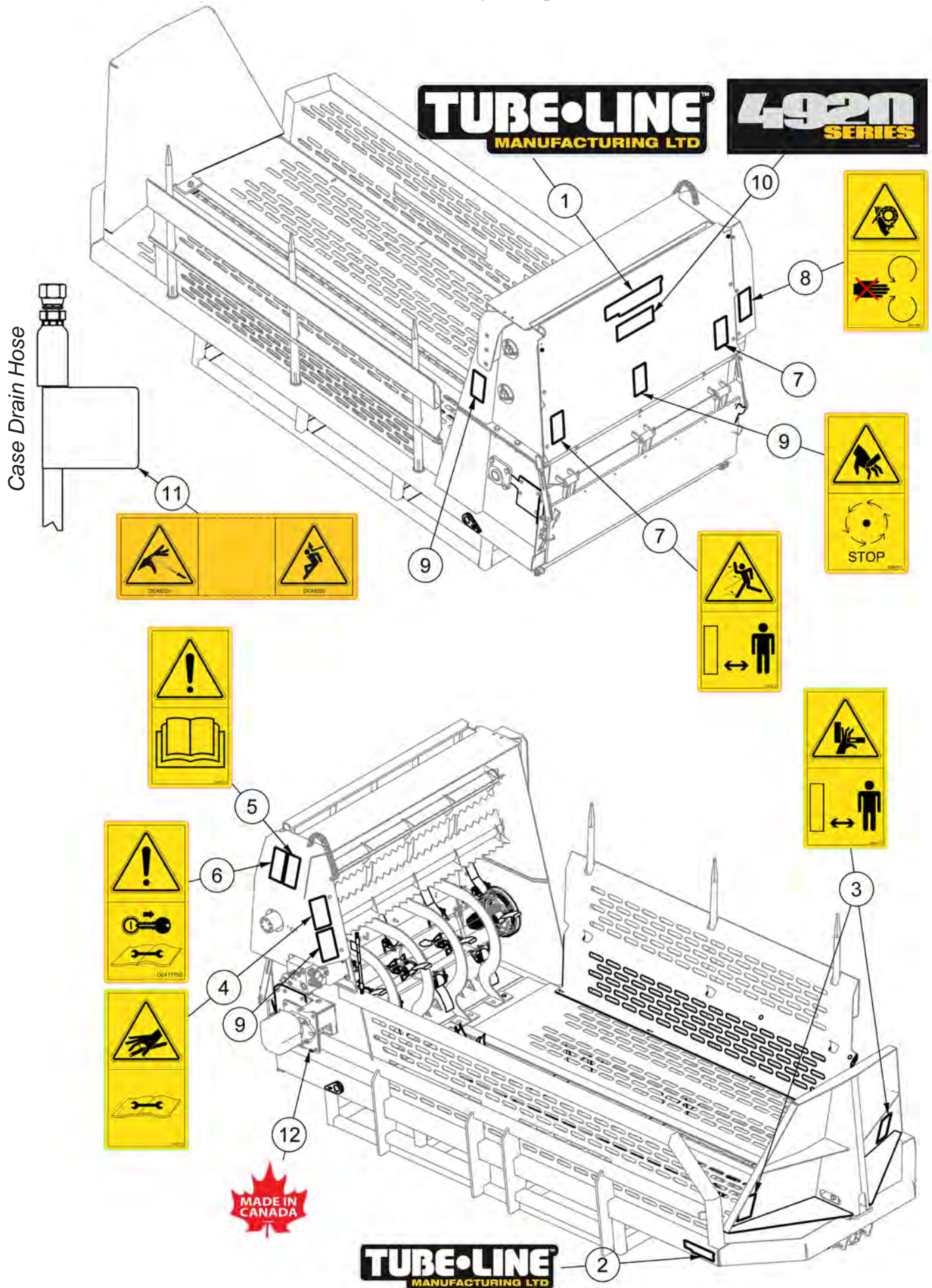
WHEN DEALING WITH HYDRAULICS DURING ANY TYPE OF ASSEMBLY, OPERATION, MAINTENANCE OR OTHER WORK ON OR NEAR THIS PRODUCT:

Hydraulic fluid under pressure can penetrate the skin and cause serious injury or death. Hydraulic leaks under pressure may not be visible. Wear safety glasses, protective clothing and use a sound piece of cardboard or wood when searching for hydraulic leaks. **DO NOT USE YOUR HANDS!** If any fluid penetrates the skin, **SEEK IMMEDIATE MEDICAL ATTENTION!**

Before connecting or disconnecting hydraulic hoses, read your tractor or power unit's operator's manual for detailed instructions on connecting and disconnecting hydraulic attachments. Make certain that all parts meet the specifications for this product when installing or replacing hydraulic hoses or fittings. After connecting hydraulic lines: Slowly and carefully raise the loader and cycle the rollback / dump cylinders to check hose clearances and to check for any interference. Operate the hydraulics on this product to check hose clearances and to check for any interference. Make certain that the hoses cannot interfere with or actuate the quick-attach mechanism. Make certain that hoses will not be pinched, or get tangled, in any equipment. Do not lock the auxiliary hydraulics of your power unit in the "ON" position.

Refer to your power unit's operator's manual and this manual for procedures and intervals, then inspect and maintain the entire hydraulic system to insure that the fluid remains clean, that all devices function properly and that there are no fluid leaks.

Section 3 - Safety Sign Locations



ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	DE28146	Tubeline Decal 4" x 16"
2	1	DE28705	Tubeline Decal 2.0" x 8.3 "
3	2	DE41712	ISO Decal - Hand Pinch Point
4	1	DE41713	ISO Decal - High Pressure Fluid
5	1	DE41714	ISO Decal - Read Operator's Manual
6	1	DE41715	ISO Decal - Remove Key Before Repair
7	2	DE41718	ISO Decal - Thrown Object Vertical
8	1	DE41902V	ISO Decal - Chain Entanglement Vertical
9	3	DE41913	ISO Decal - Cutting Hazard
10	1	DE46681	Boss 4920 Model Decal
11	1	DE48529	Case Drain Hose Decal
12	1	DECANADA	Decal Made In Canada

Placement or Replacement of Safety Signs

Clean the area of application with non-flammable solvent, then, wash the same area with soap and water. Allow the surface to fully dry. Remove the backing from the safety sign, exposing the adhesive surface. Apply the safety sign to the position shown in the diagram above and smooth out any bubbles.

Instructions

- Keep all safety signs clean and legible.
- Replace all missing, illegible or damaged safety signs.
- Replacement parts for parts with safety signs attached must also have safety signs attached.
- Safety signs are available free of charge from your dealer or from Tube-Line.

Safety Decals

DE41712 - Hand Pinch Hazard

Keep clear of machine while operating.
Do not attempt to free material by hand.
May result in serious injury and/or death.



DE41713 - Hydraulic Fluid Puncture Hazard

Do not attempt to find hydraulic leaks with hand. Consult operators manual ([pg.7-1](#)).



DE41714 - Read Operator's Manual Before Operating.

Fully understand how to use machine before operating.



DE41715 - Remove Key Before Servicing.

Read operator's manual for proper repair or maintenance techniques.



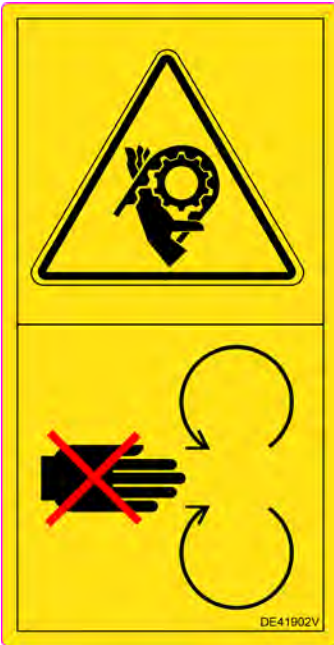
DE41718 - Thrown Object Hazard.

Keep clear of machine while operating. Serious injury may occur.



DE41902V - Chain Entanglement Hazard.

Keep hands clear of rotating parts while machine running. Do not operate without shielding in place. Do not wear loose clothing while operating.



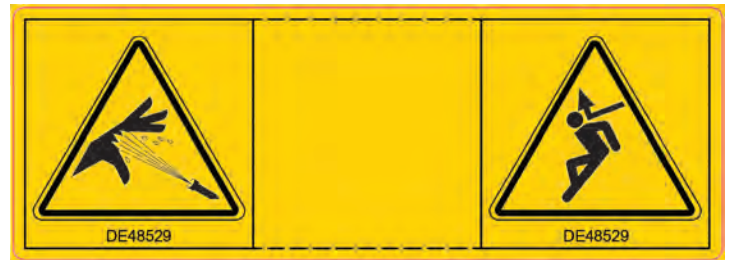
DE41913 - Cutting Hazard.

Sharp knives can cause dismemberment. Wait for moving parts to stop before attempting to repair.



DE48529 - Case Drain Hose Decal.

This hose must be attached to power unit before operation. Refer to [Pg.6-2](#).



DE46681 - Boss 4920 Model Decal.



DECANADA - Manufacturer Country of Origin.

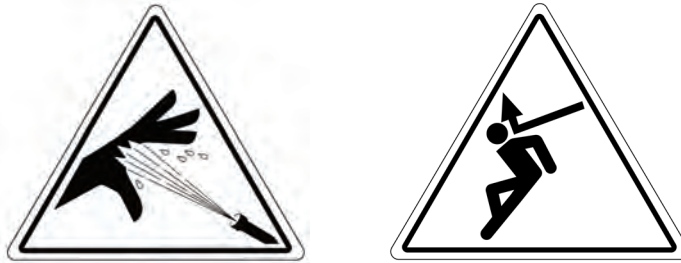


DE28146 & DE28705 - Tubeline Decal



Section 4 - Power Unit Specifications

Case Drain



DANGER: This machine requires a case drain (3rd line) to avoid damaging seals. Refer to [Tractor Hookup, Pg.5-2](#). Operating without the case drain hose attached or with a metal cap may damage the machine and could lead to fatal injury from fluid pressure or lashing from unsecured case drain hose.



WARNING: Exceeding any of the recommended power unit specifications can result in damage to your power unit and/or this product and WILL void all Tubeline warranties.

Maximum
40 GPM at 3000 PSI

Section 5 - Functions & Adjustments

Control Switch Functions

NOTICE: The Boss 4920 machine can be operated without electrical controls. However this removes the ability to stop the ram and top beater independantly from the flail drum.

With the handheld electrical control positioned as shown in Fig.1, the three toggle switch functions are:

- **(A)** Neutral position, the switch has no control over the hydraulic functions.
- **(B)** Left position, the switch will stop hydraulic flow to the bale ram.
- **(C)** Right position, the switch will stop hydraulic flow to both the bale ram and the top beaters.

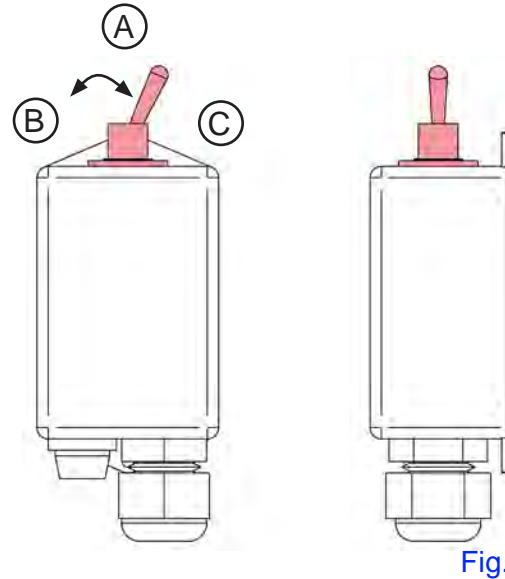


Fig.1

Adjusting High Flow Manifold Dials

There are 3 dials on the high flow manifold block. They control various functions of the machine.

NOTE: Loosen set screw on **(A)** and **(B)** dials before attempting adjustment.

1. Bale Feed Rate

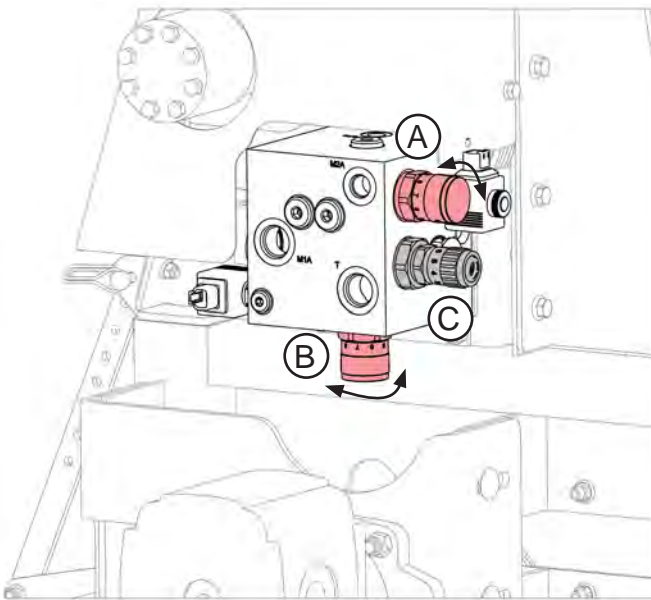
The hand dial located on the upper right side **(A)** of the manifold valve controls the speed that the bale ram pushes a bale into the flail drum.

