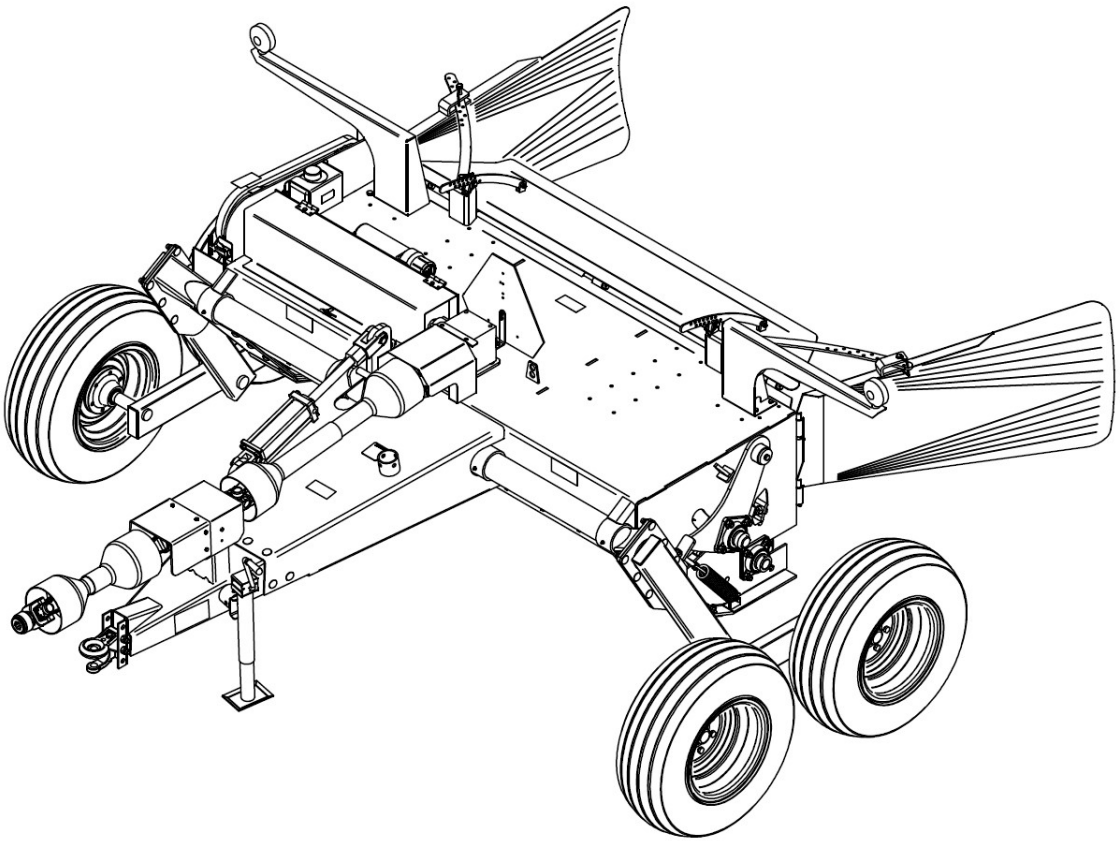
Tube-Line Accelerator

HC7500 / HC9500



Operator's Manual
& Parts Book

TUBE-LINE™ MANUFACTURING LTD

39335 (07/06/2018)

Operator's Manual

Thank you for choosing the Tubeline Accelerator.
Our hope is that it will give you many years of productive service.
This machine is designed to spread various types of manure evenly over a wide area.

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.

Serial Number

The implement serial number is located on the front of the frame. 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 # : _____

Serial # : _____

Date Purchased : _____

Dealer Name : _____

Table of Contents

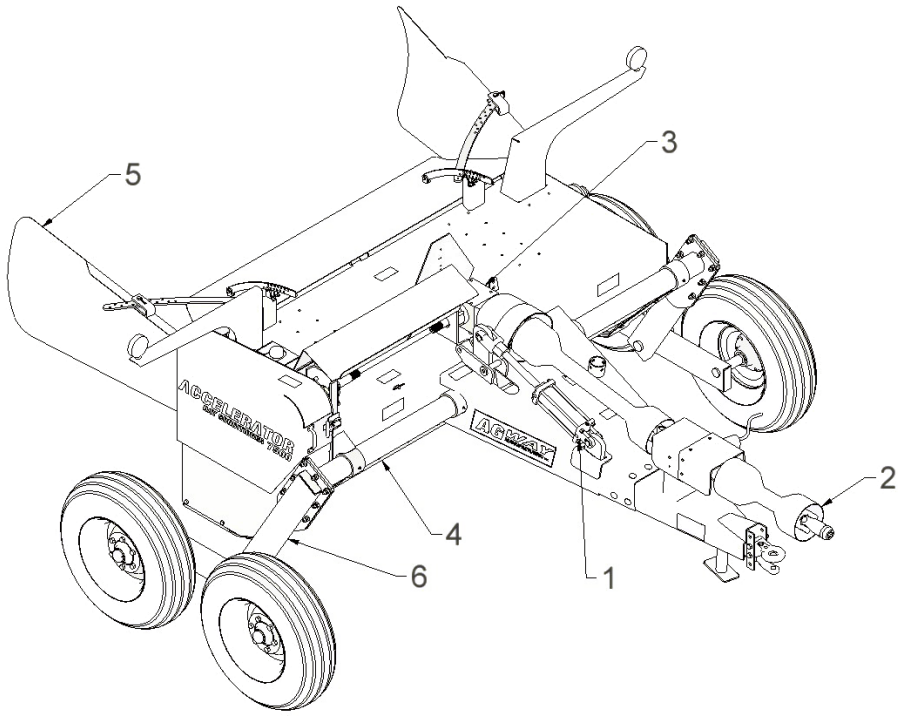
Section 1 - General Information

Terminology : Accelerator

The Tubeline Accelerator consists of two rollers located on the underside of the machine. The Accelerator is powered by the PTO driveline and hydraulic pressure from the tractor.