2. Secondary Bale Feed Rate

The hand dial located on the bottom side **(B)** of the manifold valve controls the rotation speed of the top beaters.

3. Ram Retract Speed

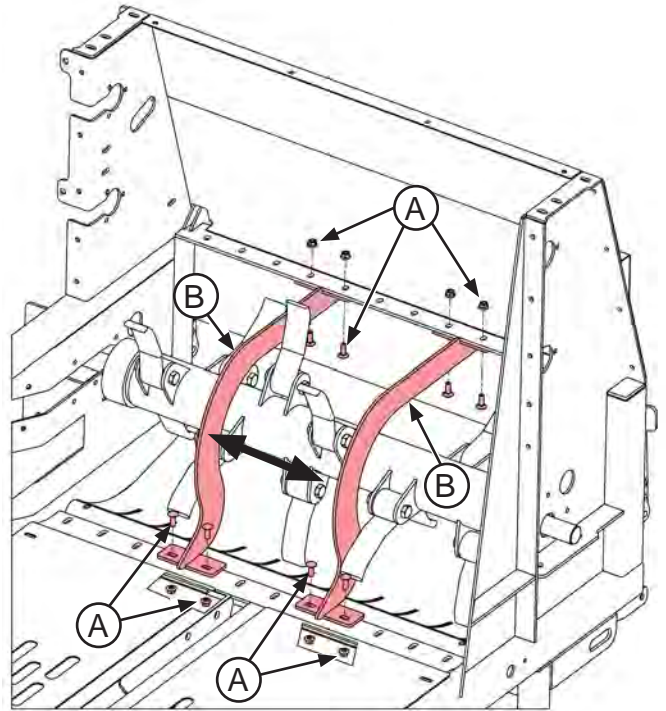
The black hand dial located on the lower right side **(C)** of the manifold valve controls the speed that the bale ram retracts from the flail drum.



Flail Drum Guards Adjustment

Flail drum guards are a great way to restrict the amount of material that is feed through the flail drum. However longer materials may be restricted too much and become entangled in the guards. Follow these instructions to remove or change the spacing of the flail drum guards.

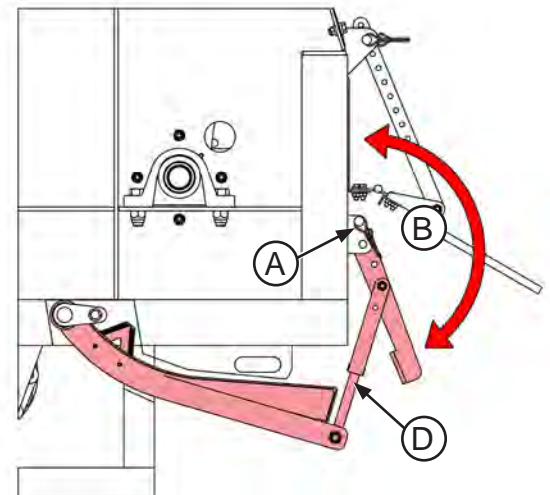
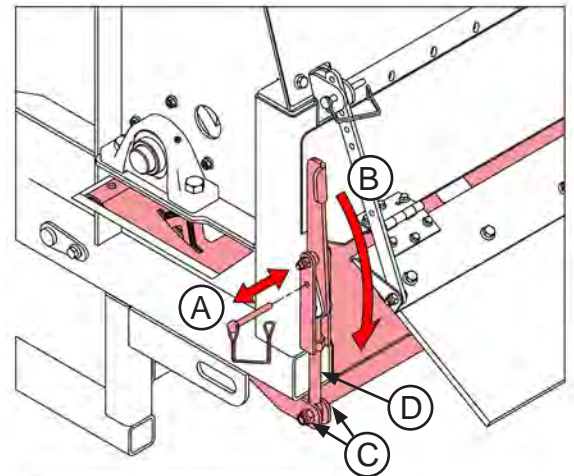
1. Remove nuts and bolts **(A)** from top and bottom of gaurds.
2. Slide, or remove, guards **(B)** to desired locations.
3. Refasten nuts and bolts of top and bottom of guards.



Flail Floor Adjustment

The floor beneath the flail drum can be lowered to allow longer strand material to be fed out of the machine.

1. Pull lock pins **(A)** from upper pivot likages (both sides).
2. Pull pivot linkage handles **(B)** down to lower floor (both sides).
3. Refasten lock pins through frame lugs to avoid losing them.
4. Further adjustment can be made by unfastening nuts and bolts **(C)** of lower pivot point which allows the eyebolts **(D)** to turn.
5. Turn the eyebolts to adjust the amount the flail floor lowers.
6. Refasten the nut and bolt through the eyebolt and flail floor (both sides).



Removing Cutting Knives

Removing the knives offers less resistance and faster processing when shorter material is being fed through the Boss I.



DANGER: Only remove knives when machine is disconnected from power unit. Wear work gloves to avoid cutting hands on serrated edges.

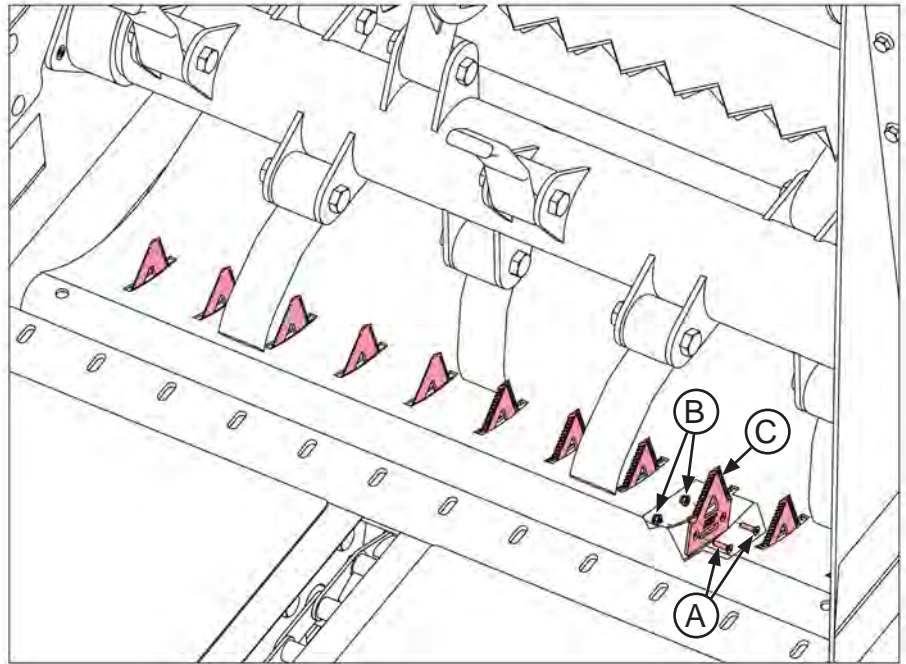
To remove knives follow these instructions:



WARNING: You may want to clamp the knife blade(s) to the frame to avoid accidental injury when fasteners are removed.

1. Remove countersunk bolts (**A**) and lock nuts (**B**).
2. Remove knife blade (**C**) and wrap sharp edges with a rag or other thick material.
3. Repeat the process to remove as many knives as desired.

Knives and hardware should be stored in a labelled container for future use.



Section 6 - Processor Operation



DANGER

Failure to obey the following procedure will result in death or serious injury. Avoid contacting overhead wires.

WARNING

Failure to obey the following procedures could result in death or serious injury.

Never lift this product: above the operator's eye level OR to a height where visibility is obstructed, whichever is lower.

Use caution when raising loaded processor. Objects could fall from processor toward bystanders or operator.

Remove all foreign objects and twine from bales before processing.

Processor Installation Instructions

Refer to the operator's manuals of your power unit, your loader and your quick-attach for special or detailed mounting instructions. This product should fit onto the quick-attach or loader arms of your power unit the same as the original products that were designed by your loader / quick-attach manufacturer. If this product does not fit properly, contact Tube-Line before operating. Never place your finger into the mounting plate or 3-point hitch or loader holes. A slight movement of the power unit or this product could cause serious injury.

Make certain that all safety signs are in place and legible. Refer to the safety sign page in this manual for the placement of safety signs for this product. Inspect driveline shield for free rotation. Replace all damaged or excessively worn parts and hardware only with genuine Tube-Line parts or with properly rated fasteners, hydraulic hoses or fittings. Make certain that all locking pins, latches and connection devices are properly installed and secured. Make certain that all shields are in place and secure.

- Never use processor on a power unit that is not equipped with a cab or ROPS, and operator restraints (seat belts or equivalent devices).
- Place this product on a firm, level surface that is large enough to safely accommodate this product, your power unit and all workers involved in the mounting process. Be sure all connection points are properly secured.
- Refer to the operator's manual(s) for your power unit, loader and quick-attach and follow the mounting instructions contained therein.
- Carefully raise the loader arms and cycle the tilt cylinders to check clearances and to verify that all mounting procedures have been successfully completed.
- Drive slowly through gates and doors.
- Know your loader's safe operating weight limit and the weight of your loader attachment.

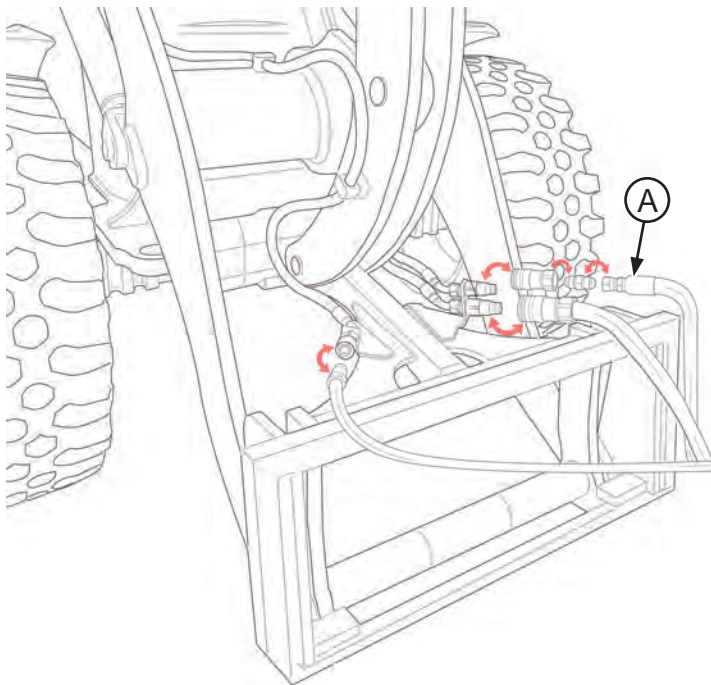
NOTICE

Refer to your power unit's operator's manual for safe operating limit and use of counterweights.



Processor Hydraulic Connection

WARNING: Read and understand the safety instructions (Section 2) before beginning any hydraulic connections.



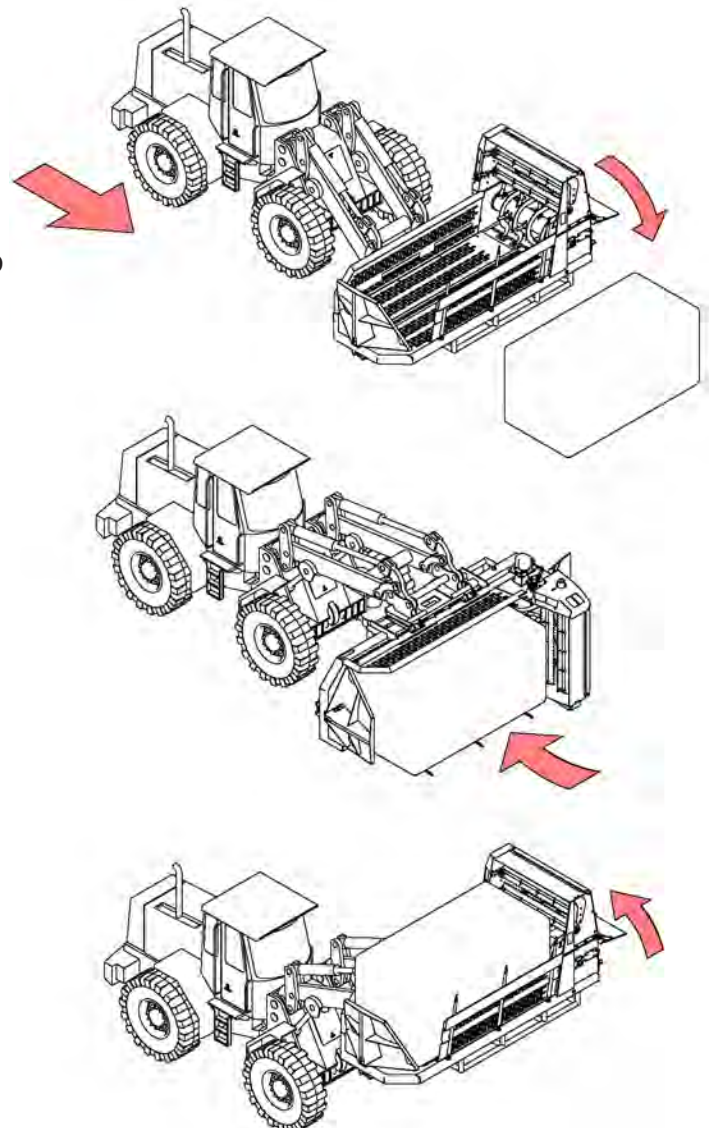
A case drain (A) is required to operate this machine. The Boss 4920 case drain hose ships with a 1/2" female JIC 37° swivel fitting. Adaptors and quick couplers must be purchased to match existing power unit case drain quick coupler. If your power unit does not have a case drain, one must be installed.

Disconnect the Boss 4920 hydraulic hose quick couplers from one another and attach the quick couplers to your power unit as per the instructions in your power unit's operator's manual.

Carefully raise the loader arms and cycle the tilt cylinders to check hose clearances and to identify any interference.

Loading Bales

- Load one bale at a time. If bales are frozen, put frozen side down to the table for better operation.
- Center the bale on the forks before loading on to the table. Slide forks lightly on the ground when loading bales. Store bales on level ground and on a clean surface free from rocks and other foreign objects.
- Adjust discharge deflector to spread forage at desired width.
- Operating power unit at maximum RPM. allows the processor to do a better job of chopping forage.
- Twine build-up should be kept to a minimum to reduce fire hazard and keep the machine in balance.
- Always lower the processor to the ground; set the parking brake; stop the engine; remove ignition key and wait for all moving parts to stop before leaving the operator's seat.



Section 7 - Processor Maintenance

Regular maintenance is the key to long equipment life and safe operation. It is very important that these maintenance functions be performed as described below.



SAFETY FIRST!! READ AND UNDERSTAND THE SAFETY INSTRUCTIONS *(Section 2)* BEFORE BEGINNING ANY PROCESSOR MAINTENANCE OPERATION

IMPORTANT

The flail tube on this machine is a fully balanced assembly. If for any reason the flails must be removed, they must be returned to the same position they were taken from. If this is not done a balance problem will result in causing machine vibration. Number flails and inserts and their positions before you do any work.

Before First Use

Inspect the attachment for shipping damage. If damage does exist, do not operate until the damaged parts have been replaced or repaired.

Before Each Use

Check for loose or badly worn parts.

Conveyor chain should be adjusted to allow chain slack 1" (2.54 cm) to 1½" (3.8 cm).

Make sure that all hydraulic fittings are tightened and that there are no leaks in any fittings or hoses.

Inspect rotor and all rotating parts for twine or wire build-up.

Check for cylinder wear and broken flails and flail bracket wear. Replace with new "Boss" flails to keep machine in balance.

Make sure that all safety signs are in place, are clean and are legible. Refer to Safety Sign Section, [page 3-1](#).

After Every 10 Hours of Operation

Grease all roller bearings ([refer to diagram on page 9-1](#)).

Inspect and tighten Allen screws on bearing.

Repairs

When making repairs, use only genuine Tubeline parts or, for fasteners, hydraulic hoses or hydraulic fittings, use only properly rated parts.

Order safety decals for replacement parts that have a safety decal on the original part.

Section 8 - Processor Service



SAFETY FIRST!! READ AND UNDERSTAND THE SAFETY INSTRUCTIONS ([Section 2](#)) BEFORE BEGINNING ANY PROCESSOR SERVICE.



WARNING

Hydraulic fluid under pressure can penetrate skin, resulting in serious injury or death.
Always relieve hydraulic pressure before disconnecting lines.

Shut off engine, set parking brake and relieve hydraulic pressure before connecting or disconnecting hydraulic lines. Refer to your power unit's manual for instruction on how to relieve hydraulic pressure in lines.

Before applying pressure to the system, be sure that all connections are tight and be sure there are no damaged hoses, lines or fittings.

Wear safety glasses and use metal or wood when searching for leaks. Do not use your hands.



WARNING

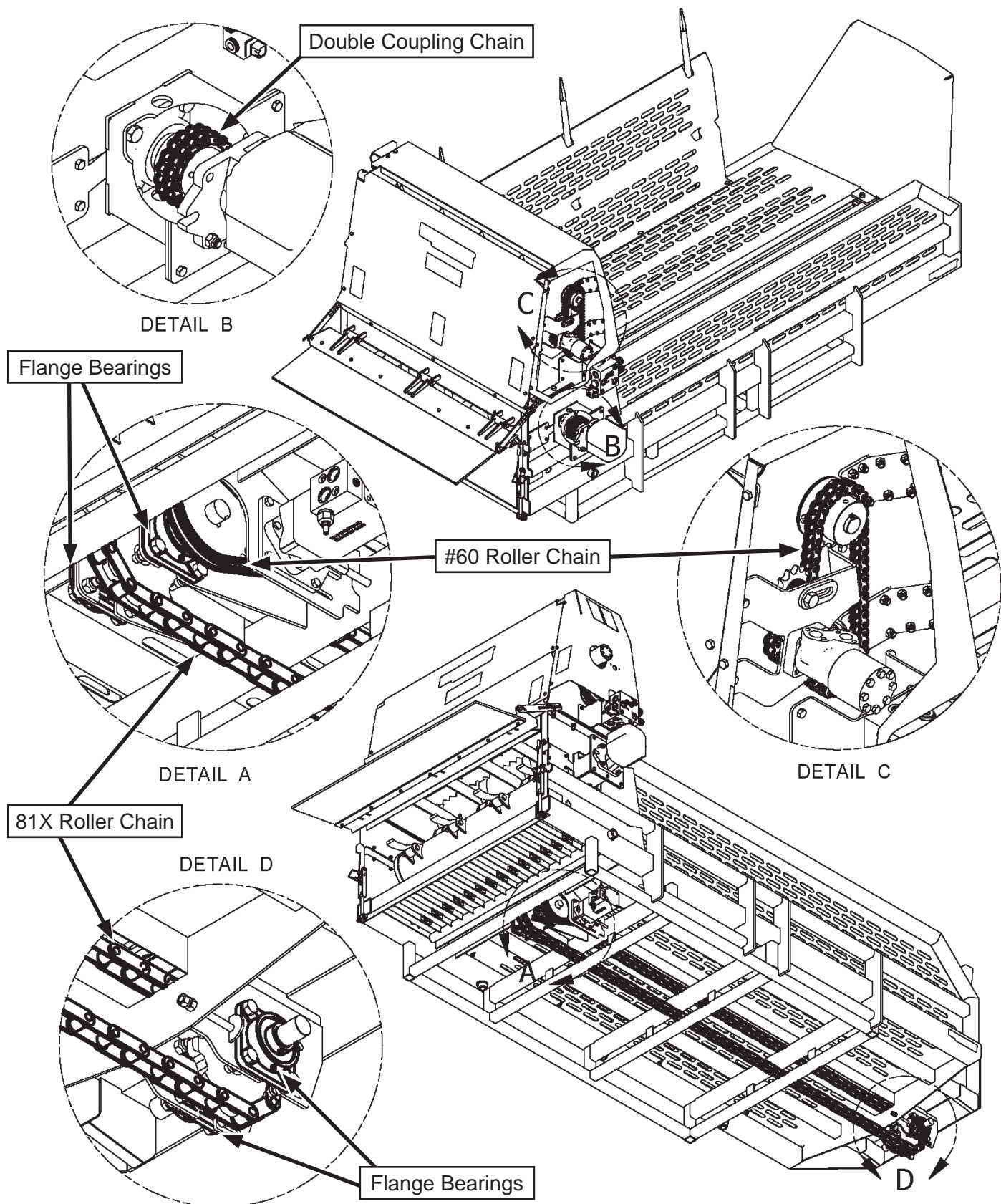
Before servicing the loader, remove the attachment and make certain the lift arms are lowered to their lowest position or that the arms are supported by the mechanical lock up devices (if the machine is so equipped).

Steam-clean the power unit before any installation is made to the hydraulic system.

Remove any attachment from the power unit and position on a level surface.

Section 9 - Grease Points

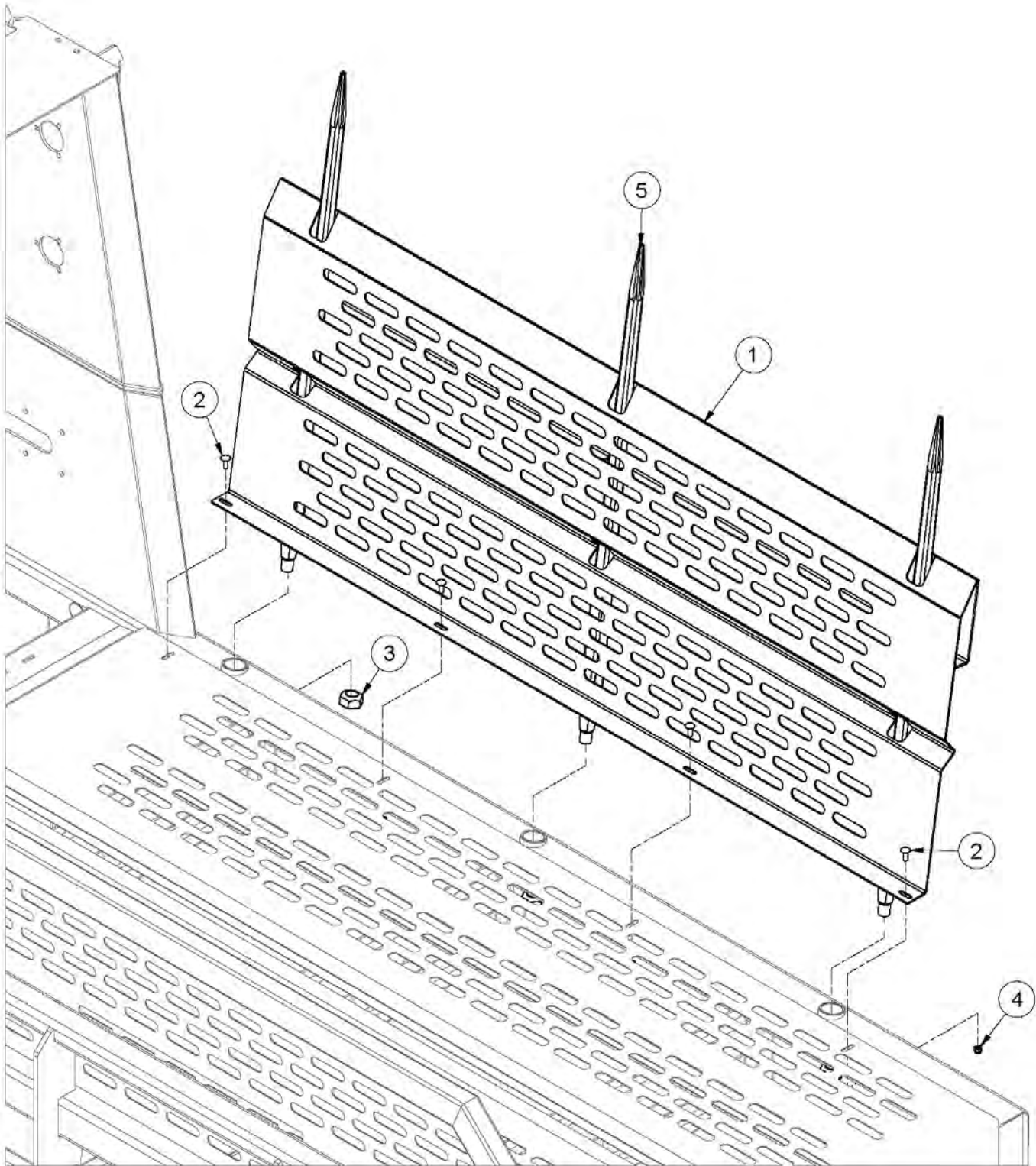
Use a high quality lithium or lithium complex grease. There are many variables to take into account when reapplying lubrication. As a general rule, high use and hot climates require more frequent greasing. Bearings only need a single stroke from a grease gun as over application may cause overheating. Chain (roller and coupling) should be lubricated with a high quality roller chain lubricant. It is good practice to apply a rust inhibitor to machine at end of season.