Principle Components

1. Lift cylinder
2. PTO driveline
3. Gear box
4. Rollers
5. Deflectors
6. Light arms



Terminology : Accelerator Locations

Front

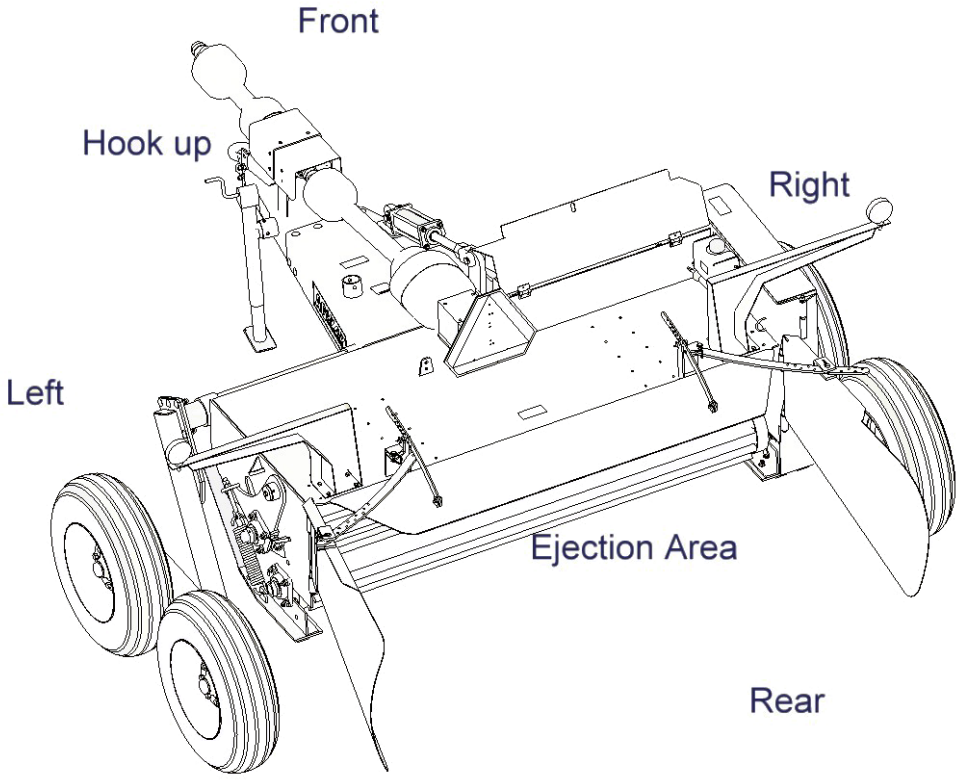
Rear

Left

Right

Hook up

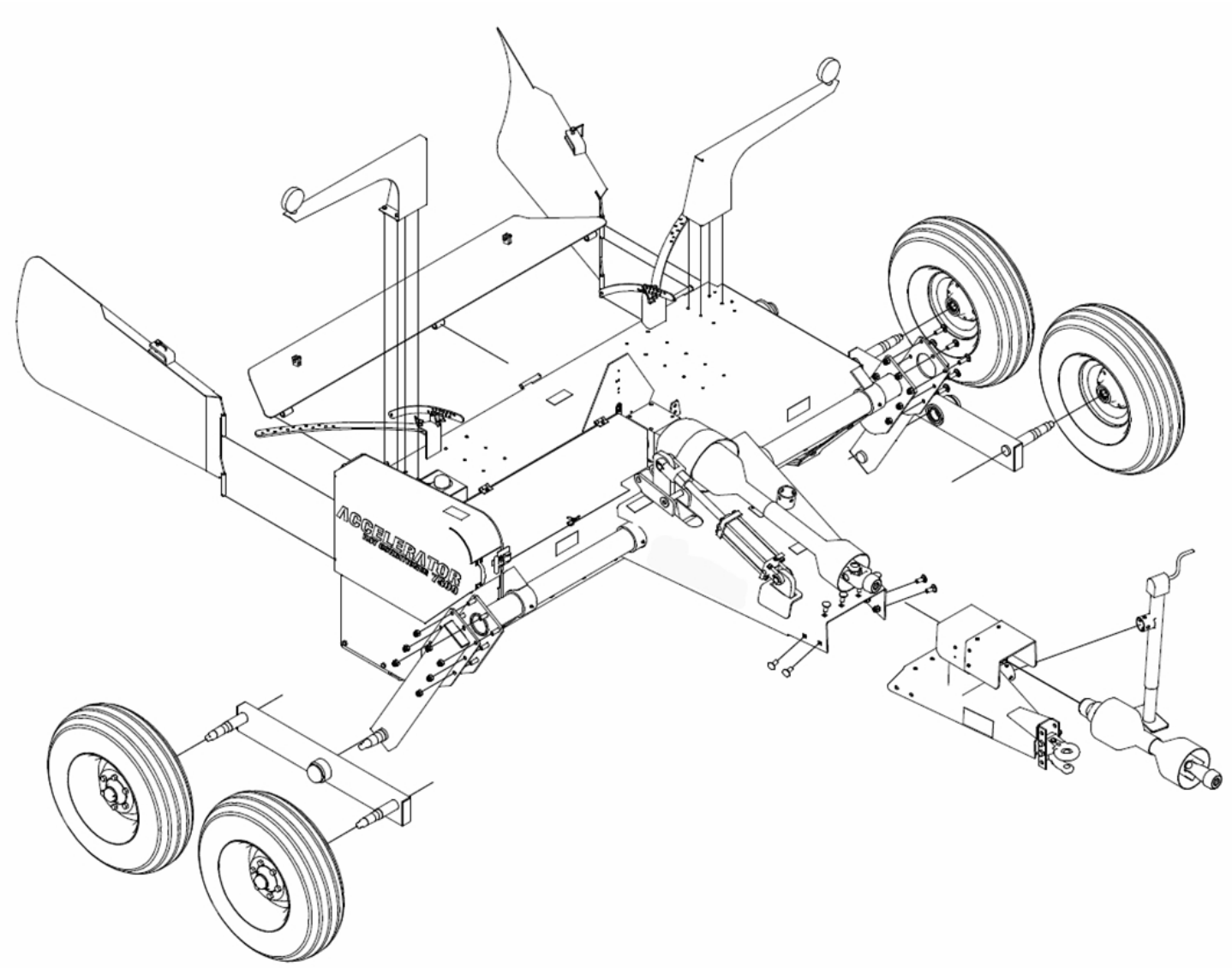
Ejection area



Accelerator Initial Setup

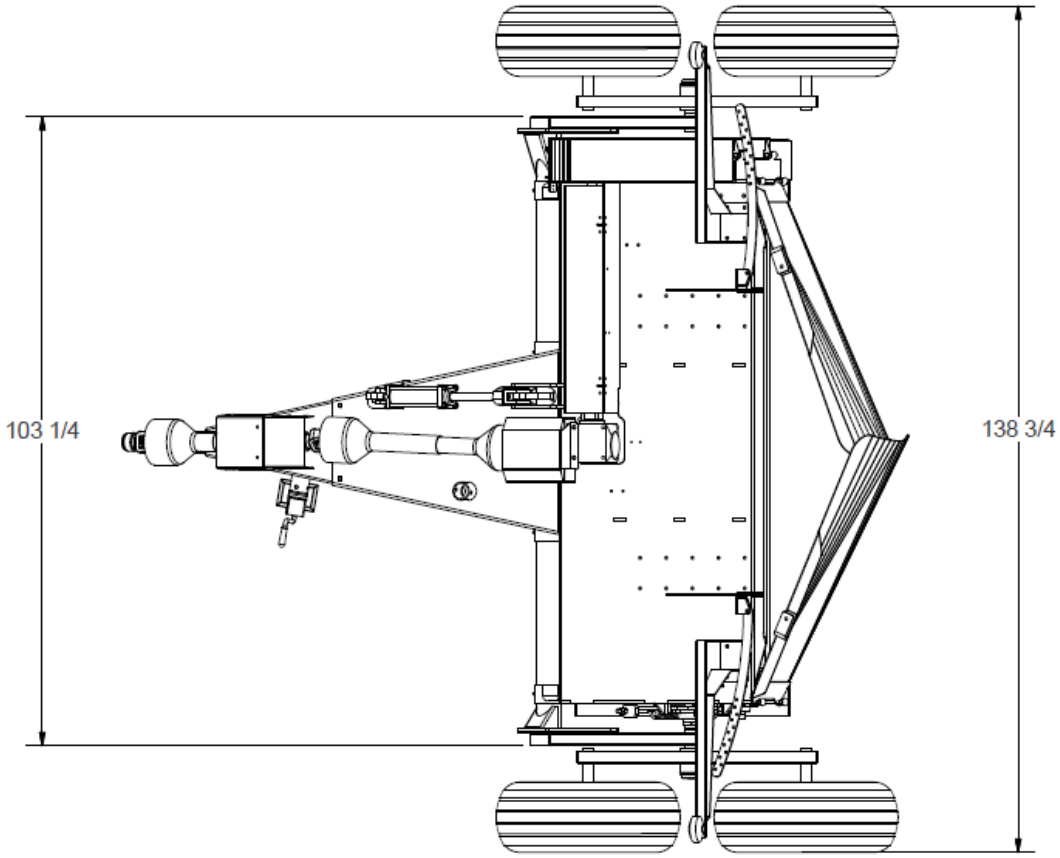
The Tubeline Accelerator in most cases will come assembled and ready to operate, however customers outside of North America may recieve the Accelerator in a crate and will require some assembly.

Note: Tandem axles must be installed with short side towards front.

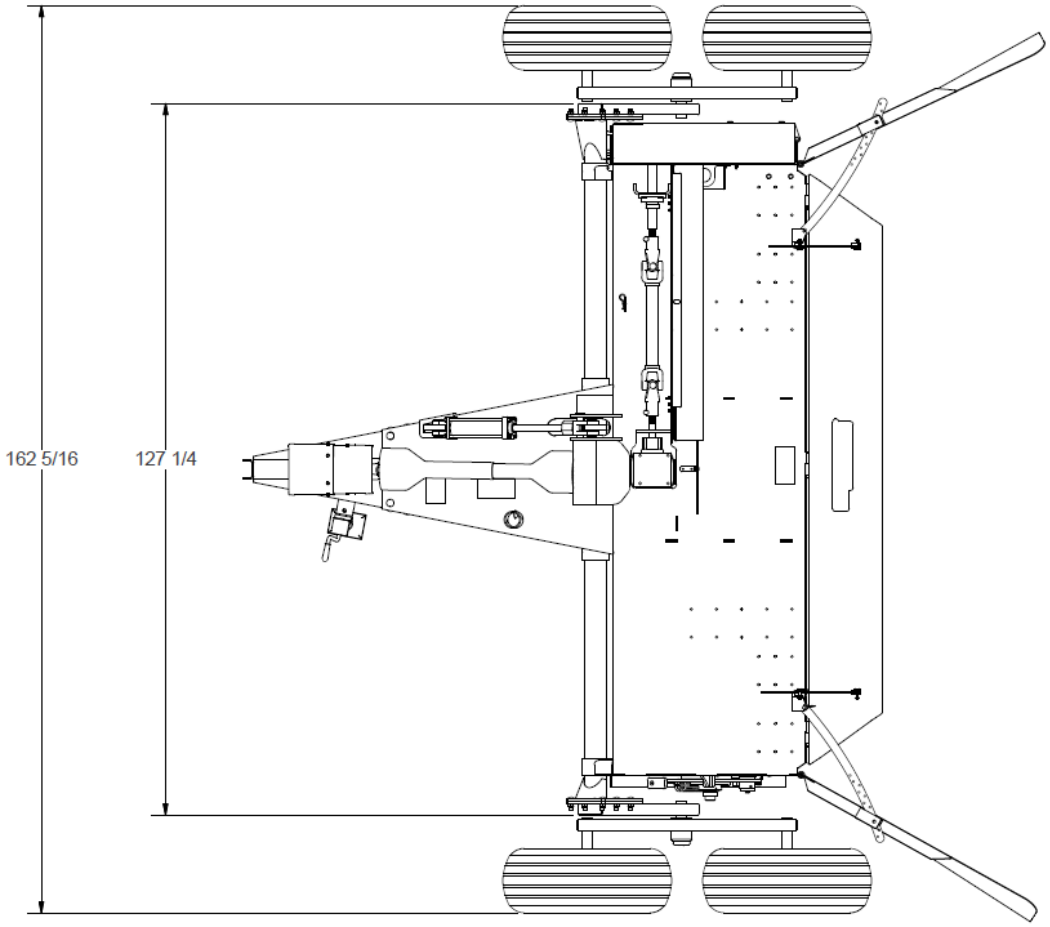


Specifications

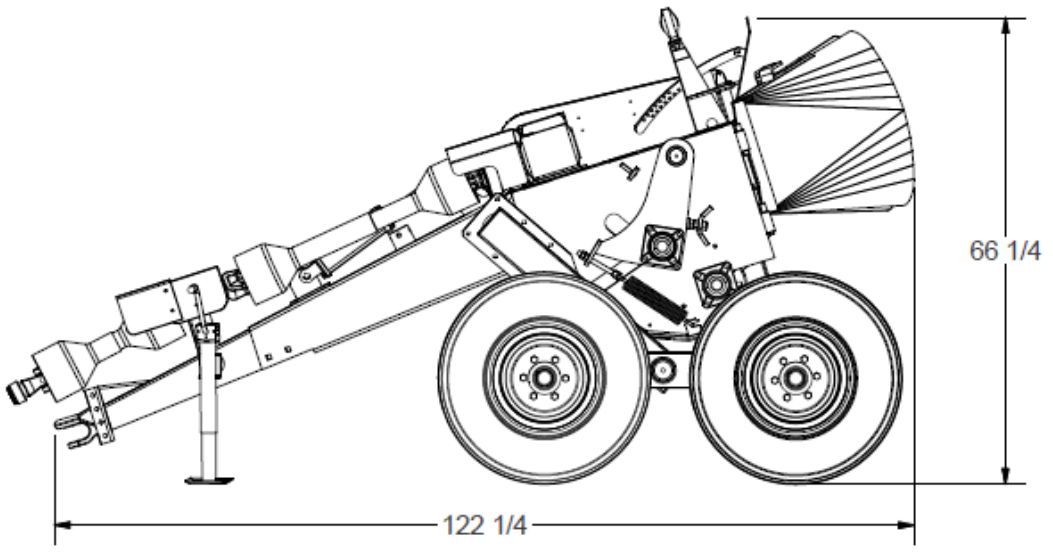
**HC7500 shown*

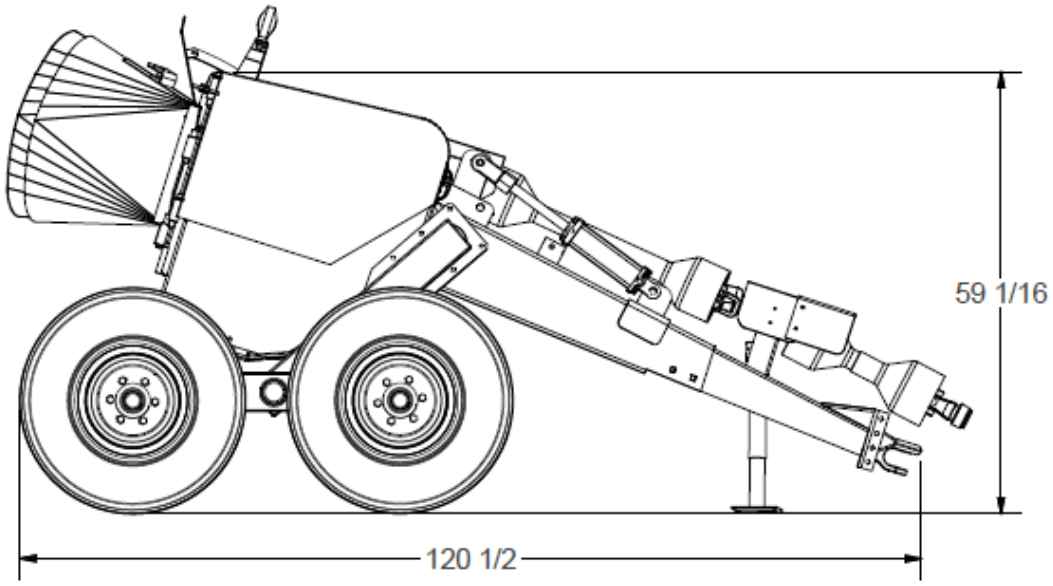


**HC9500 shown*



**Side dimensions are same for HC7500 and HC9500*





Intended Use

The Tubeline Accelerator has been developed to quicken the drying process of cut foilage by squeezing moisture and cracking hay stems rapidly between two rollers and evenly shooting it back into windrows. There should be no lose of nutrients as hay leaves are not removed with this machine. Conditioning also fluffs the hay, allowing air to flow through the swath, for faster and more even drying from top to bottom.

Functionality as a tedder is added with an optional spinner kit.

Improvements

Tubeine Manufacturing Inc. is continually striving to improve its products. We reserve the right to make improvements or changes when it becomes practical and possible to do so, without incurring any obligation to make changes or additions to the equipment sold previously.

Section 1 - Safety

Take note! This safety alert symbol is found throughout this manual to call your 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 is serious injury or death.

Danger: Indicates a hazardous situation that needs to be avoided. It is you the operator that needs to be aware of these dangers.

If you have any questions not answered in this manual, please contact your dealer or Tubeline Manufacturing Ltd.

Check for newer manual version at www.tubeline.ca/support

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Safety Guidelines

Safety of the operator is a main concern, take neccessary precautionshile operating and maintaining this machine. To avoid personal injury study the following precautions and insist those working with you or for you, follow them.

Do not allow anyone to operate the Accelerator who has not been instructed in how to use the machine.

All operators should familiarize themselves with the safety section in the operator's manual. Review the safety instructions with all users annually.

This equipment must not be operated by children, and with those unfamiliar with the operation of the machine. Do not allow persons to operate this machine until they have read this manual and/or were instructed by a qualified person.

This manual may show machine with shields removed, this is only to show a view behind the shield. Keep all the shields and safety doors in place. If they become faulty and fail to work replace them.

Replace any shields removed for repairs or maintenance before operating this machine.

Do not paint over, remove or deface any safety signs or warning decals on your equipment. Observe all safety signs and practice the instructions on them.

Replace any decals that may be missing or that are not readable. Location of the decals is indicated in this manual (*Pg.2-4*).

Do not operate this machine while under the influence of drugs or alcohol.

Keep a first aid kit in the cab for emergencies and know how to use it.

When transporting the machine on public roads, make sure the machine is in compliance with all local road regulation.

Before operating the unit be sure that it is assembled correctly and in good operating condition.

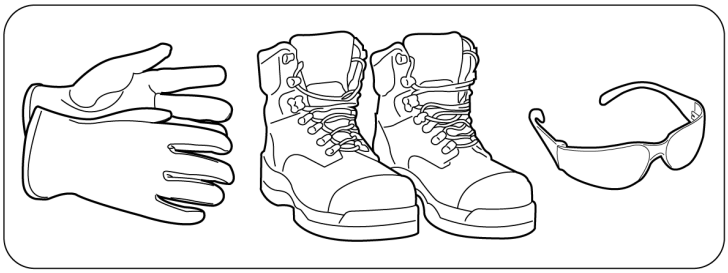
Before leaving the cab, engage the parking brake, shut down engine, and wait for all moving parts to stop.

Do not allow any one to ride on the Accelerator while it is in motion.

Clear the area of bystanders, especially small children before starting the Accelerator.

Always keep bystanders away from machine during operation, Rotating elements may cause serious bodily injury.

Maintenance Safety



If machine maintenance work, repairs or adjustments must be done in the field, they should be done at a spot where the ground is firm and level. Turn off the tractor and apply the parking brake. Use the proper tools and wear suitable protection (safety goggles, work gloves, etc.).

If any maintenance work, repairs or adjustments are done which require disassembly, always make sure that everything is reassembled or retightened as it has been prior to making repairs or adjustments.

Follow the schedule provided for maintenance. By following these suggestions, it will be possible to keep the machine operating safely and efficiently, to the benefit of the user.

DO NOT remove side guard until all moving parts have stopped, rollers and chain inside the side panel are free wheeling and may be still spinning, failure to comply could result in death or serious injury.