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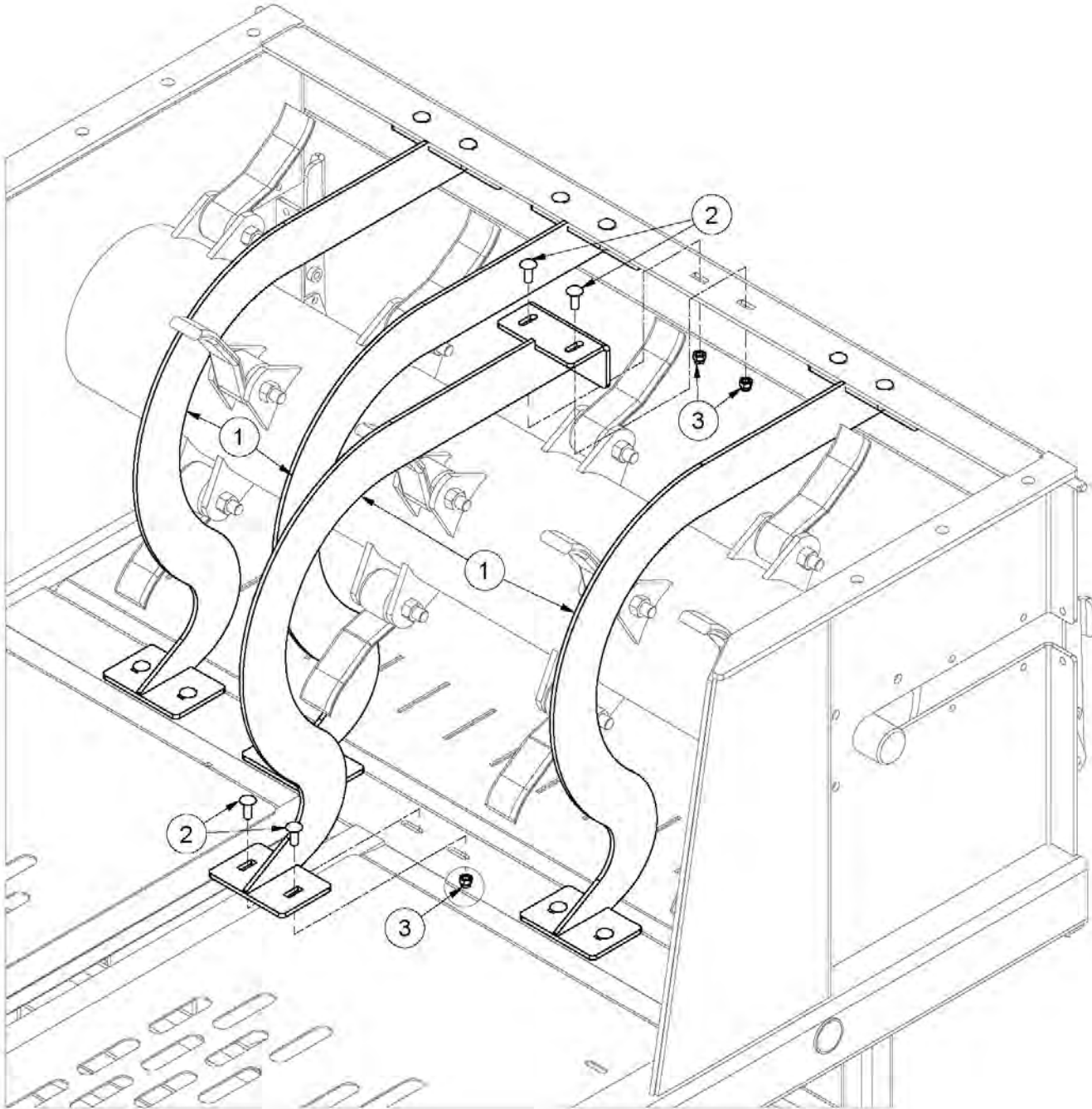
Section 10 - Part Breakdowns & Lists

Loading Plate



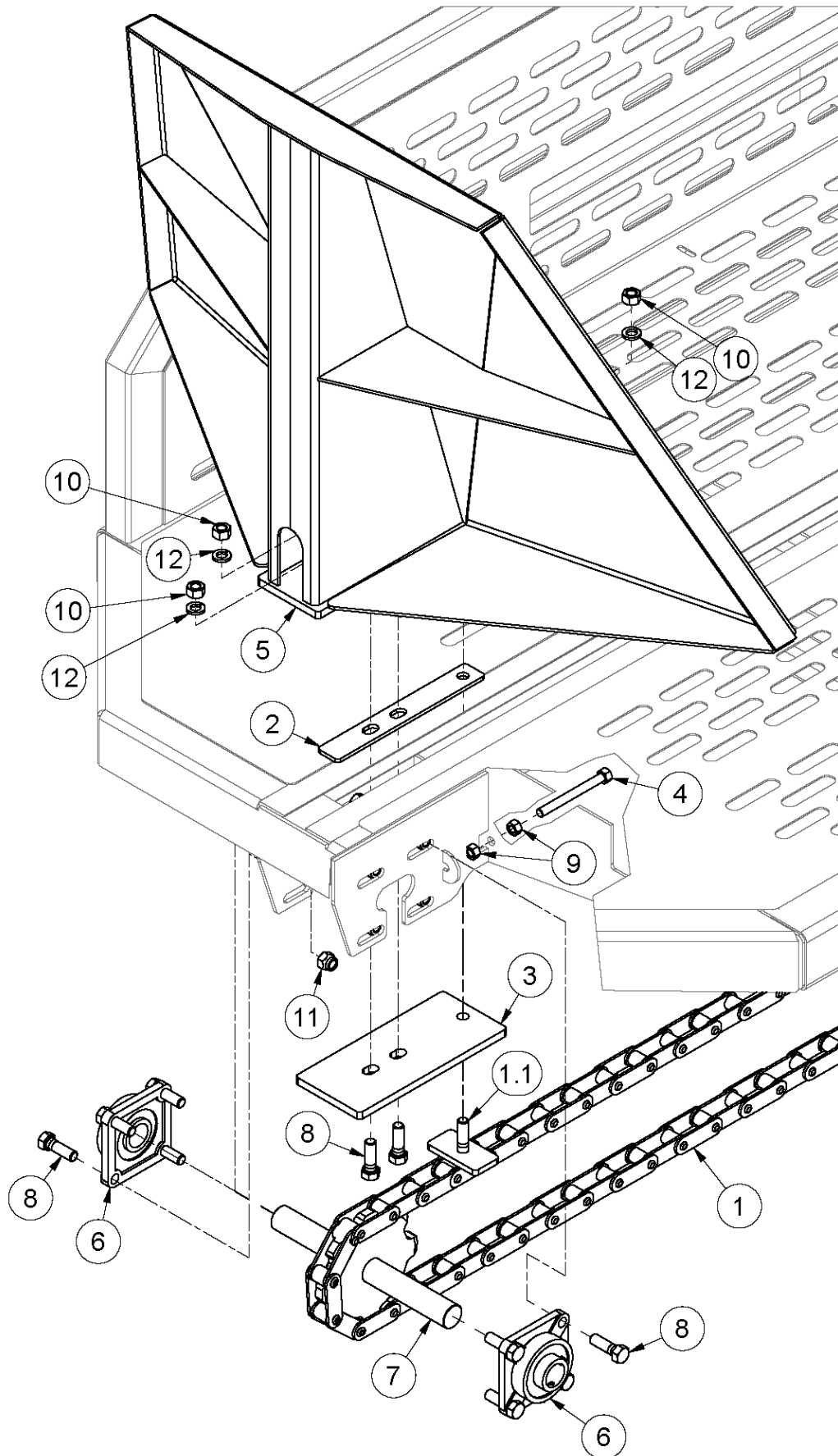
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	63511	Bale Lift Panel
2	4	CB 3/8-16 X1 Z5	Carriage Bolt - 3/8-16 x 1" Grade 5 Zinc
3	3	LA-SDENU	Conus II Nut
4	5	LN 3/8 N	LN 3/8-16 Zinc Plated Nylon Insert Lock Nut
5	3	PP-00519	49" Fork Spear

Flail Drum Guards



ITEM	QTY	PART NUMBER	DESCRIPTION
1	4	63502	Retainer Bar Weldment
2	16	CB 3/8-16 X1 Z5	Carriage Bolt - 3/8-16 x 1" Grade 5 Zinc
3	16	LN 3/8 N	LN 3/8-16 Zinc Plated Nylon Insert Lock Nut

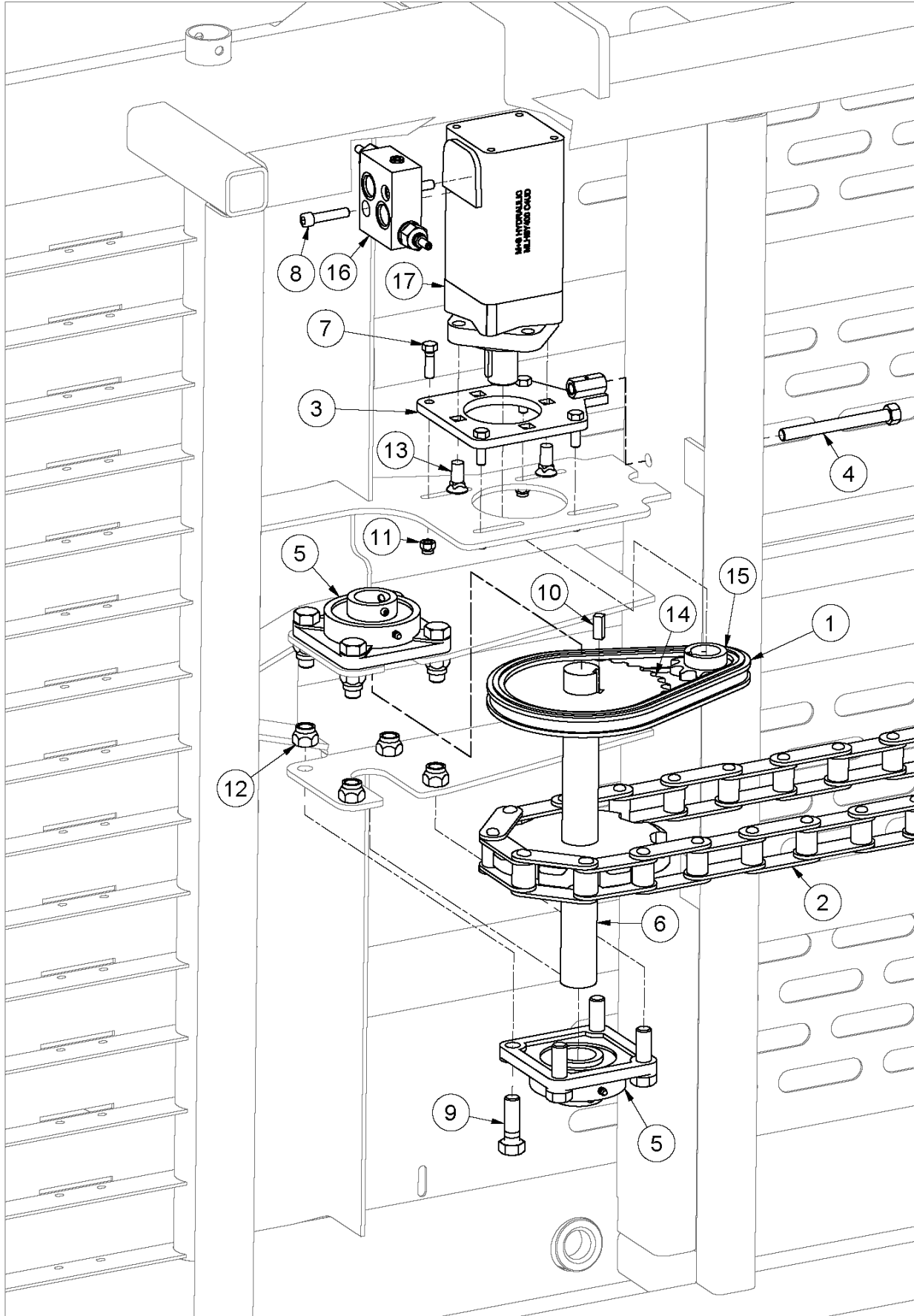
Ram



Ram

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	46685	Boss 4920 Conveyor Chain
1.1	1	B1 089	Chain Pusher Mount
2	1	63493	Chain Connect Spacer
3	1	63494	Chain Connect
4	2	63513	Motor Plate Adjuster
5	1	63518	Bale Pusher
6	2	BEA UCF208-24-1.5	1 1/2" 4 Bolt Flange Bearing
7	1	BS200138A	Idler
8	10	HB 5/8-11X2 Z5	Hex Bolt 5/8-11x2 Grade 5 Zinc Plated Hex Cap Screw
9	4	HN 1/2	Hex Nut 1/2"-13 Grade 5 Zinc Plated Finished
10	3	HN 5/8	Hex Nut 5/8"-11 Grade 5 Zinc Plated Finished
11	8	LN 5/8 N	LN 5/8-11 Zinc Plated Nylon Insert Lock Nut
12	3	LW 5/8	LW - 5/8" Zinc Plated Medium Split