Hydraulic Safety

Before applying pressure to the system, be sure all connections are tight and that hoses and connections are not damaged.

Ensure that all the pressure is released from the hydraulic lines before repairing. Replace or repair damaged hoses immediately.

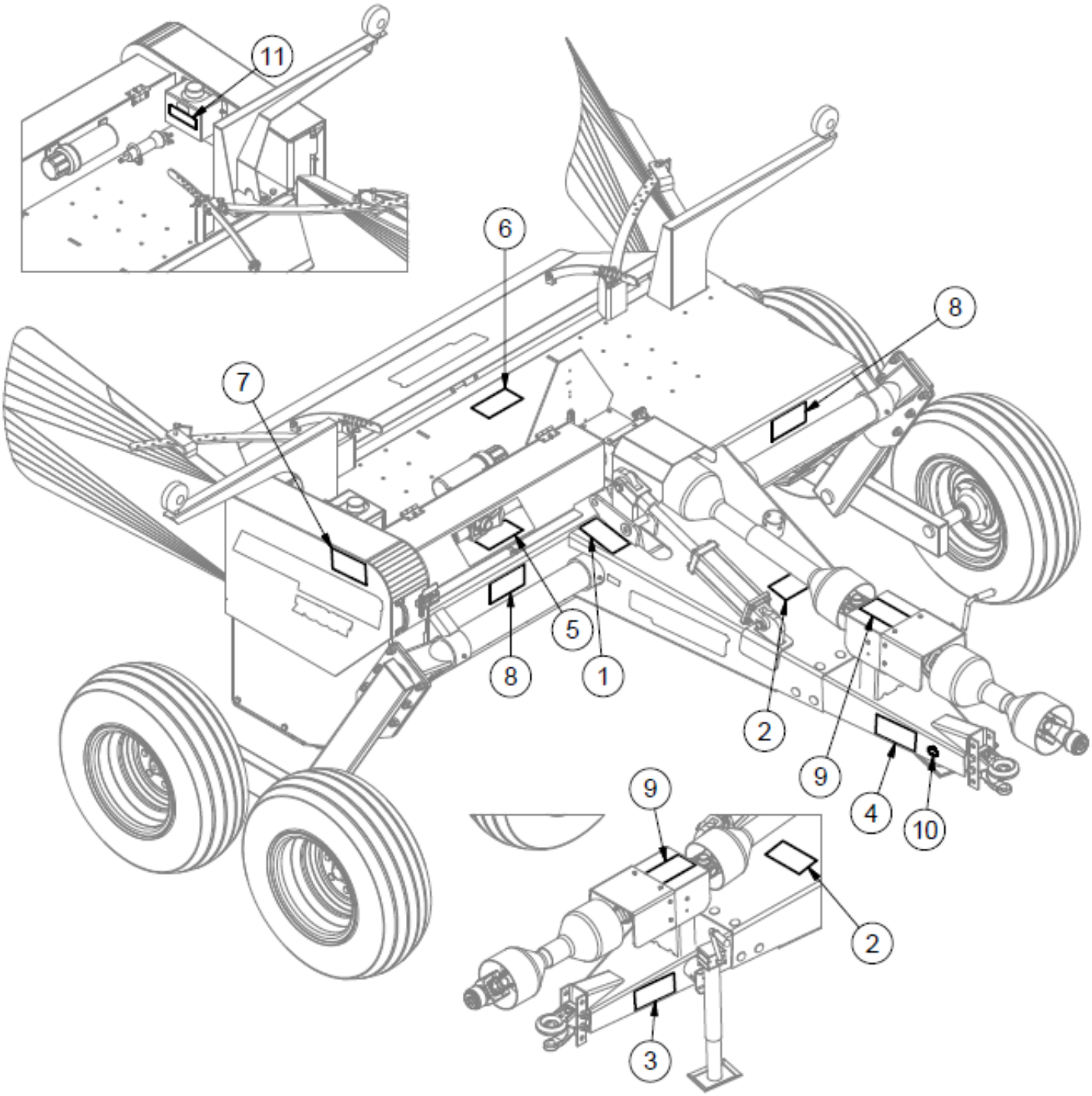
WARNING

When checking for oil leaks use a piece of cardboard; **DO NOT** use your hand:

- Escaping fluid under pressure can penetrate the skin causing serious injury.
- Avoid the hazard by relieving pressure before disconnecting hydraulic of other lines.
- Tighten all line connections before applying pressure.
- Protect hands and body from high-pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Failure to comply could result in serious injury, paralysis or even death.

Safety Decal Locations



Safety Decal Locations

ITEM	QTY	PART NUMBER	DESCRIPTION
	15	DE23979	Grease Decal
1	1	DE41712	ISO Decal - Hand Pinch Point
2	1	DE41713H	ISO Decal - High Pressure Fluid Horizontal
3	1	DE41714H	ISO Decal - Read OM Horizontal
4	1	DE41715H	ISO Decal - Remove Key Before Repair Horizontal
5	1	DE41716H	ISO Decal - Shaft Entanglement Horizontal
6	1	DE41718H	ISO Decal - Thrown Object Horizontal
7	2	DE41902	ISO Decal - Chain Entanglement
8	2	DE42537	ISO Decal Roller Entanglement
9	1	DE42785	ISO Decal - PTO Entanglement
10	1	DECANADA	Decal Made In Canada
11	1	DEPP00929	Important Use SAE #30 Oil 2” x 6.5 “ Decal

See Lubrication Section for further information on grease locations.

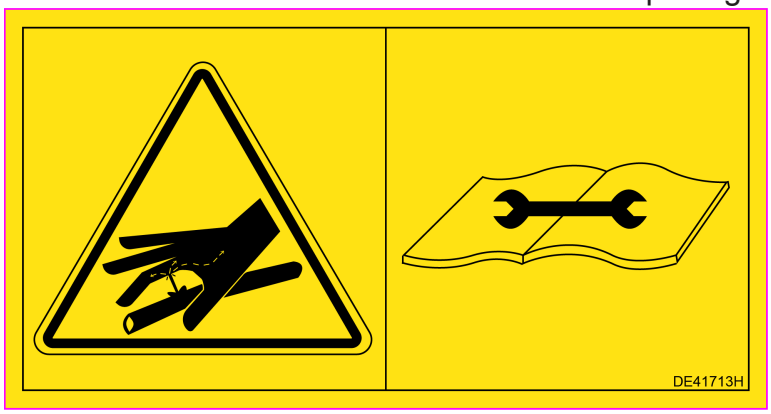
Safety Decals

DE41712 - Hand pinch point hazard.

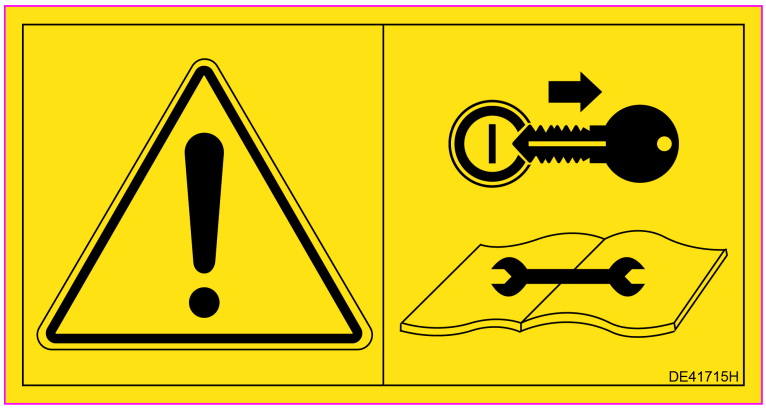
Keep hands clear of cylinder stop while operating.

DE41713H - Hydraulic pressure puncture hazard.

Read manual maintenance section before repairing.



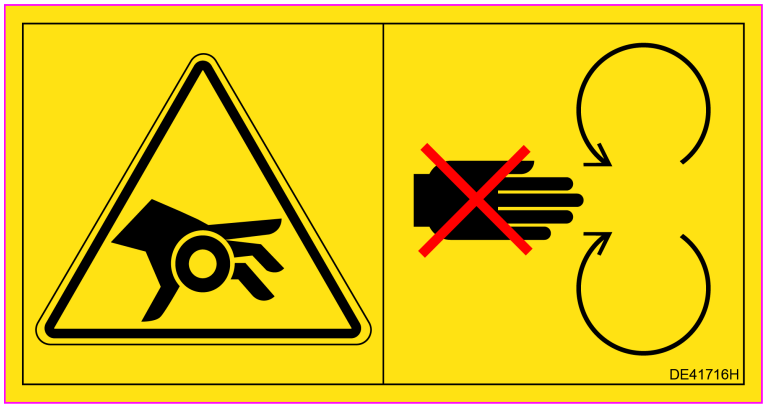
DE41714H - Read Manual Before Operating Machine.



DE41715H - Remove key from power unit and read manual maintenance section before attempting repairs.

DE41716H - Shaft entanglement hazard.

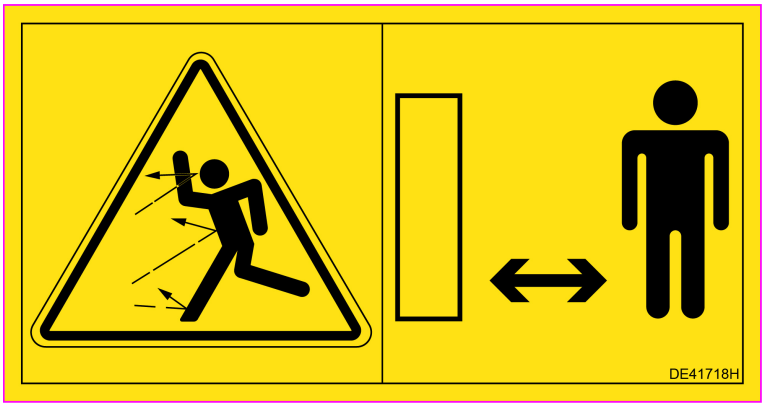
Keep hands away from moving shaft and do not operate machine without shields in place.



Safety Decals

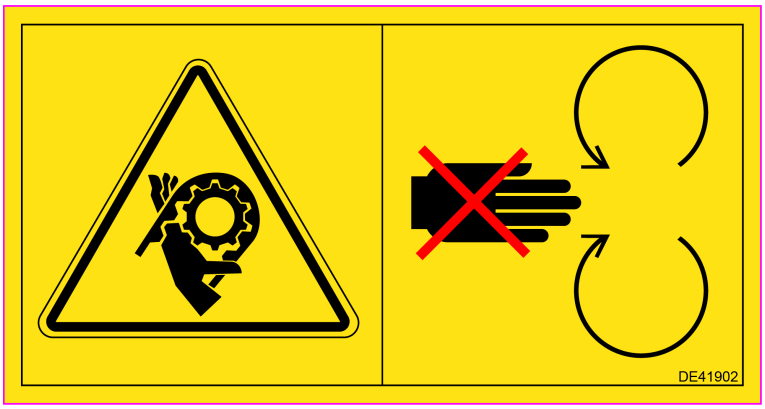
DE41718H - Thrown object hazard.

Be sure all observers are clear of discharge area while operating.



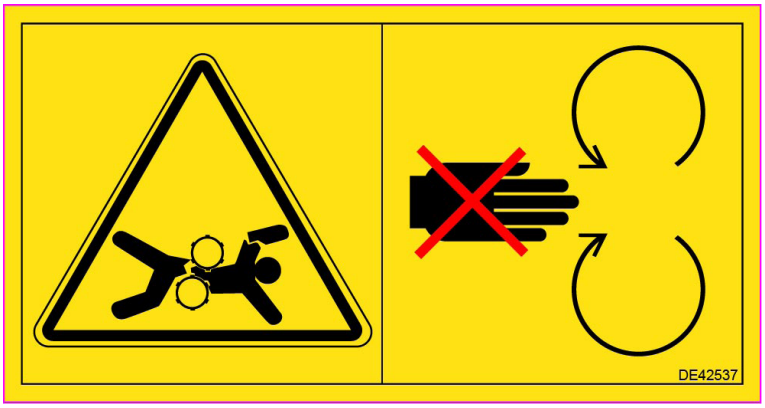
DE41902 - Chain entanglement hazard.

Keep hands clear and shields in place while operating machine.



DE42537 - Roller entanglement hazard.

Do not attempt to dislodge material from spinning rollers. Entanglement could cause paralysis or death.



DE42785 - PTO entanglement hazard.

Stand clear of PTO drivelines while operating. Entanglement could cause paralysis or death.

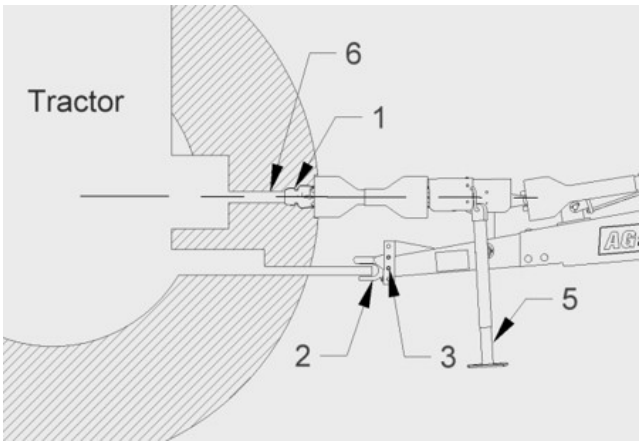
DECANADA - This product is proudly manufactured in Canada.

DEPP00929 - Use clean SAE #30 oil for chain auto greaser. See Lubrication section for further information.

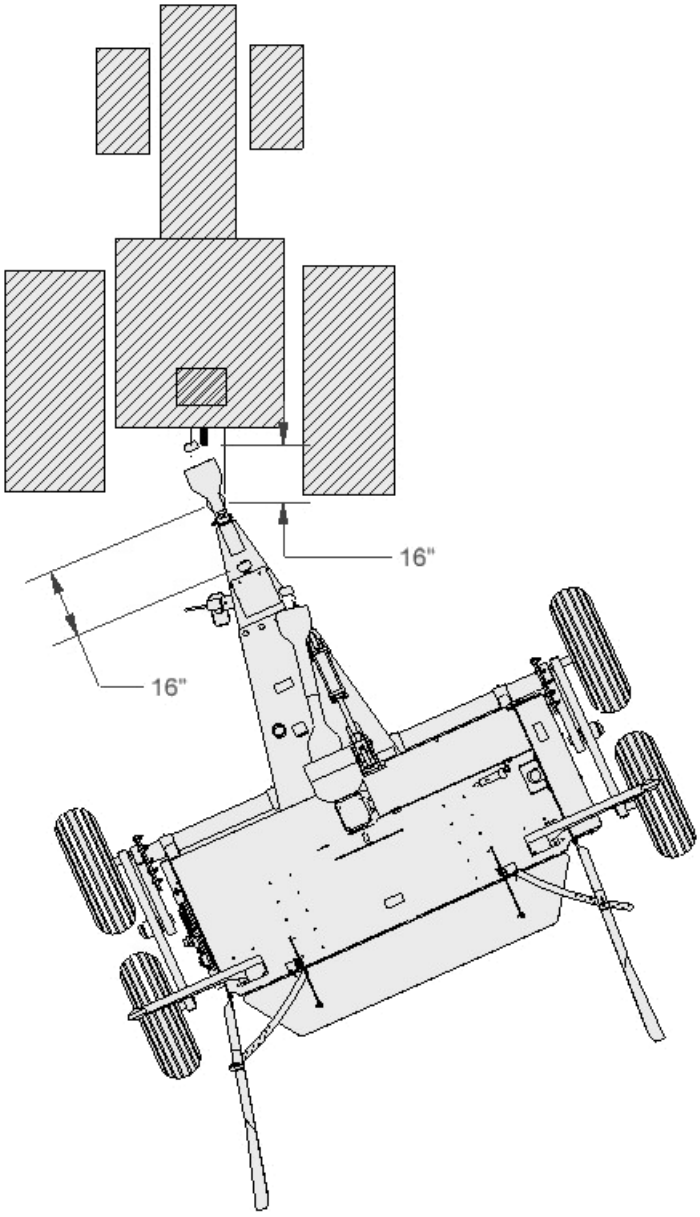
Section 3 - Pre-Operation

Accelerator Hook up to Power Unit

1. Remove hitch **(2)**, 5/8-11 x 4.5” bolts (3) and nuts from the accelerator.
2. Attach the loose hitch on the Accelerator to the draw bar of the tractor with a draw pin.
3. Attach the PTO driveline **(1)** to the tractor.
4. Adjust height of accelerator with jack **(5)**, until the PTO driveline is in line with the power unit’s PTO outlet shaft.
5. Reattach hitch to the Accelerator hitch plate at best aligned holes to assure PTO stays aligned.
6. Remove jack bolt, turning jack 90° and refastening bolt to lock jack into horizontal position.



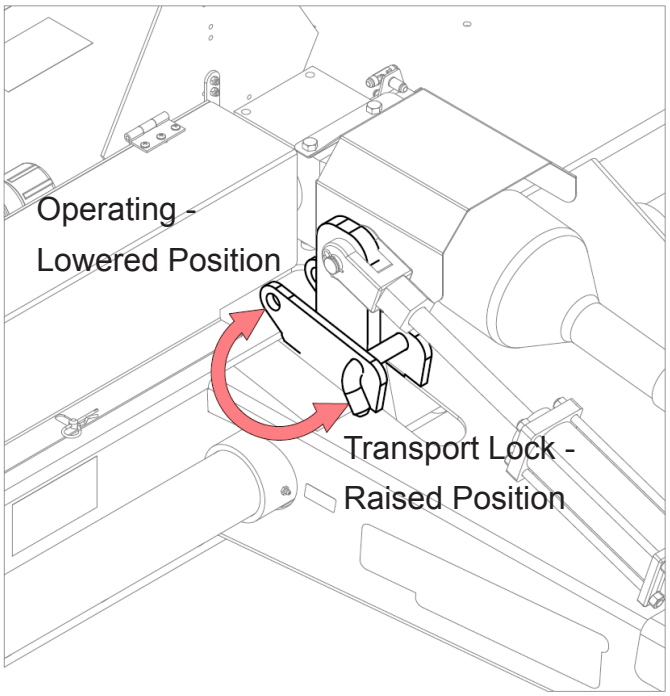
NOTE: Set the Accelerator so that the hitch point to the PTO stub shaft is the same distance as the distance from the hitch point to the tractor’s PTO output shaft, approximately 16”.



Section 4 - Operation

WARNING

Keep bystanders away from the machine. Failure to comply could result in death or serious injury. Make sure all protective shields are in place and properly secured. Check all hydraulic hoses and fittings to be sure they are tight and that no hose damage has occurred.



1. Move transport lock to rear storage holes to avoid cylinder damage while lowering Accelerator.
2. Keep machine raised until Accelerator reaches start of desired row.
3. Apply hydraulic pressure and lower the Accelerator to desired height above foilage.
4. Engage PTO to start turning rollers.
5. Drive down the row at a controlled speed, keeping the Accelerator in the middle of the row.
6. At end of row, raise Accelerator above foilage row while turning to next row.
7. Lower Accelerator at beginning of next row and repeat step 5 until operation complete.

WARNING

Engage the parking brake on the tractor, shut down the engine, and wait for all moving parts to stop before leaving the cab. Failure to comply could result in death or serious injury.

8. Once field has been completed, raise Accelerator, reset tranport lock pin to holes in front of cylinder lug.
9. Check for loose or missing nuts and bolts. Tighten any that are loose and replace any missing fasteners.
10. Make sure all protective shields are in place and properly secured.
11. Check all hydraulic hoses and fittings to be sure they are tight and that no hose damage has occurred. Repair or replace any damaged parts before next job.

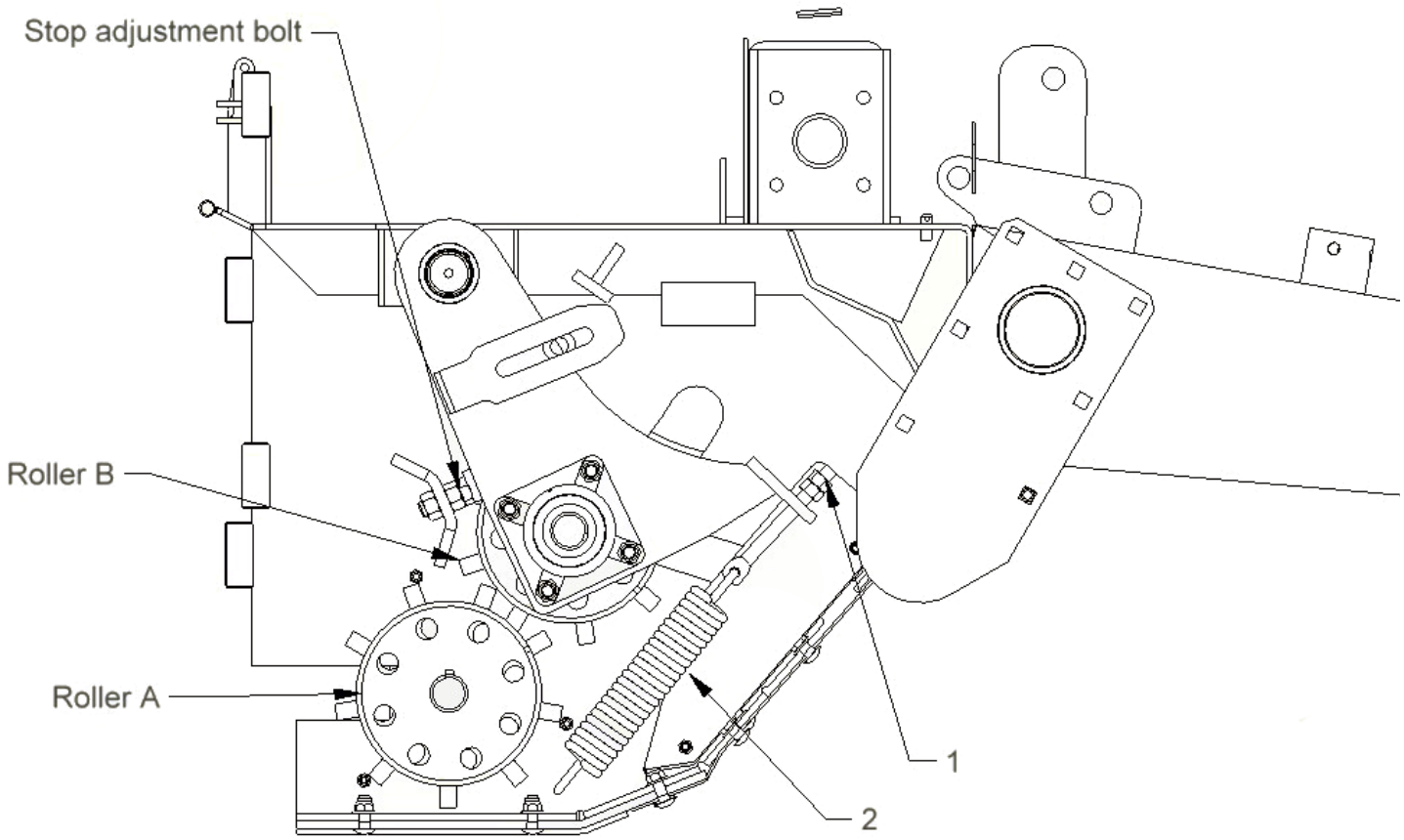
WARNING

Do not run with defective hoses or fittings. Make sure that there is no pressure in the hydraulic lives before checking repairing. High-pressured hydraulics can cause death or serious injury.

Roller Tensioning

The Tubeline Accelerator has a spring tension setting on the both the left and the right side of the machine, too set the tensioning of the two rollers.

1. To adjust the rollers simply open the cover shield found on the right side of the machine, and either loosen the nut **(1)** or tighten it for more or less tension.
2. Repeat process for left side.



Note: It is a good practice to make sure that both sides, left and right side tension springs **(2)** are set at the same tension rate.

- To adjust roll spacing turn Stop Adjustment bolt in until rolls make light contact. Turn bolt out to provide slight clearance.
- Tighten lock nut.
- Adjust both sides.

Section 5 - Lubrication

This section gives full details of the procedures necessary to maintain the Tubeline Accelerator at peak efficiency. Complete all checks and services in this section at the hour interval shown.

Note: Failure to complete the required maintenance at the interval shown can cause unnecessary downtime.