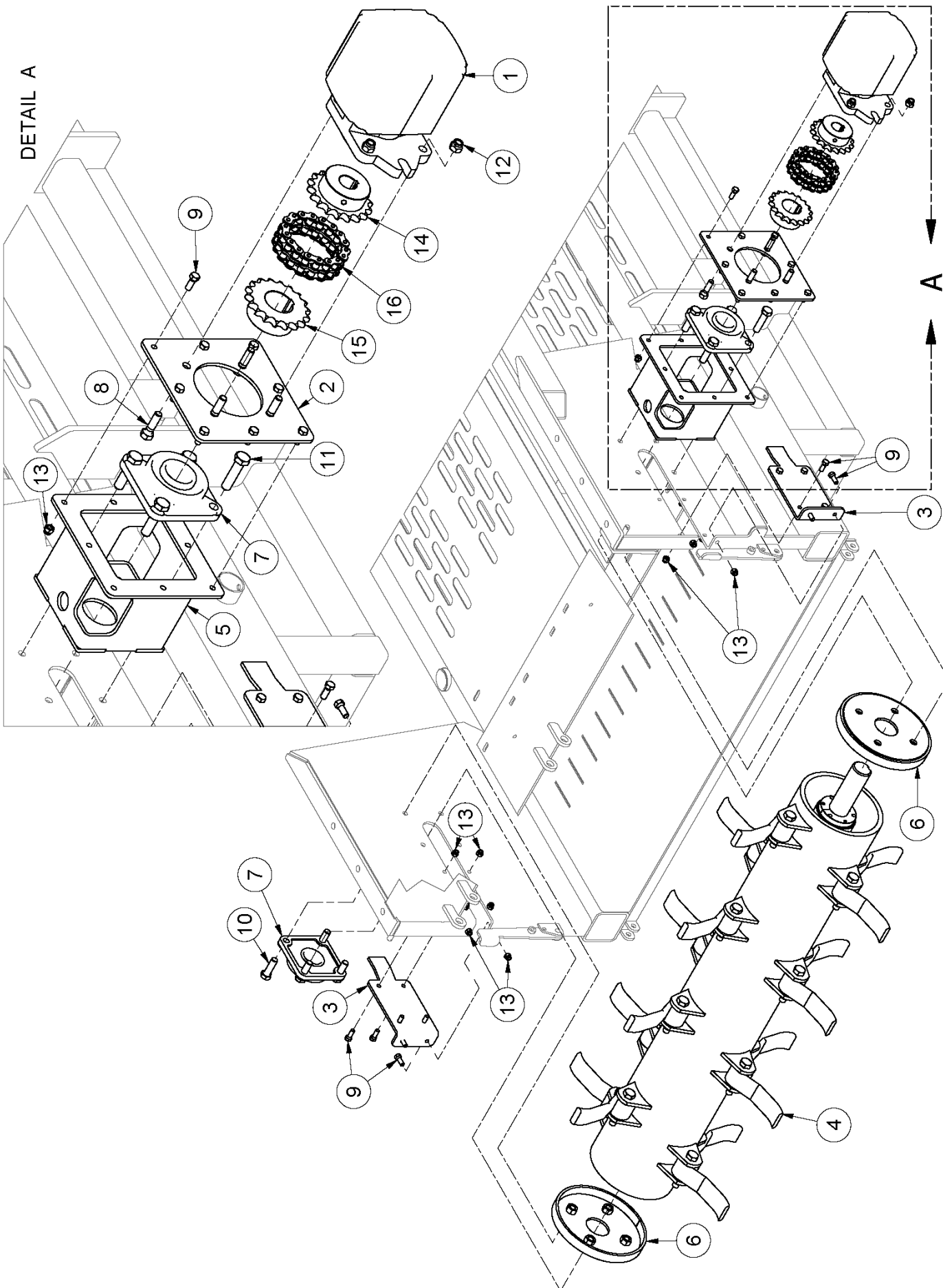
Conveyor Chain Drive



Conveyor Chain Drive

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	39997	Chain - #60 x 39 Links (+ Connector Link)
2	1	46685	Conveyor Chain
3	1	63510	Ram Motor Plate
4	1	63513	Motor Plate Adjuster
5	2	BEA UCF208-24-1.5	1 1/2" 4 Bolt Flange Bearing
6	1	BS200141A	Bed Chain Sprocket Weldment
7	4	HB 3/8-16X1.25 Z5	Hex Bolt 3/8-16x1 1/4 Grade 5 Zinc Plated Hex Cap Screw
8	2	HB 3/8-16X1.75 SHCS	Hex Bolt - 3/8-16 x 1 3/4 Socket Head Cap Screw
9	8	HB 5/8-11X2 Z5	Hex Bolt 5/8-11x2 Grade 5 Zinc Plated Hex Cap Screw
10	1	KS39999	Keystock .375 X .375 X 1
11	4	LN 3/8 N	LN 3/8-16 Zinc Plated Nylon Insert Lock Nut
12	8	LN 5/8 F	Center Locknuts (5/8-18) 2-Way Fine Thread
13	2	PB 1/2-13X1.25	Plow Bolts - 1/2-13 x 1 1/4 Flat Head Gr.5
14	1	SPR60B30F-IH	Sprocket - 30 Tooth, 1.5" Bore w/ .375" Keyway
15	1	SPR60B111.25	Sprocket - 11 Tooth, 1.25" Bore w/ .313" Keyway
16	1	VAL KPDS100/A/3	Relief Valve
17	1	VAL MLHSY400	Hydraulic Motor

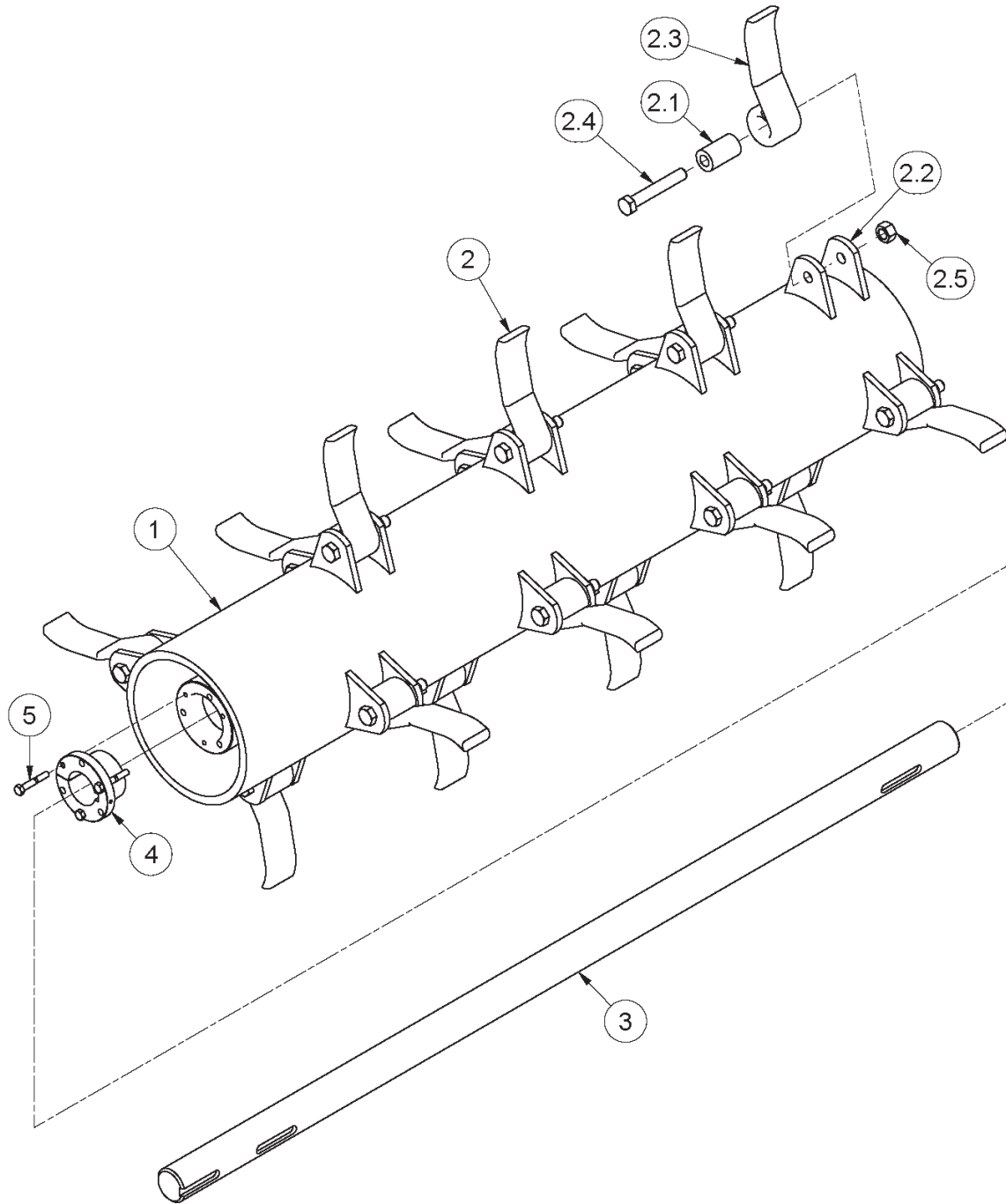
Flail Drum Assembly



Flail Drum Assembly

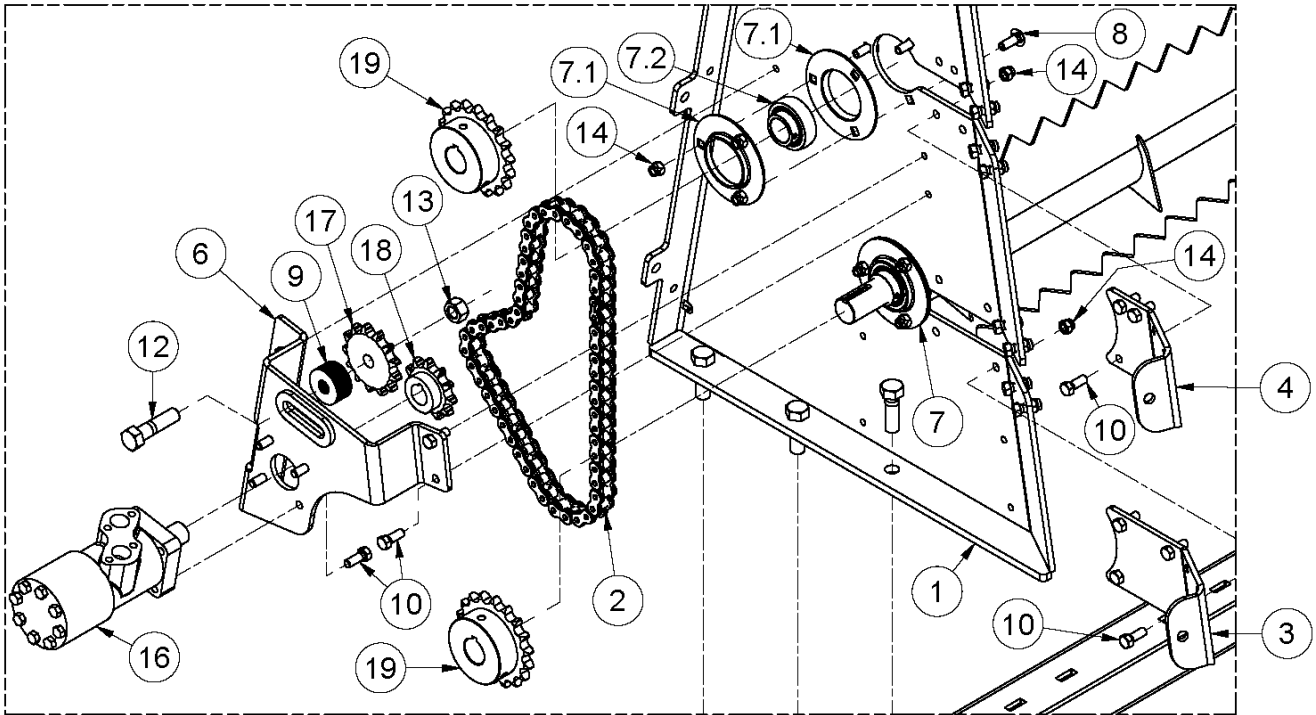
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	42272	High Flow Hydraulic Motor
2	1	63465	Flail Hyd. Motor Mount
3	2	63475	Side Panel Brace Plate
4	1	63508	Beater
5	1	63509	Flail Housing/ Motor Mt
6	2	208141	Bearing Protector
7	2	BEA UCF210-32R3	2" Bearing 4-Bolt Ductile Iron Flange with Triple Seal
8	4	HB 1/2-13X1.75 Z5	Hex Bolt 1/2-13x1 3/4 Grade 5 Zinc Plated Hex Cap Screw
9	20	HB 3/8-16X1 Z5	Hex Bolt 3/8-16x1 Grade 5 Zinc Plated Hex Cap Screw
10	4	HB 5/8-18 X2 YZ8	Hex Bolt 5/8-18x2 Grade 8 Zinc Hex Cap Screw
11	4	HB 5/8-18 X2.5 YZ8	Hex Bolt 5/8-18x2 1/2 Grade 8 Zinc Hex Cap Screw
12	4	LN 1/2 N	LN 1/2-13 Zinc Plated Nylon Insert Lock Nut
13	20	LN 3/8 N	LN 3/8-16 Zinc Plated Nylon Insert Lock Nut
14	1	SPR60B18-1.25	60B18 Sprocket w/1.25 Bore 5/16 kwy
15	1	SPR60B18-2	60B18 Sprocket w/2.0 Bore 3/8 kwy
16	1	SPR6018CC	#60 Chain Coupler (c/w Connector Link)

Flail Drum Breakdown

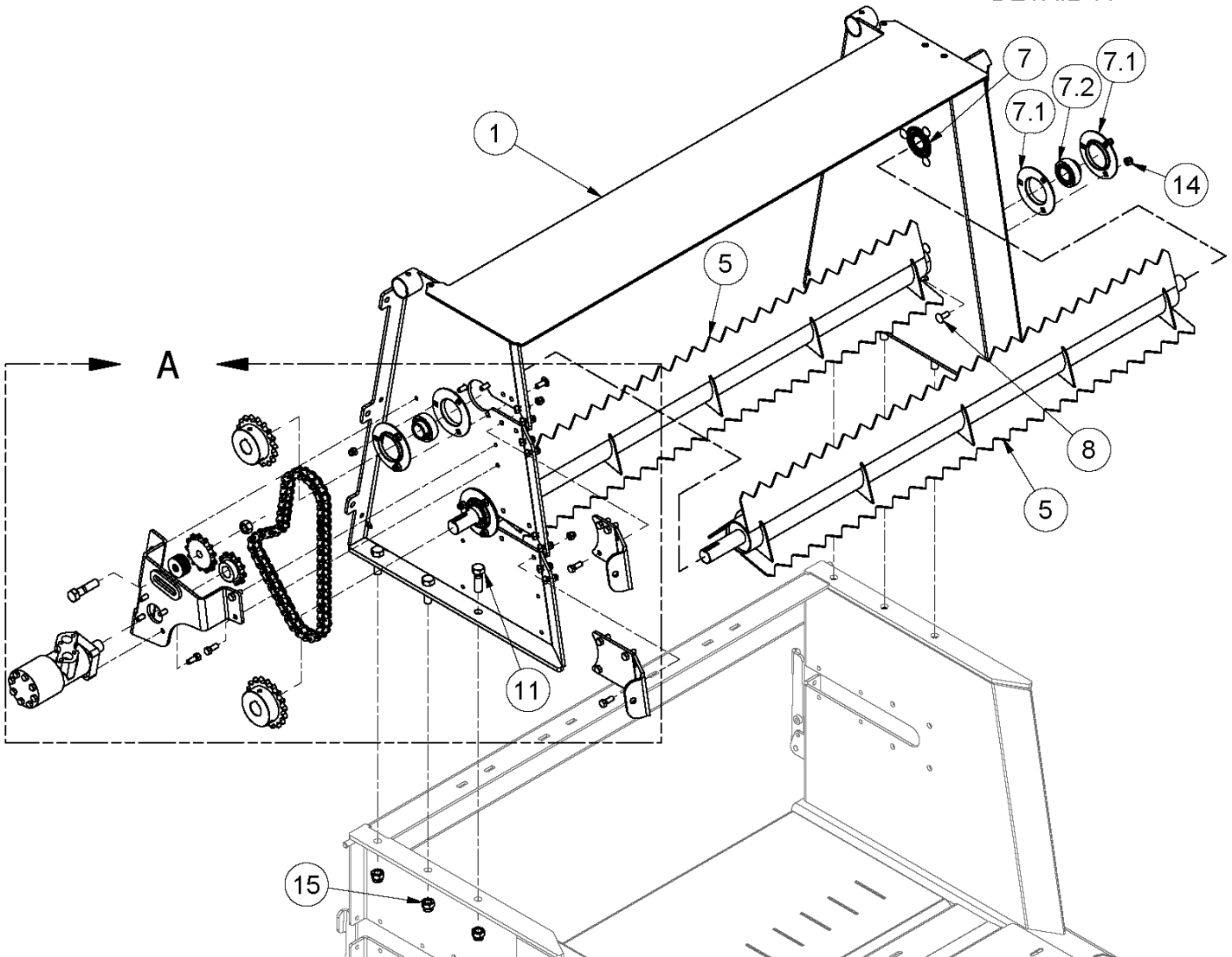


ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	63508	Flail Drum
2	16	25574	Flail
2.1	1	BS200059	Flail Bushing
2.2	2	PCT200054	Flail Mount Lug
2.3	1	BS200060A-1	Hammers, Heavy - 7/16 Material
2.4	1	HB 5/8-18 X4 YZ8	Hex Bolt 5/8-18x4 Grade 8 Zinc Hex Cap Screw
2.5	1	HN 5/8-18	Hex Nut 5/8-18 NF Fine Thread
3	1	63495	2" Flail Shaft
4	2	BS BUSK-2TBW	Bushing - SG 2" Taper Lock Insert
5	6	HB 5/16-18X2 Z5	Hex Bolt 5/16-18x2 Grade 5 Zinc Plated Hex Cap Screw

Top Beaters



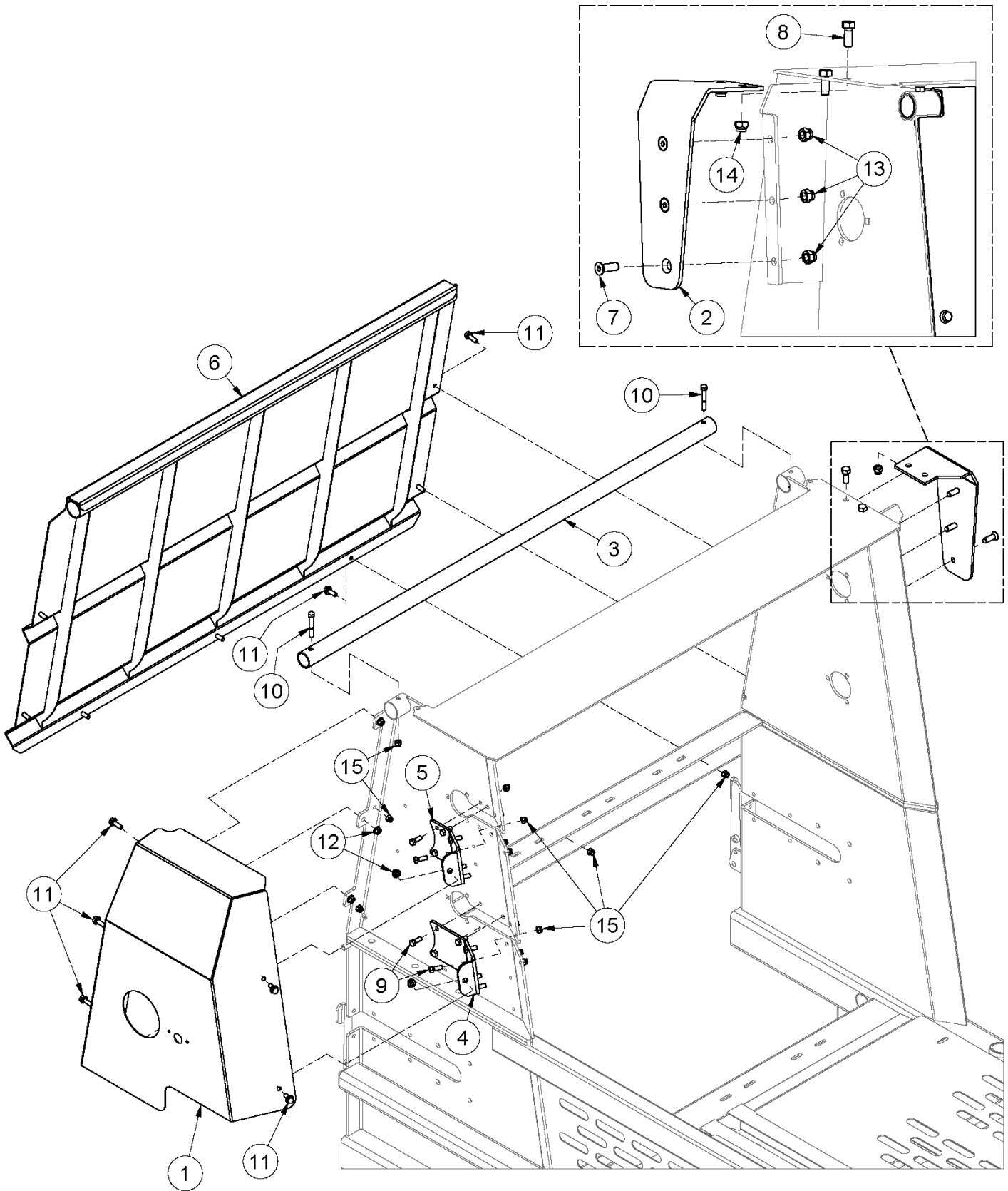
DETAIL A



Top Beaters

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	45721	Top Beater Assembly
2	1	46684	Chain #60 X 53 Links c/w Connector Link
3	1	63478	Side Panel Brace 2
4	1	63479	Side Panel Brace 1
5	2	63507	Top Beater
6	1	63515	Motor Bracket
7	4	BEA SBPF206-20	Flange Bearing - 3 Bolt 1.25" ID
7.1	2	BEA PF206	Flange 3 Bolt Non Greaseable
7.2	1	BEA SB206-20	Bearing, Insert 1.25"
8	12	CB 3/8-16 X1 Z5	Carriage Bolt - 3/8-16 x 1" Grade 5 Zinc
9	9	FW 5/8	Flatwasher - 5/8" Zinc Plated USS
10	24	HB 3/8-16X1 Z5	Hex Bolt 3/8-16x1 Grade 5 Zinc Plated Hex Cap Screw
11	6	HB 5/8-11X2 Z5	Hex Bolt 5/8-11x2 Grade 5 Zinc Plated Hex Cap Screw
12	1	HB 5/8-11X2.5 Z5	Hex Bolt 5/8-11x2 1/2 Grade 5 Zinc Plated Hex Cap Screw
13	1	HN 5/8	Hex Nut 5/8"-11 Grade 5 Zinc Plated Finished
14	32	LN 3/8 N	LN 3/8-16 Zinc Plated Nylon Insert Lock Nut
15	6	LN 5/8 F	Center Locknuts (5/8-18) 2-Way Fine Thread
16	1	VAL 1008	Hydraulic Motor
17	1	SPR60A13-.625	#60, 13 Tooth, .625 Bearing
18	1	SPR60B11	60B11 Sprocket w/1 Bore 1/4 kwy 2 5/16 SS
19	2	SPR60B18-1.25	60B18 Sprocket w/1.25 Bore 5/16 kwy