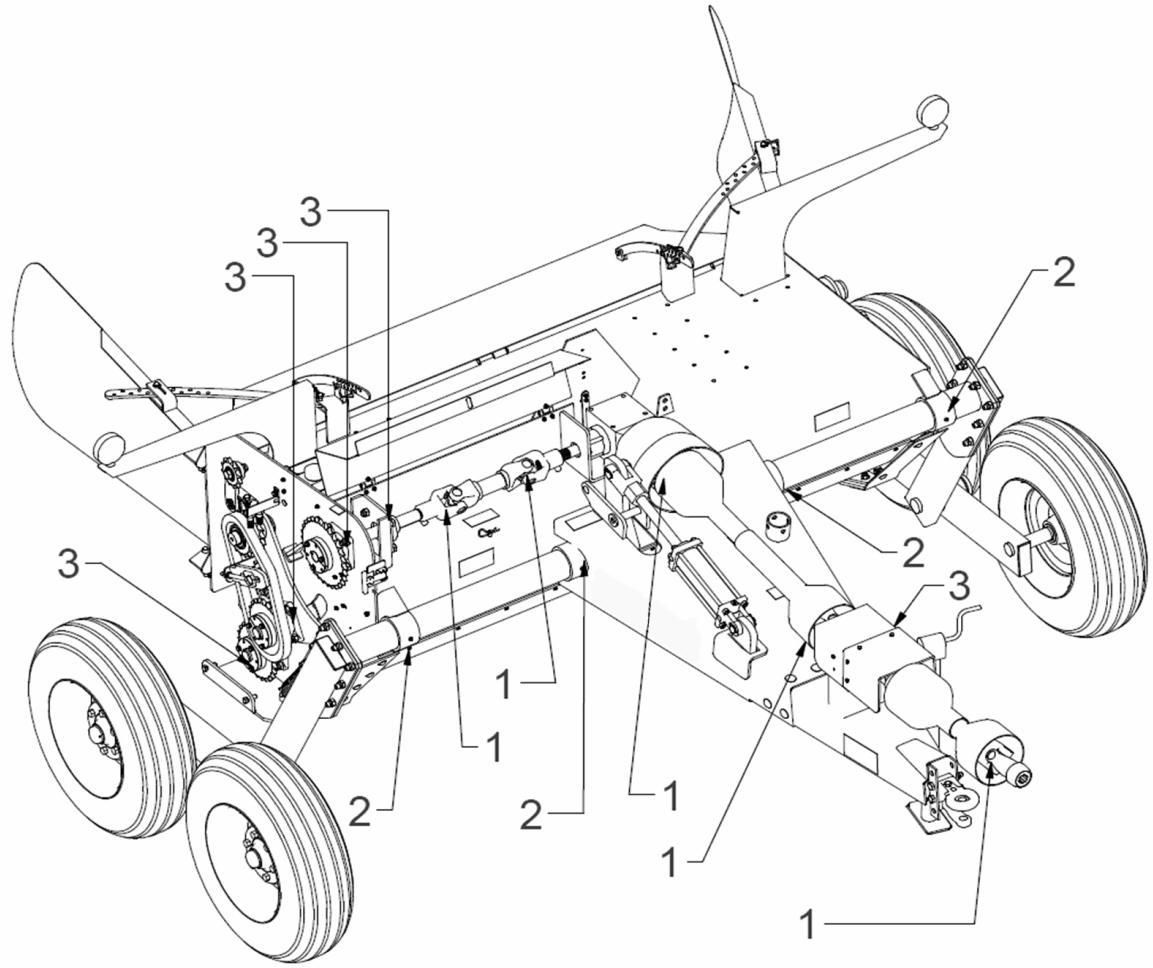
The recommended lubrication intervals are for average conditions. Perform lubrication more often when operating under adverse conditions.

WARNING

Before lubricating the Tube-Line Accelerator always observe the following precautions:

Turn off tractor, set parking brake, remove key and wait for all moving parts to stop before leaving cab. Failure to comply could result in death or serious injury.

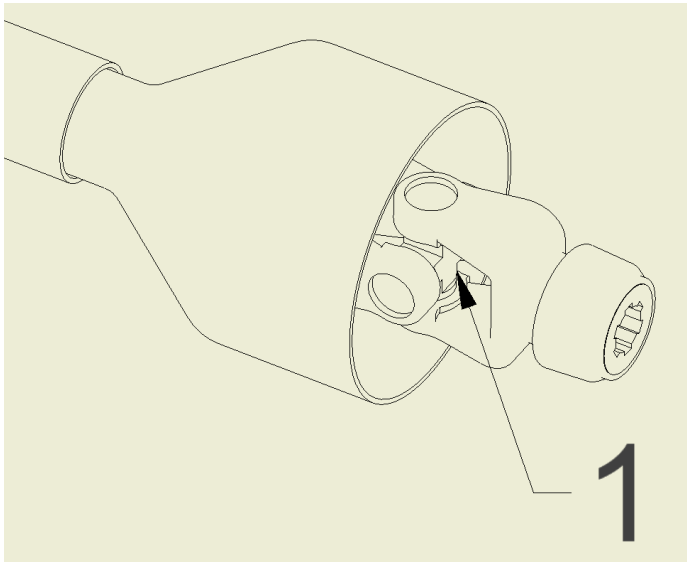
Grease Points



NUMBER	ITEM	INTERVAL
1	PTO Knuckles	Every 50 – 250 Hours
2	Lifting Pivot	Every 100 Hours
3	Pillow Block Bearing	Every 100 Hours

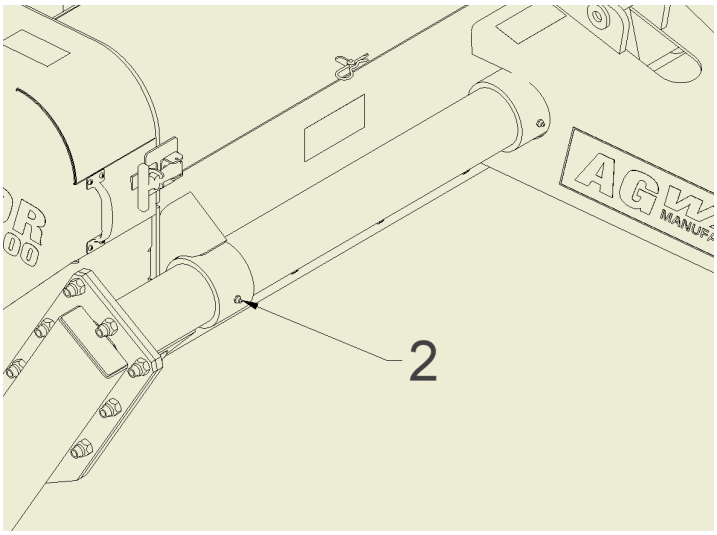
Grease Point - PTO Knuckles

Apply 2 strokes of grease every 50 to 250 hours to point (1) (6 locations).



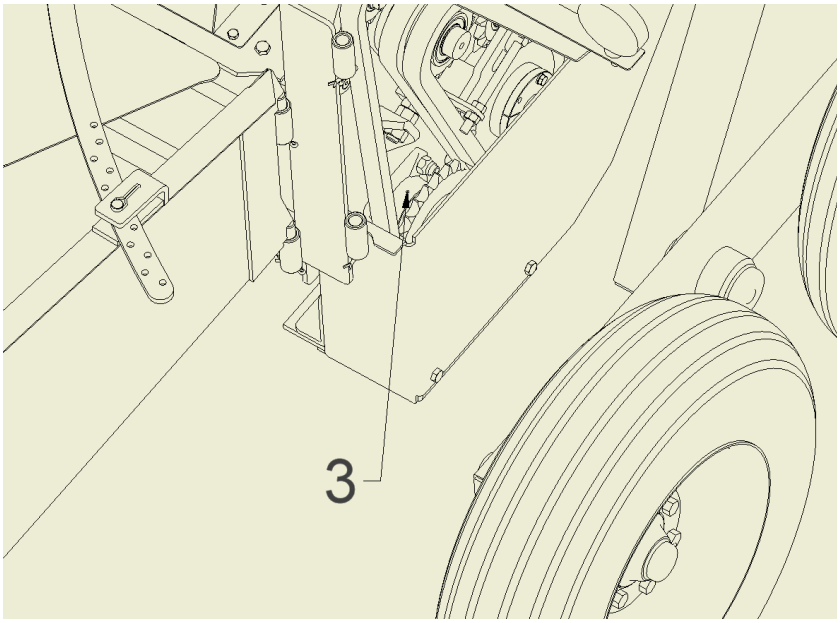
Grease Point - Lifting Pivot

Apply 5 strokes of grease every 100 hours at points **(2)**; 5 locations.

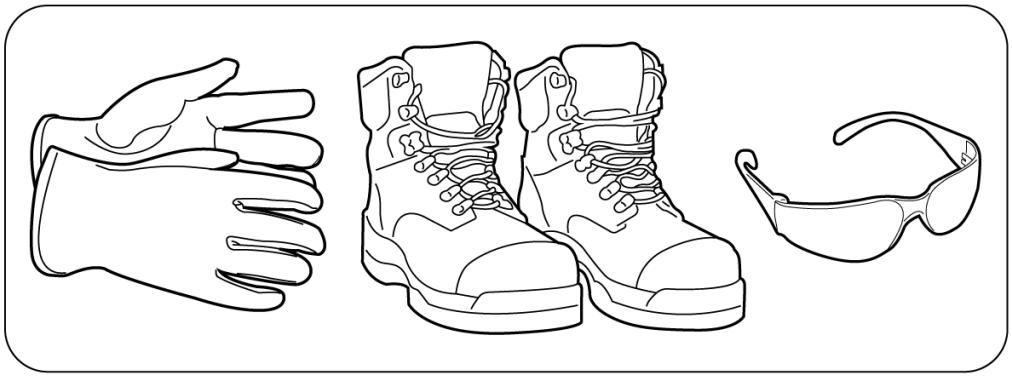


Grease Point - Pillow Block Bearing

Apply 2 strokes of grease every 100 hours at points **(3)**; 6 locations.



Section 6 - Maintenance



Complete all checks and services in this section at the hour interval shown.

NOTE: Failure to complete the required maintenance at intervals shown can cause unnecessary downtime.

The recommended intervals are for average conditions. Perform maintenance more often when operating the Tube-Line Accelerator under adverse conditions.

General checking of bolts, security pins and split pins must be carried out initially after the first 8 hours of use. Subsequently, check every 50 hours and whenever the machine is laid up for extended periods.

WARNING

Before performing any adjustments or maintenance on the Tube-Line Accelerator, observe these safety precautions:

Turn off tractor, set parking brake, remove key and wait for all moving parts to stop before leaving cab.

Failure to comply could result in death or serious injury.

DO NOT weld on or near rotating parts. Welding close to rotating parts will cause warping and will challenge the structural integrity.

DO NOT weld on or near rotating parts. Welding close to rotating parts may cause warping thus creating high stress loads for moving or rotating parts.

DO NOT weld on wheels. Welding on wheels may cause high stress and wheel failure.

DO NOT weld on wheels with a mounted tire, Welding on wheels with a mounted tire may cause tire to burst, causing serious injury or death.

Friction Clutch Maintenance

If the clutch has not been operated for 1 season we recommend the following.

1. Make sure the tractor is off and the PTO is disengaged.
2. Disconnect the driveline from the tractor.

3. Locate the long bolts on the outside of the clutch pack. Loosen the bolts until all are finger tight, then tighten each, one half turn.
4. Attach the implement to the tractor at the hitch pin, and the driveline to the tractor PTO.
5. Turn the tractor on. Engage the PTO clutch and run for a few seconds, or until the clutch visibly smokes.
6. Disengage the tractor PTO clutch off the tractor. Keep clear of the machine until all parts stop moving.
7. Disconnect the driveline from the tractor.
8. Tighten the long bolts on the outside of the clutch pack until the compression plate is in full contact with the housing.
9. If the clutch contains an integral overrunning clutch, make sure the clutch spins freely in one direction.

Daily Maintenance

Careful inspection and service of the Tubeline Accelerator prior to operation each day will prevent needless breakdowns and delays in the field. Make the following checks and adjustments.

1. Be alert for loose hardware and tighten or replace as required.
2. Lubricate the Tube-Line Accelerator according to the instruction in the “Lubrication” section of this manual.

Preseason Service

Prior to beginning the harvest, after off season storage, take the following steps to be certain the Tubeline Accelerator is in good condition.

1. Inspect and make adjustment to the friction clutch as necessary. (refer to page 5-2).
2. Lubricate the Tube-Line Accelerator according to the “Lubrication” section of the manual.
3. Tighten or replace any damaged or missing fasteners.

End of Season Service

Prior to storing the Tube-Line Accelerator during the off season, follow these steps to ensure easier preparation for the next season and longer Tubeline Accelerator life.

1. Pack all grease points with grease (see the “Lubrication” section for grease points location.)
2. Remove all crop material from the Tubeline Accelerator.

Section 7 - Troubleshooting

Problem: Material wraps on the bottom roller.

Cause #1: Accelerator is set too low and is contacting the ground.

Cause #2: Slip clutch is not set tight enough, causing the slip clutch to slip.

Remedy #1 : Adjust the rod on the cylinder so that the bottom roller is 1-2” off the ground.

Remedy #2 : Tighten tension adjustments on slip clutch 2 rounds each and test, repeat if necessary.

Problem: Main PTO drive knuckles chatter when turning a sharp corner.

Cause: The distance from draw pin to end of the stub shaft on Accelerator and the distance from draw pin to end of PTO in tractor in not equal. (see pg 2-2)

Remedy: Adjust drawbar on tractor so that the distance form draw pin to end of stub shafts are equal each being approximately 16”. (see page 2-2)

Problem: After product has passed through the Accelerator the product is not crushed or broken.

Cause #1: The rollers on the Accelerator are too fat apart allowing the product to pass through without properly conditioning it.

Cause #2: The sprig tension on rollers is not set tight enough.

Remedy #1: Adjust roller spacing.

Remedy #2: Adjust spring tension.

Problem: Rollers chatter

Cause #1: Rollers too close together.

Cause #2: Roller timing is incorrect.

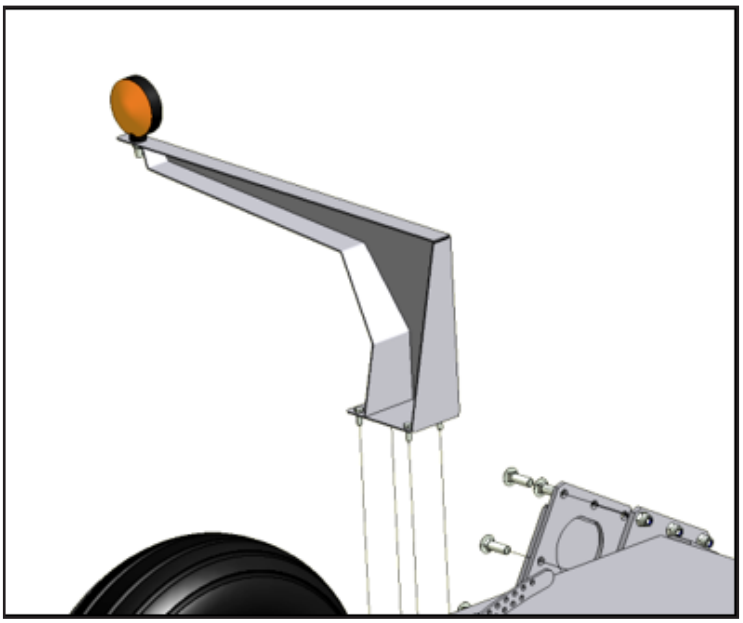
Remedy #1: Adjust the stop for the rollers (see page 3-1)

Remedy #2: Remove a link from the chain or readjust hubs on sprockets to correct the timing.

Section 8 - Optional Kit Information

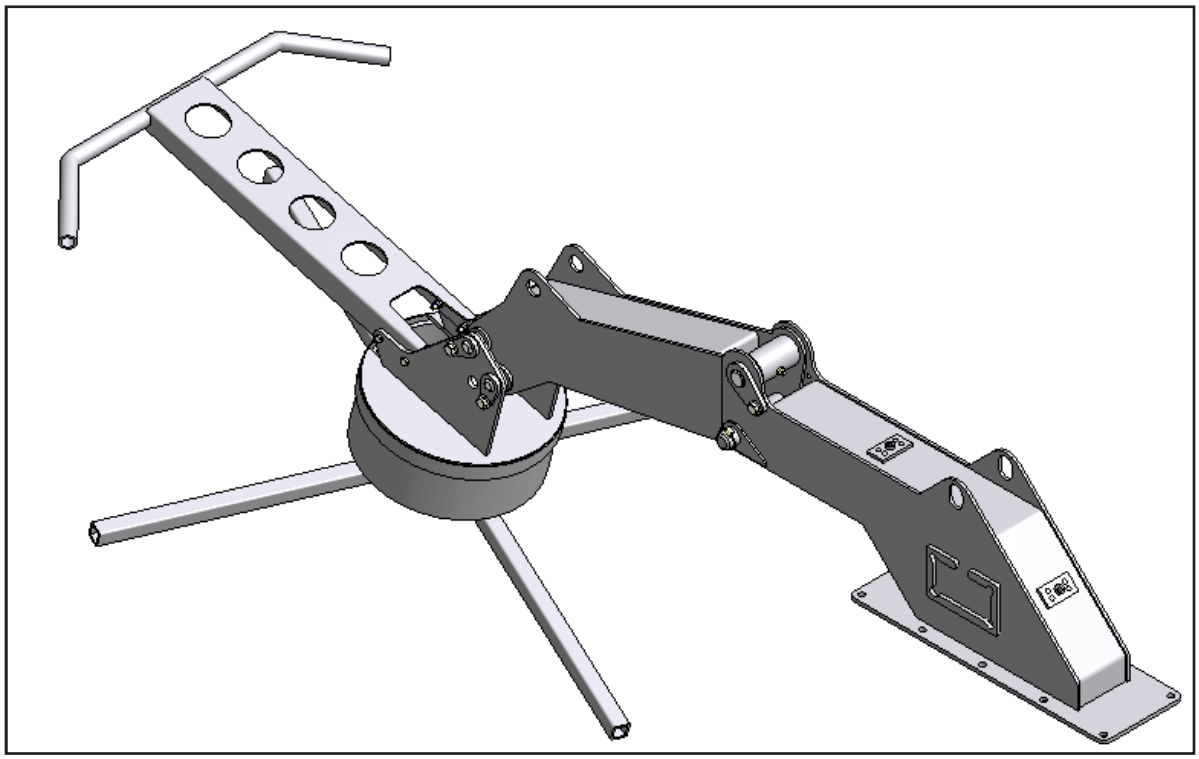
Light Arms

Light arms are available for the Tube-Line Accelerator, light arms make the Tubeline Accelerator more visible to other traffic, while transporting on the road.



Spreader Kit

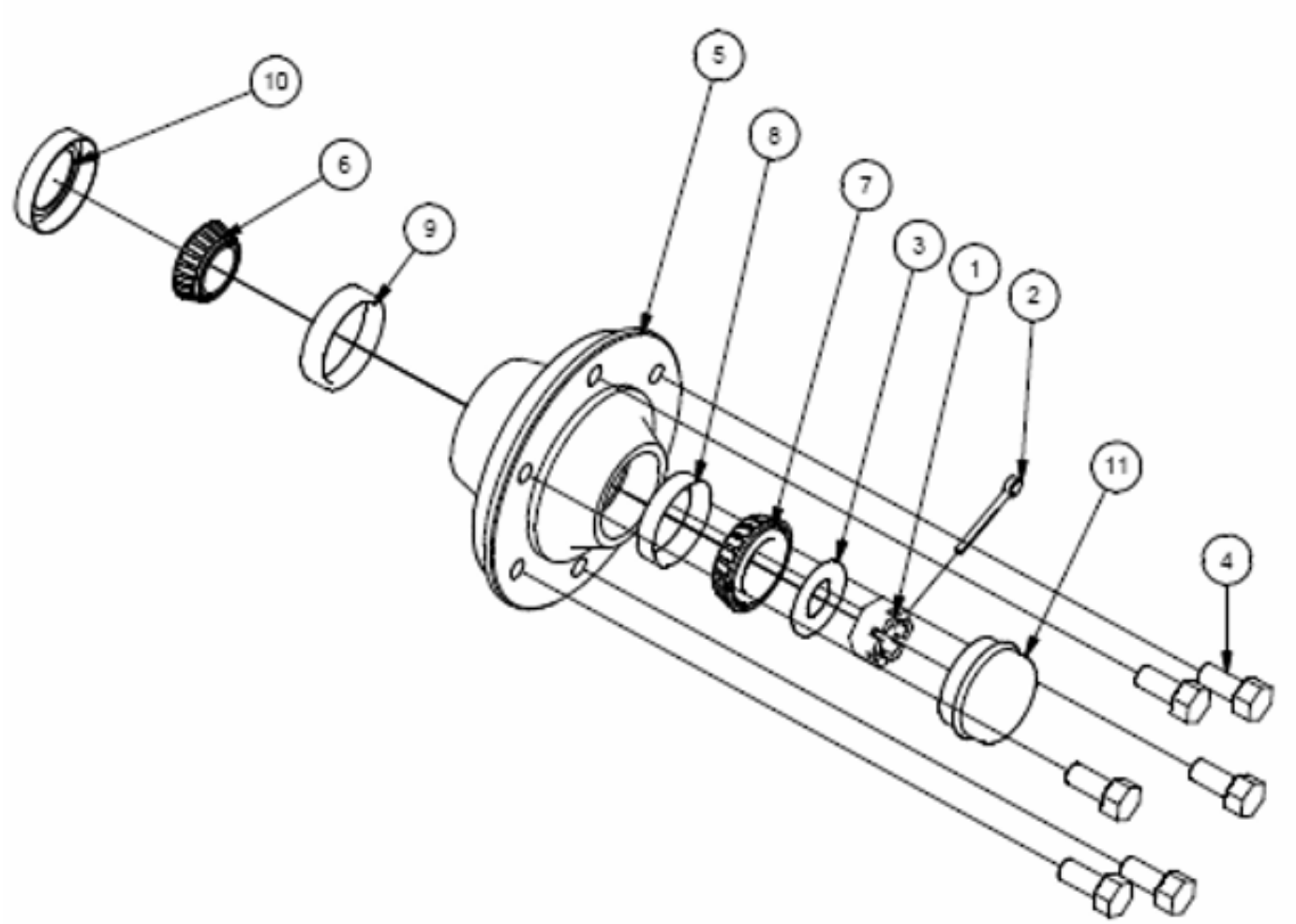
The spreader kit available for the Tubeline Accelerator can be attached at the back of the machine, and will increase drying time by spreading the crop material being ejected from the Accelerator.



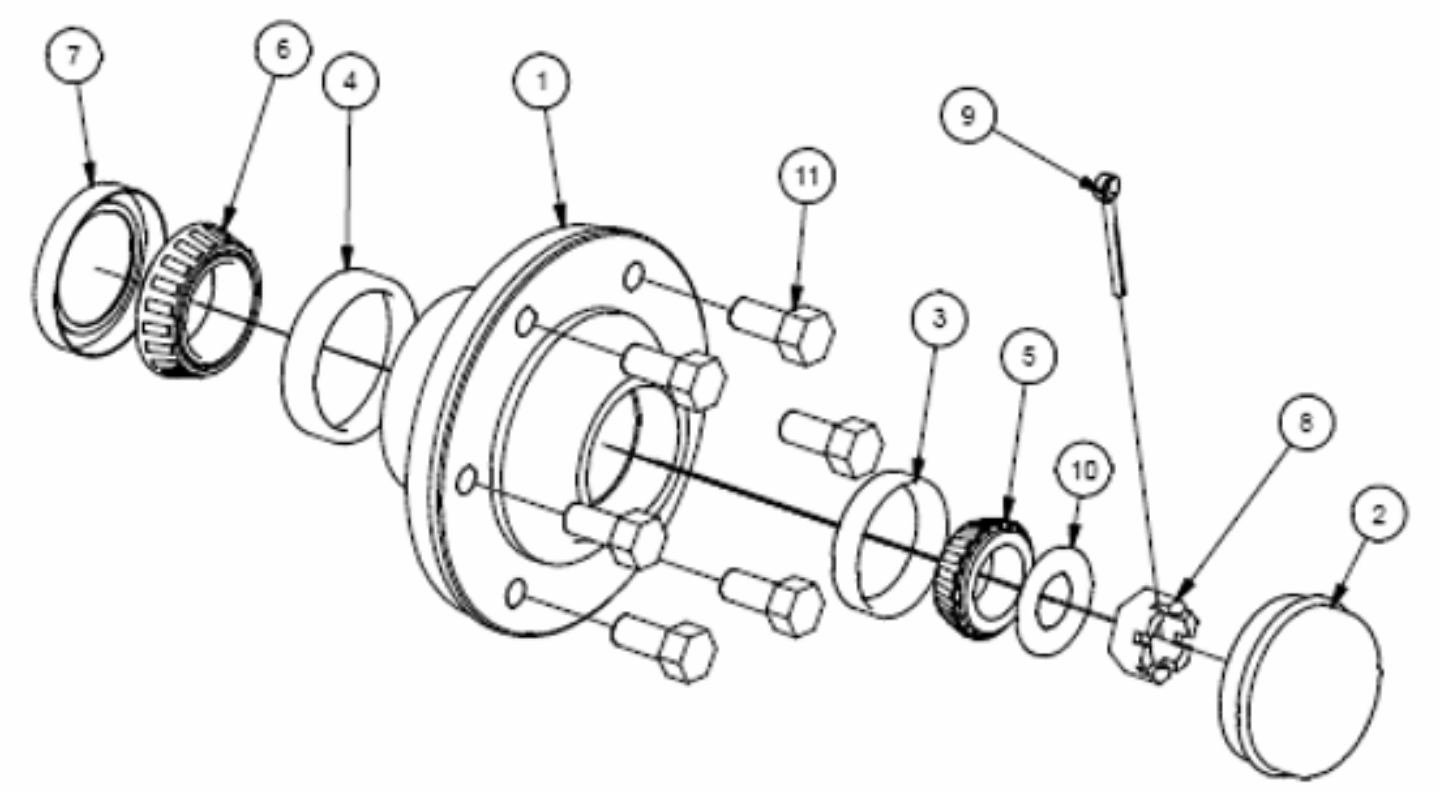
Section 9 - Parts Breakdowns & Lists

Illustrations may differ slightly from actual machine.