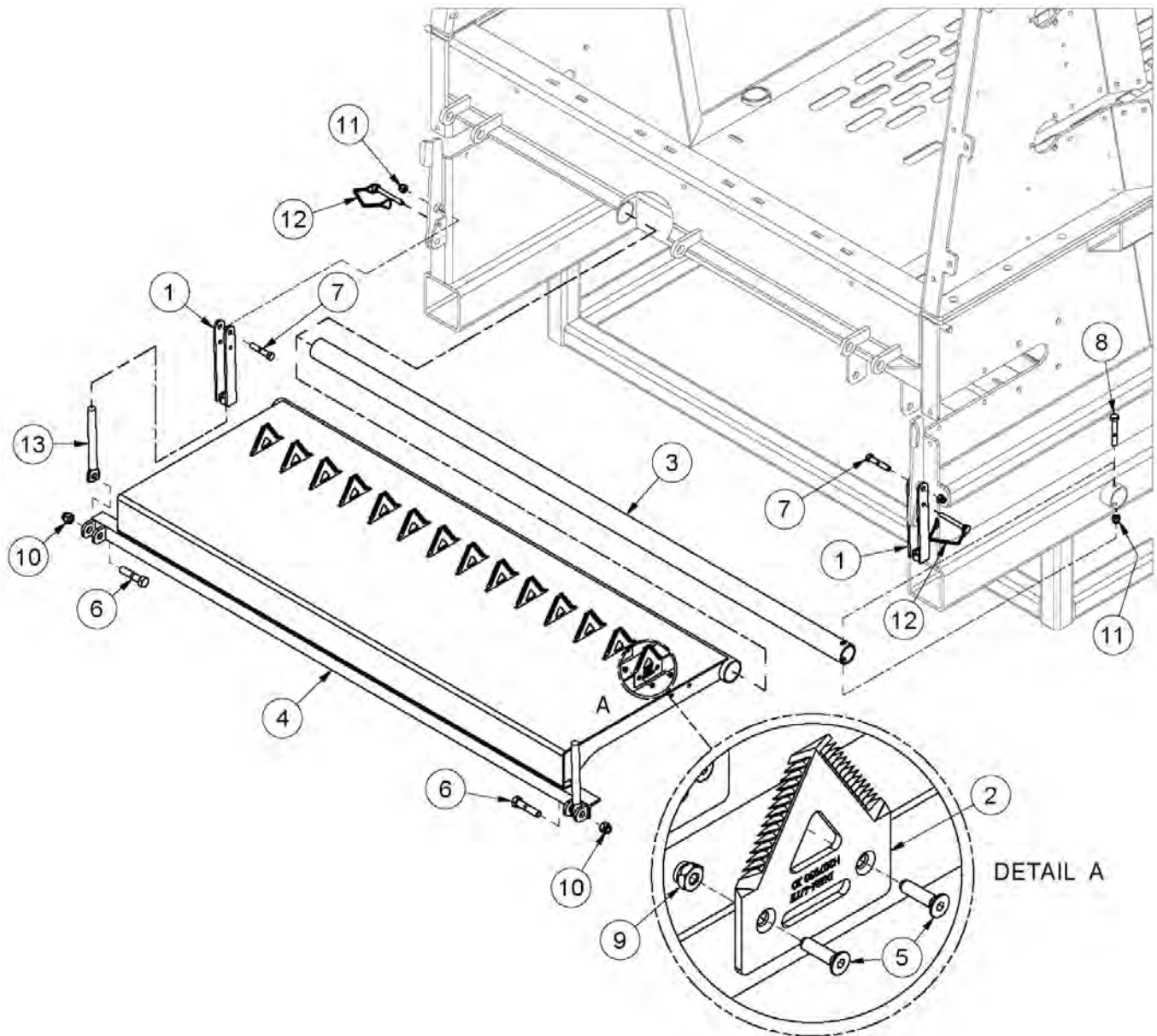
Front Shields



Front Shields

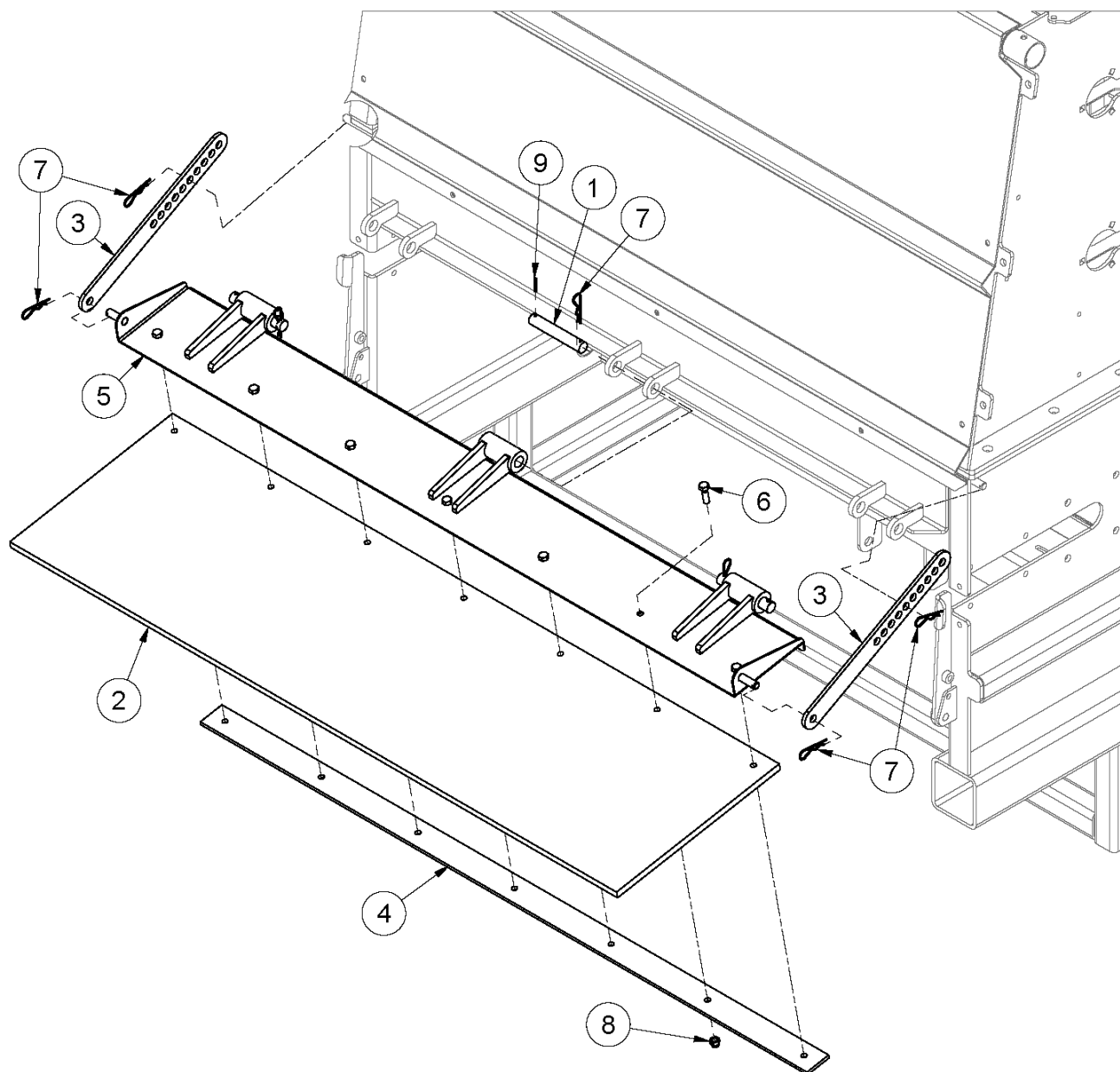
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	45708	Side Shield
2	1	45713	Front Skid Shoe
3	1	63416	Front Lid Pivot Pin
4	1	63478	Side Panel Brace #2
5	1	63479	Side Panel Brace #1
6	1	63503	Front Lid
7	3	HB 1/2-13X1.5 FHSCS	Hex Bolt - 1/2"-13 x 1 1/2" Flat Socket Cap Screw
8	2	HB 1/2-13X1.25 Z5	Hex Bolt 1/2-13x1 1/4 Grade 5 Zinc Plated Hex Cap Screw
9	16	HB 3/8-16X1 Z5	Hex Bolt 3/8-16x1 Grade 5 Zinc Plated Hex Cap Screw
10	2	HB 3/8-16X2.5 Z5	Hex Bolt 3/8-16x2 1/2 Grade 5 Zinc Plated Hex Cap Screw
11	12	HBC3/8X1	Hex Bolt Cerrated 3/8-16 x 1 Zinc Flange Bolt
12	5	HNS3/8-16CZ	3/8"-16 Zinc Finish Case Hardened Serrated Flange Nut
13	3	LN 1/2 F	Center Locknuts (1/2-20) 2-Way Fine Thread
14	2	LN 1/2 N	LN 1/2-13 Zinc Plated Nylon Insert Lock Nut
15	23	LN 3/8 N	LN 3/8-16 Zinc Plated Nylon Insert Lock Nut

Discharge Chute



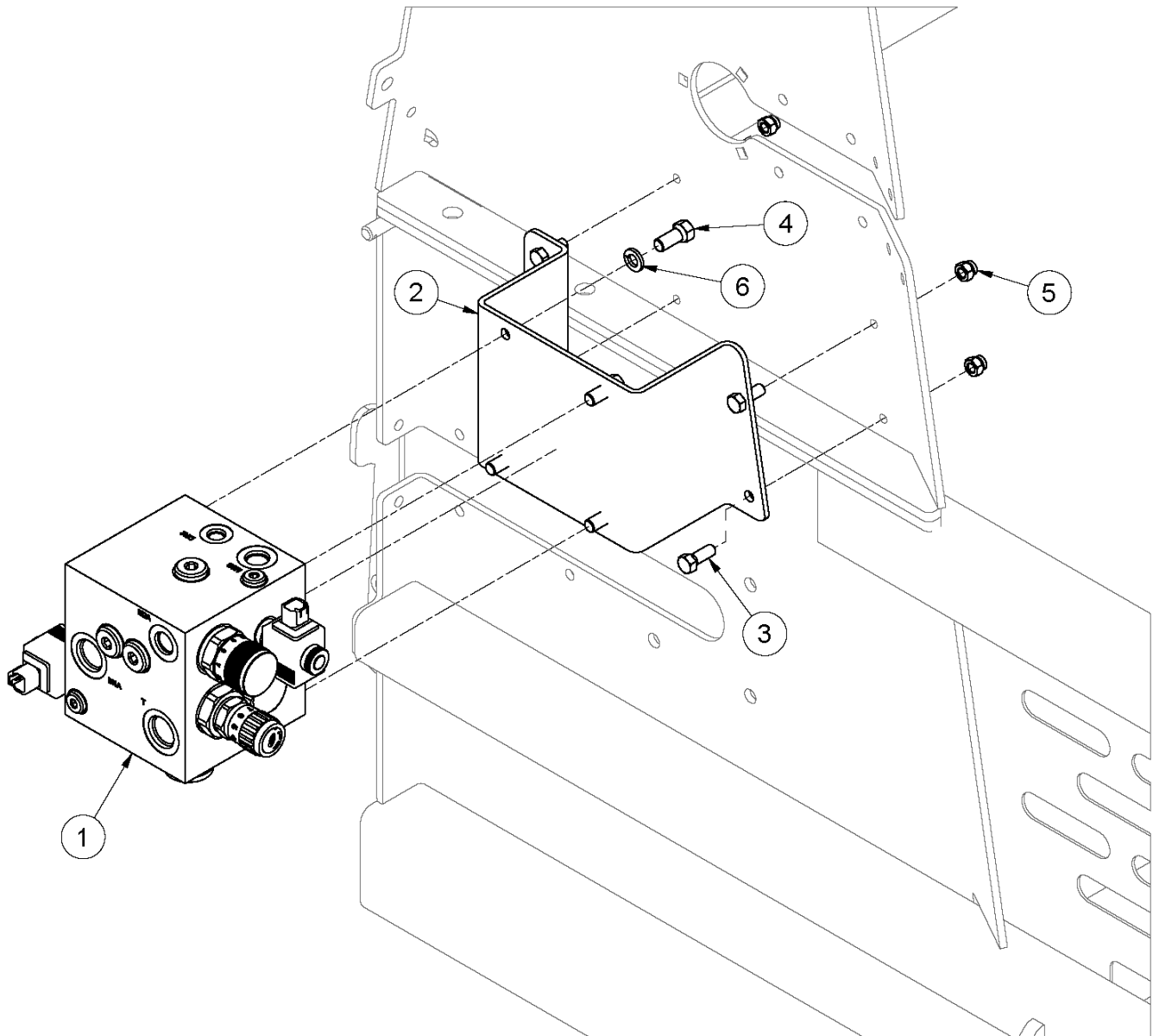
ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	36305	Link
2	14	37508	Knife
3	1	63482	Bottom Cleanout Gate Pivot Pin
4	1	63512	Clean Out Gate
5	28	HB #10-24X0.75 FHSCS	Hex Bolt - 3/16"-24 x 3/4" Flat Socket Cap Screw
6	2	HB 1/2-13X2.25 Z5	Hex Bolt 1/2-13x2 1/4 Grade 5 Zinc Plated Hex Cap Screw
7	2	HB 3/8-16X2 Z5	Hex Bolt 3/8-16x2 Grade 5 Zinc Plated Hex Cap Screw
8	1	HB 3/8-16X2.5 Z5	Hex Bolt 3/8-16x2 1/2 Grade 5 Zinc Plated Hex Cap Screw
9	28	LN #10 N	LN 3/16-24 Zinc Plated Nylon Insert Lock Nut
10	2	LN 1/2 N	LN 1/2-13 Zinc Plated Nylon Insert Lock Nut
11	3	LN 3/8 N	LN 3/8-16 Zinc Plated Nylon Insert Lock Nut
12	2	LP B1997	Pin - Lock Pin 5/16 X 2 1/2
13	2	PP00051	Flat Eyebolt - 5/8 X 7

Deflector



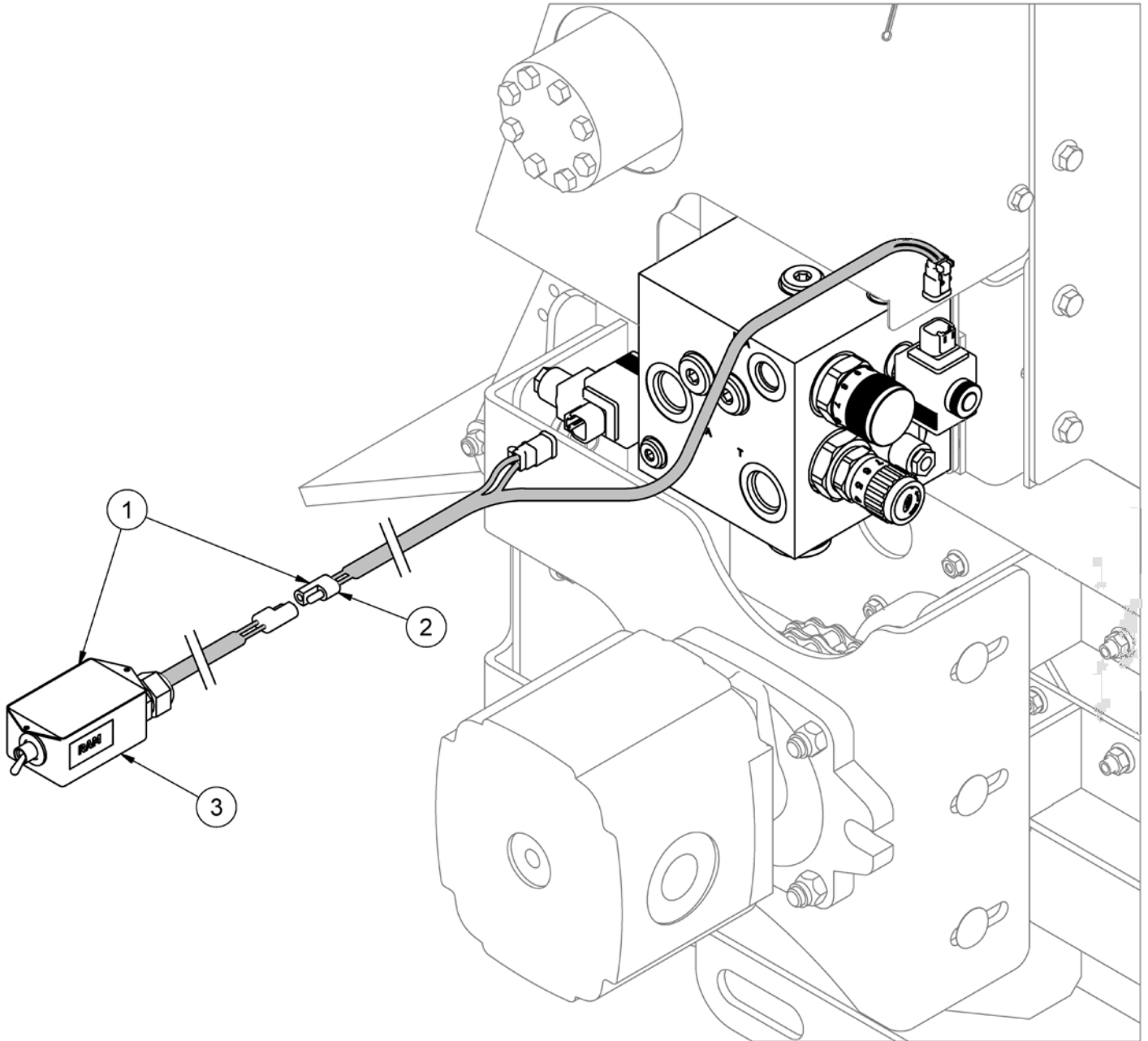
ITEM	QTY	PART NUMBER	DESCRIPTION
1	3	45715	Deflector Pin
2	1	63487	Rubber Deflector
3	2	63488	Deflector Adjustment Plate
4	1	63491	Rubber Deflector Mount Strip
5	1	63516	Deflector
6	7	HB 3/8-16X1.25 Z5	Hex Bolt 3/8-16x1 1/4 Grade 5 Zinc Plated Hex Cap Screw
7	7	HP .125X1.5	Pin Hitch - .125 X 1.5
8	7	LN 3/8 N	LN 3/8-16 Zinc Plated Nylon Insert Lock Nut
9	3	RP 3/16 x 1	Pin - Roll Pin 3/16 x 1