Hub 5000 (Single Axle Models Only)



Hub 4000 (Tandem Axle Models Only)



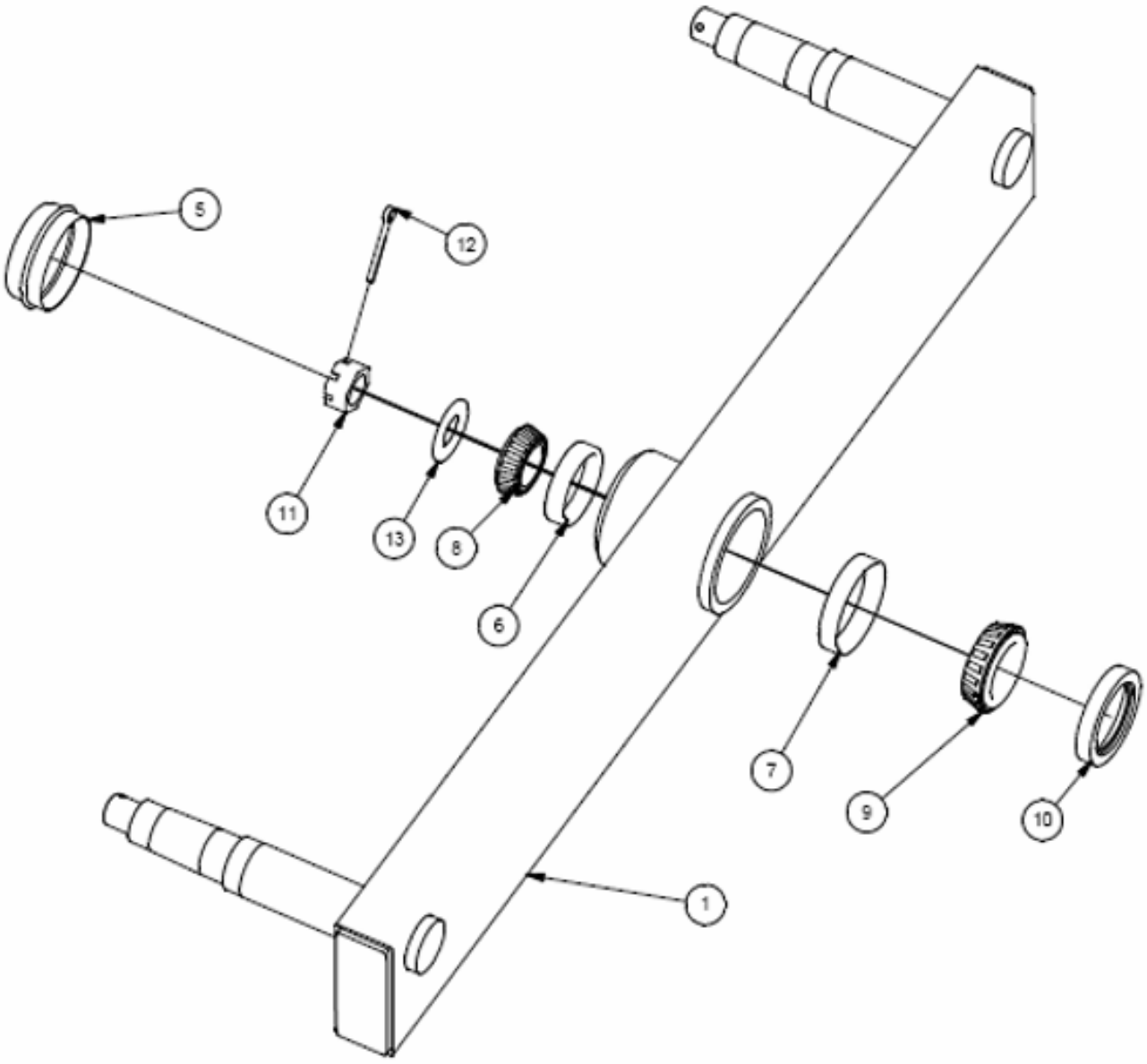
Hub 5000 (Single Axle Models Only)

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	PP-00025	1-UNC Castle Nut
2	1	PP-00026	3/16 x 2 Cotter Pin, Brass
3	1	PP-00030	1 Flat Washer
4	6	PP-00031	9/16-18 UNF x 1.75 Wheel Stud
5	1	PP-00211	4000lb Hub
6	1	PP-00212	LM7048 Outer Bearing
7	1	PP-00213	LM29749 Inner Bearing
8	1	PP-00214	LM57010 Outer Cup
9	1	PP-00215	LM29710 Inner Cup
10	1	PP-00216	521227 Seal
11	6	PP-00217	D-4000 Dustcap

Hub 4000 (Tandem Axle Models Only)

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	PP-00018	5000lb Hub
2	1	PP-00019	D-5000-dustcap
3	1	PP-00020	LM48510 Outer Cup
4	1	PP-00021	LM503011 Inner Cup
5	1	PP-00022	LM48549 Outer Cone
6	1	PP-00023	LM503049 Inner Bearing
7	1	PP-00024	CR200044 Seal
8	1	PP-00025	1-UNC Castle Nut
9	1	PP-00028	3-16 x Cotter Pin, Brass
10	1	PP-00030	1” Flat Washer
11	6	PP-00031	9/16-18 UNF x 1.75 Wheel Stud

Tandem Walking Beam

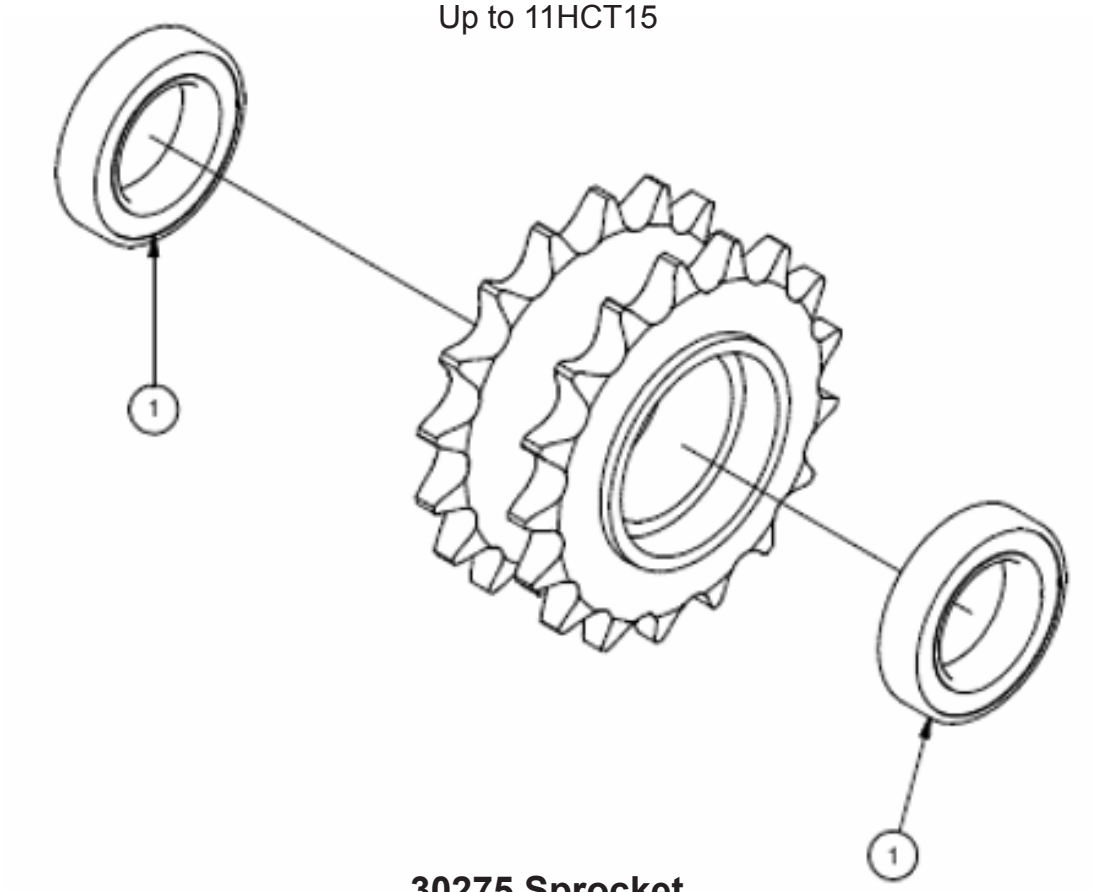


Tandem Walking Beam

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	HC-019	Rocking Tandem
2	1	HC-020	Tandem Pivot Boss
3	2	HC-021	4000lb Spindle
4	2	HC-022	Cap
5	1	PP-00019	D-5000-dustcap
6	1	PP-00020	LM48510 Outer Cup
7	1	PP-00021	LM503011 Inner Cup
8	1	PP-00022	LM503049 Inner Bearing
9	1	PP-00023	CR20044 Inner Bearing
10	1	PP-00024	CR20044 Seal
11	1	PP-00025	1-UNC Castle Nut
12	1	PP-00028	3/16 x 2 Cotter Pin, Brass
13	1	PP-00030	1 Flat Washer