Manifold Mount



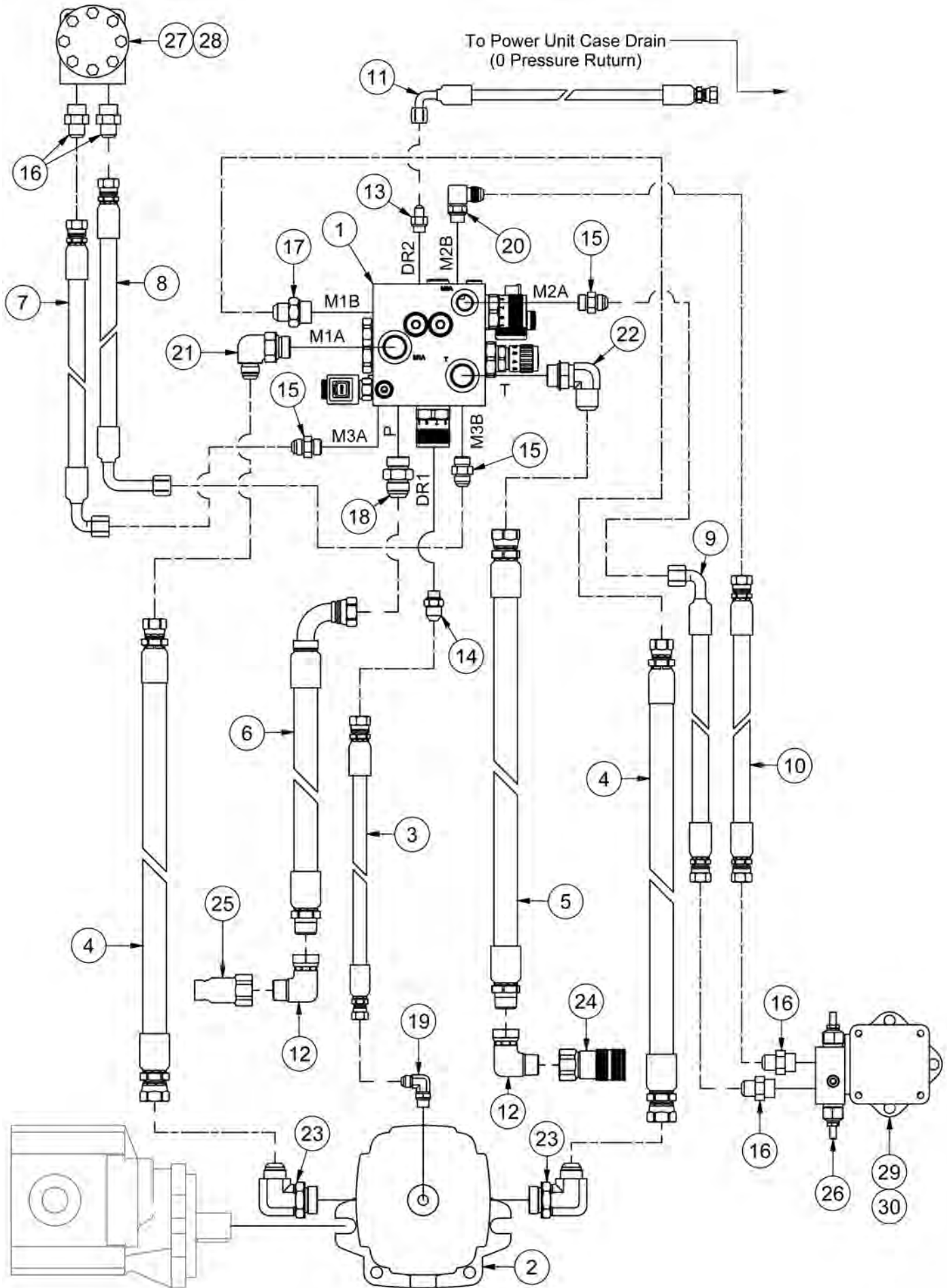
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	42179	Boss I Canimex Manifold
2	1	63484	Valve Mount
3	4	HB 3/8-16X1 Z5	Hex Bolt 3/8-16x1 Grade 5 Zinc Plated Hex Cap Screw
4	4	HB 7/16-20X1 Z5	Hex Bolt 7/16-20x1 Grade 5 Zinc Plated Hex Cap Screw
5	4	LN 3/8 N	LN 3/8-16 Zinc Plated Nylon Insert Lock Nut
6	4	LW 7/16	LW - 7/16" Zinc Plated Medium Split

Electrical Harness



ITEM	QTY	PART NUMBER	DESCRIPTION	NOTE
1	1	45958	Boss I HF Canimex Harness - Complete	Incl. Items 2,3
2	1	45959	Boss I HF Canimex Harness	
3	1	BS B1 107	Boss I Toggle Switch Wiring Harness	

Hydraulic Layout












Hydraulic Layout

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	42179	Boss I Canimex Manifold Block
2	1	42272	High Flow Hydraulic Motor
3	1	44879	Hose - HH30 - 6ATI(8FJXH,6FJXH)HCL 30"
4	2	45395	Hose - HH26 - 12AT1(10FJXH,12FJXH) HCL 26"
5	1	45947	Hose - HH94 - 12AT1(12MP,12FJX)HCL 94"
6	1	45948	Hose - HH94 - 12AT1(12MP,12FJX90L)HCL 94"
7	1	46636	Hose - HH19- 8AT1(8FJX,8FJX90S) HCL 19"
8	1	46637	Hose - HH26- 8AT1(8FJX,8FJX90L) HCL 26"
9	1	46638	Hose - HH68- 8AT1(8FJX,8FJX90S) HCL 68"
10	1	46639	Hose - HH68- 8AT1(8FJX,8FJX) HCL 68"
11	1	47644	Hose - HH110 - 4AT1(6FJX,4FJX90S) HCL 110"
12	2	HF 1501-12-12	Hydraulic Fitting 90 Degree Male to Female
13	1	HF 6400-4-6	Hydraulic Fitting - Male JIC - Male ORB
14	1	HF 6400-8-6	Hyd. Fitting
15	3	HF 6400-8-8	Hydraulic Fitting - O-Ring to JIC Adapter
16	4	HF 6400-8-10	Hyd Fitting - Male JIC - Male ORB
17	1	HF 6400-10-12	Hydraulic Adapter - JIC to O-Ring
18	1	HF 6400-12-12	Hydraulic Fitting - O-Ring to JIC Adapter
19	1	HF 6801-6-6	Hydraulic Fitting - 90 Degree JIC to O-Ring
20	1	HF 6801-8-8	Hyd. Fitting- 1/2" JIC- 1/2" SAE 90 Deg Elbow
21	1	HF 6801-10-12	Hyd Fitting - 5/8" JIC x 5/8" SAE 90 Deg. Elbow
22	1	HF 6801-12-12	Forged Fitting - 3/4" JIC X 3/4" SAE 90° Elbow
23	2	HF 6801-12-16	Forged Fitting - JIC x SAE 90 Deg. Elbow
24	1	HF QCFF-1	Quickcoupler 3/4" Flat Face Pipe - Female
25	1	HF QCFF-2	Quickcoupler 3/4" Flat Face Pipe - Male
26	1	VAL KPDS100/A/3	Relief Valve
27	1	VAL MLHPQ400C4C	M+S Hydraulic Motor
28	1	SKMLHPQUDE	Seal Kit for 200 & 400 Series Motors
29	1	VAL MLHSY400	Complete Motor - MLHSY400C4UD
30	1	SKMLHSY-U/D	Seal Kit for M+S Motors

Section 11 - Torque Value Charts

Imperial Torque Values

UNIFIED INCH BOLT AND CAP SCREW TORQUE VALUES

SAE Grade and Head Markings	NO MARK	1 or 2 ^b 	5 	5.1 	5.2 	8 	8.2 
SAE Grade and Nut Markings	NO MARK	2 	5 		8 		

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Size	Grade 1				Grade 2 ^b				Grade 5, 5.1, or 5.2				Grade 8 or 8.2			
	Lubricated ^a		Dry ^a		Lubricated ^a		Dry ^a		Lubricated ^a		Dry ^a		Lubricated ^a		Dry ^a	
	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft
1/4	3.7	2.8	4.7	3.5	6	4.5	7.5	5.5	9.5	7	12	9	13.5	10	17	12.5
5/16	7.7	5.5	10	7	12	9	15	11	20	15	25	18	28	21	35	26
3/8	14	10	17	13	22	16	27	20	35	26	44	33	50	38	63	46
7/16	22	16	28	20	35	26	44	32	55	41	70	52	80	58	100	75
1/2	33	25	42	31	53	39	67	50	85	63	110	80	120	90	150	115
9/16	48	36	60	45	75	56	95	70	125	90	155	115	175	130	225	160
5/8	67	50	85	62	105	78	135	100	170	125	215	160	240	175	300	225
3/4	120	87	150	110	190	140	240	175	300	225	375	280	425	310	550	400
7/8	190	140	240	175	190	140	240	175	490	360	625	450	700	500	875	650
1	290	210	360	270	290	210	360	270	725	540	925	675	1050	750	1300	975
1-1/8	400	300	510	375	400	300	510	375	900	675	1150	850	1450	1075	1850	1350
1-1/4	570	425	725	530	570	425	725	530	1300	950	1650	1200	2050	1500	2600	1950
1-3/8	750	550	950	700	750	550	950	700	1700	1250	2150	1550	2700	2000	3400	2550
1-1/2	1000	725	1250	925	990	725	1250	930	2250	1650	2850	2100	3600	2650	4550	3350

DO NOT use these values if a different torque value or tightening procedure is given for a specific application. Torque values listed are for general use only. Check tightness of fasteners periodically.

Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical grade.

Fasteners should be replaced with the same or higher grade. If higher grade fasteners are used, these should only be tightened to the strength of the original.

Make sure fasteners threads are clean and that you properly start thread engagement. This will prevent them from failing when tightening.

Tighten plastic insert or crimped steel-type lock nuts to approximately 50 percent of the dry torque shown in the chart, applied to the nut, not to the bolt head. Tighten toothed or serrated-type lock nuts to the full torque value.

^a "Lubricated" means coated with a lubricant such as engine oil, or fasteners with phosphate and oil coatings. "Dry" means plain or zinc plated without any lubrication.

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

Metric Torque Values

METRIC BOLT AND CAP SCREW TORQUE VALUES

Property Class and Head Markings	4.8		8.8		9.8		10.9		12.9	
Property Class and Nut Markings	5		10		10		10		12	

Size	Class 4.8				Class 8.8 or 9.8				Class 10.9				Class 12.9			
	Lubricated ^a		Dry ^a		Lubricated ^a		Dry ^a		Lubricated ^a		Dry ^a		Lubricated ^a		Dry ^a	
	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft
M6	4.8	3.5	6	4.5	9	6.5	11	8.5	13	9.5	17	12	15	11.5	19	14.5
M8	12	8.5	15	11	22	16	28	20	32	24	40	30	37	28	47	35
M10	23	17	29	21	43	32	55	40	63	47	80	60	75	55	95	70
M12	40	29	50	37	75	55	95	70	110	80	140	105	130	95	165	120
M14	63	47	80	60	120	88	150	110	175	130	225	165	205	150	260	190
M16	100	73	125	92	190	140	240	175	275	200	350	255	320	240	400	300
M18	135	100	175	125	260	195	330	250	375	275	475	350	440	325	560	410
M20	190	140	240	180	375	275	475	350	530	400	675	500	625	460	800	580
M22	260	190	330	250	510	375	650	475	725	540	925	675	850	625	1075	800
M24	330	250	425	310	650	475	825	600	925	675	1150	850	1075	800	1350	1000
M27	490	360	625	450	950	700	1200	875	1350	1000	1700	1250	1600	1150	2000	1500
M30	675	490	850	625	1300	950	1650	1200	1850	1350	2300	1700	2150	1600	2700	2000
M33	900	675	1150	850	1750	1300	2200	1650	2500	1850	3150	2350	2900	2150	3700	2750
M36	1150	850	1450	1075	2250	1650	2850	2100	3200	2350	4050	3000	3750	2750	4750	3500

DO NOT use these values if a different torque value or tightening procedure is given for a specific application. Torque values listed are for general use only. Check tightness of fasteners periodically.

Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical property class.

Fasteners should be replaced with the same or higher property class. If higher property class fasteners are used, these should only be tightened to the strength of the original.

^a "Lubricated" means coated with a lubricant such as engine oil, or fasteners with phosphate and oil coatings. "Dry" means plain or zinc plated without any lubrication.

Make sure fasteners threads are clean and that you properly start thread engagement. This will prevent them from failing when tightening.

Tighten plastic insert or crimped steel-type lock nuts to approximately 50 percent of the dry torque shown in the chart, applied to the nut, not to the bolt head. Tighten toothed or serrated-type lock nuts to the full torque value.

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