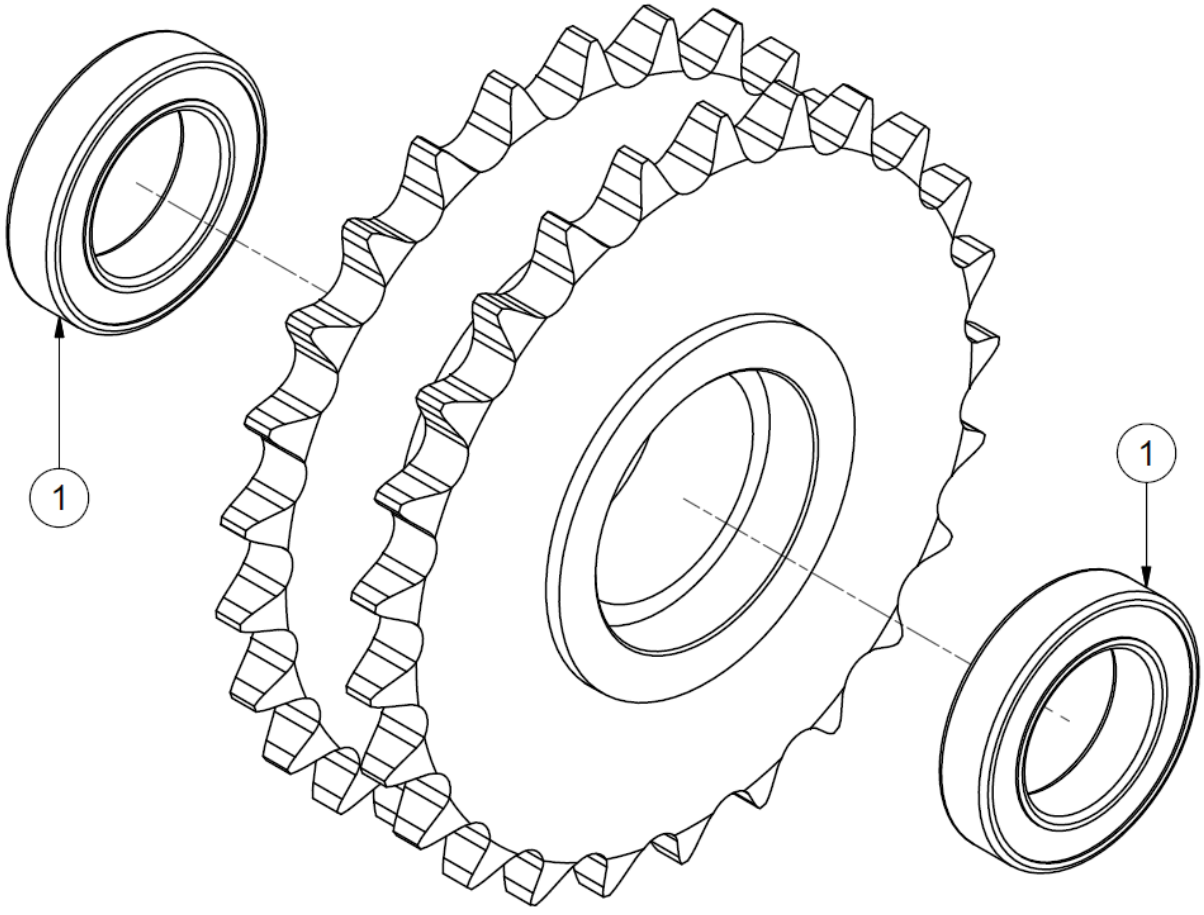
HC-28 Sprocket

Up to 11HCT15



30275 Sprocket

12HCT01 to current



HC-28 Sprocket

Up to 11HCT15

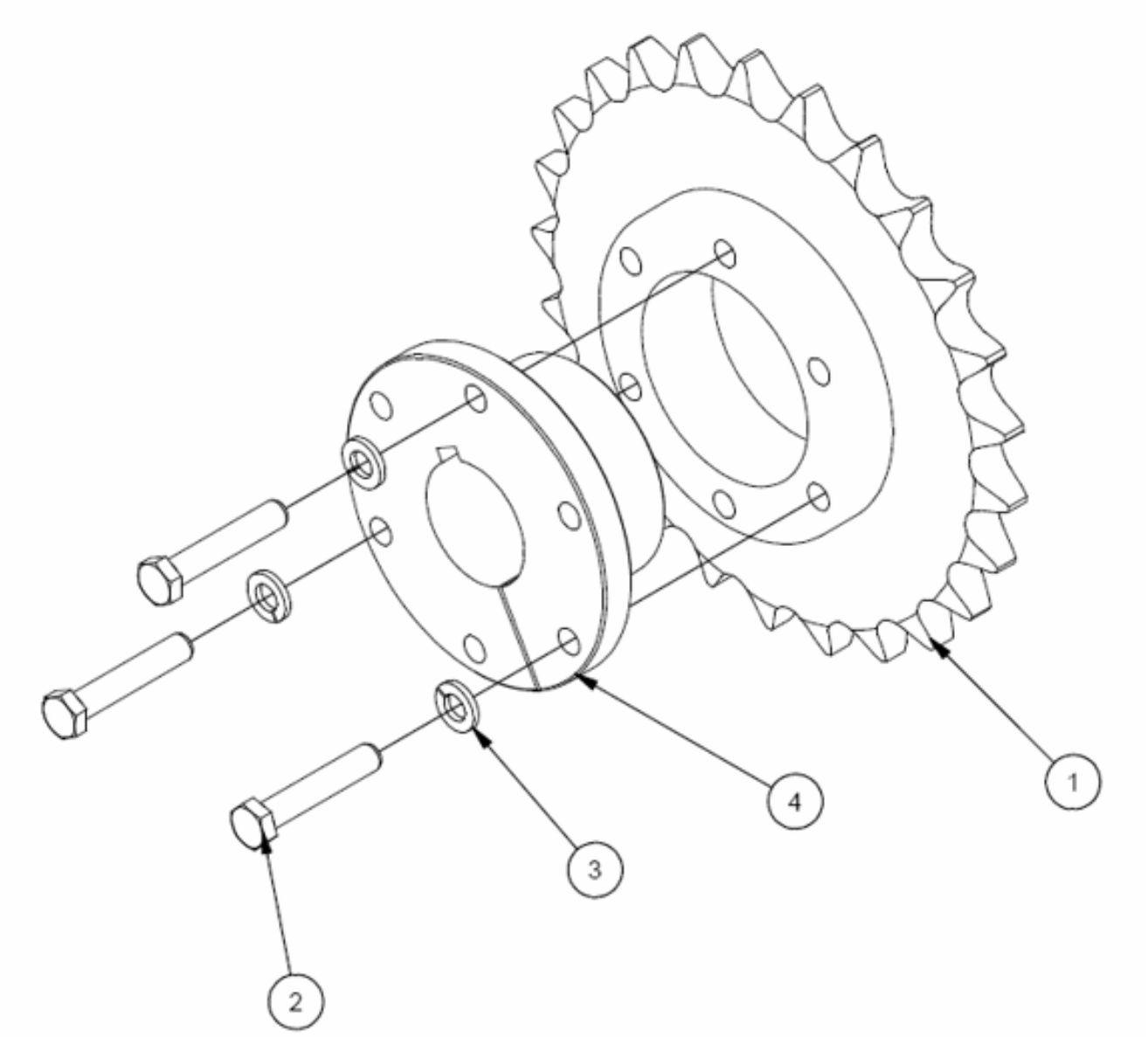
ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	PP-00900	45 x 75 x 16mm Ball Bearing #6009

30275 Sprocket

12HCT01 to current

ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	PP-00900	45 x 75 x 16mm Bal Bearing #6009

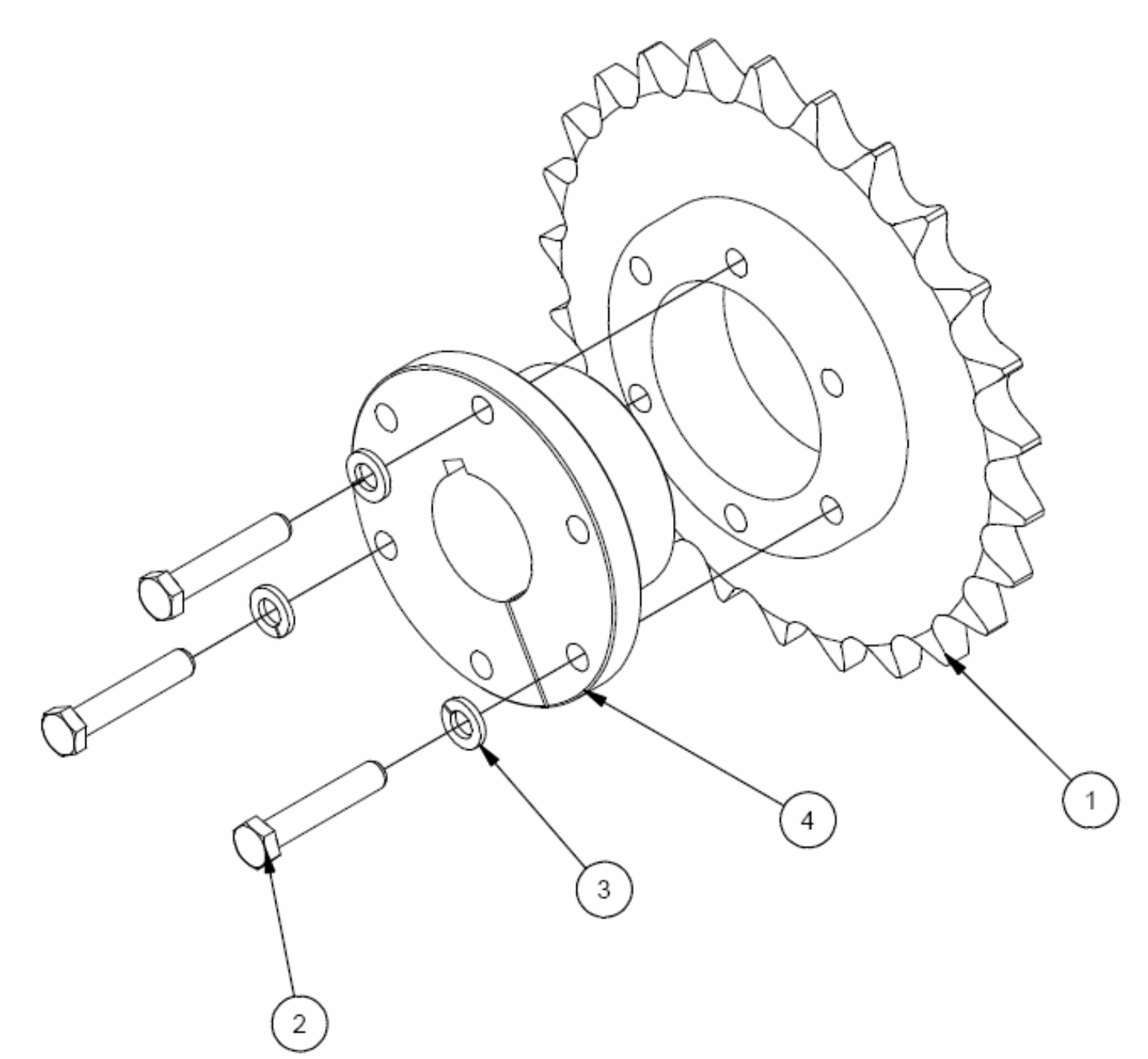
PP-00303 Sprocket



PP-00303 Sprocket

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	PP-00304	80SF25 Taper Lock Sprocket
2	3	HB 3/8-16X2.0 Z5	Hex Bolt 3/8-16 x 2” Grade 5 Zinc Plated Hex Cap Screw NC
3	3	LW 3/8	Lockwasher - 3/8” Zinc Plated Medium Split
4	1	PP-00305	SF 1 3/4 Taper Lock

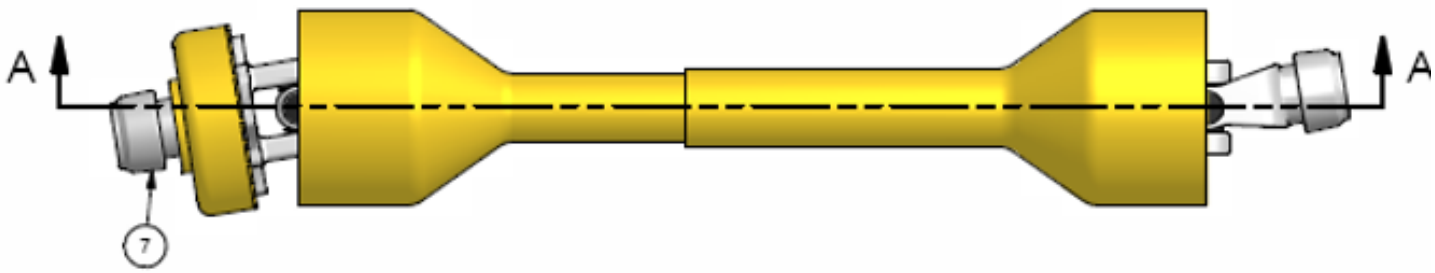
PP-00318 Sprocket

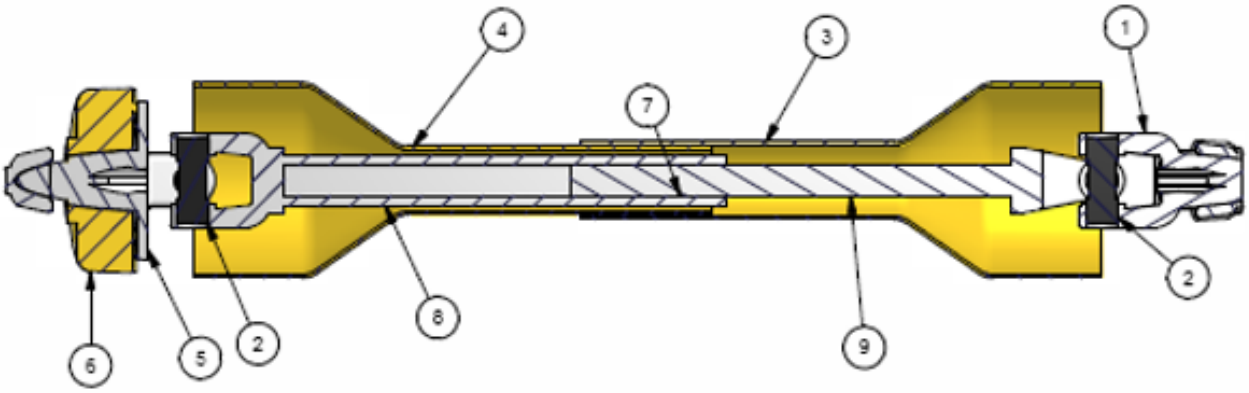


PP-00318 Sprocket

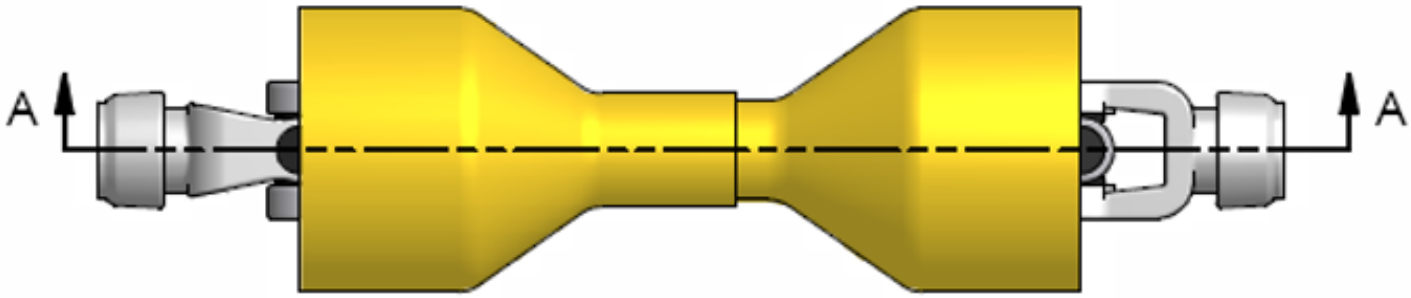
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	PP-00320	80SF30 Taper Lock Sprocket
2	3	HB 3/8-16X2.0 Z5	Hex Bolt 3/8-16 x 2” Grade 5 Zinc Plated Hex Cap Screw NC
3	3	LW 3/8	Lockwasher - 3/8” Zinc Plated Medium Split
4	1	PP-00319	SF 1 1/2 Taper Lock

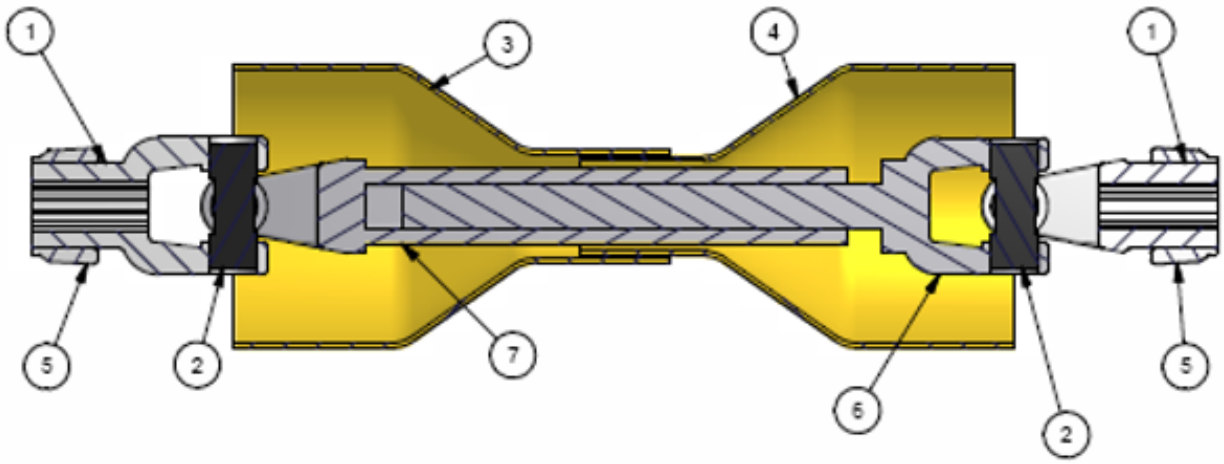
PP-00338 PTO





PP-00339 PTO





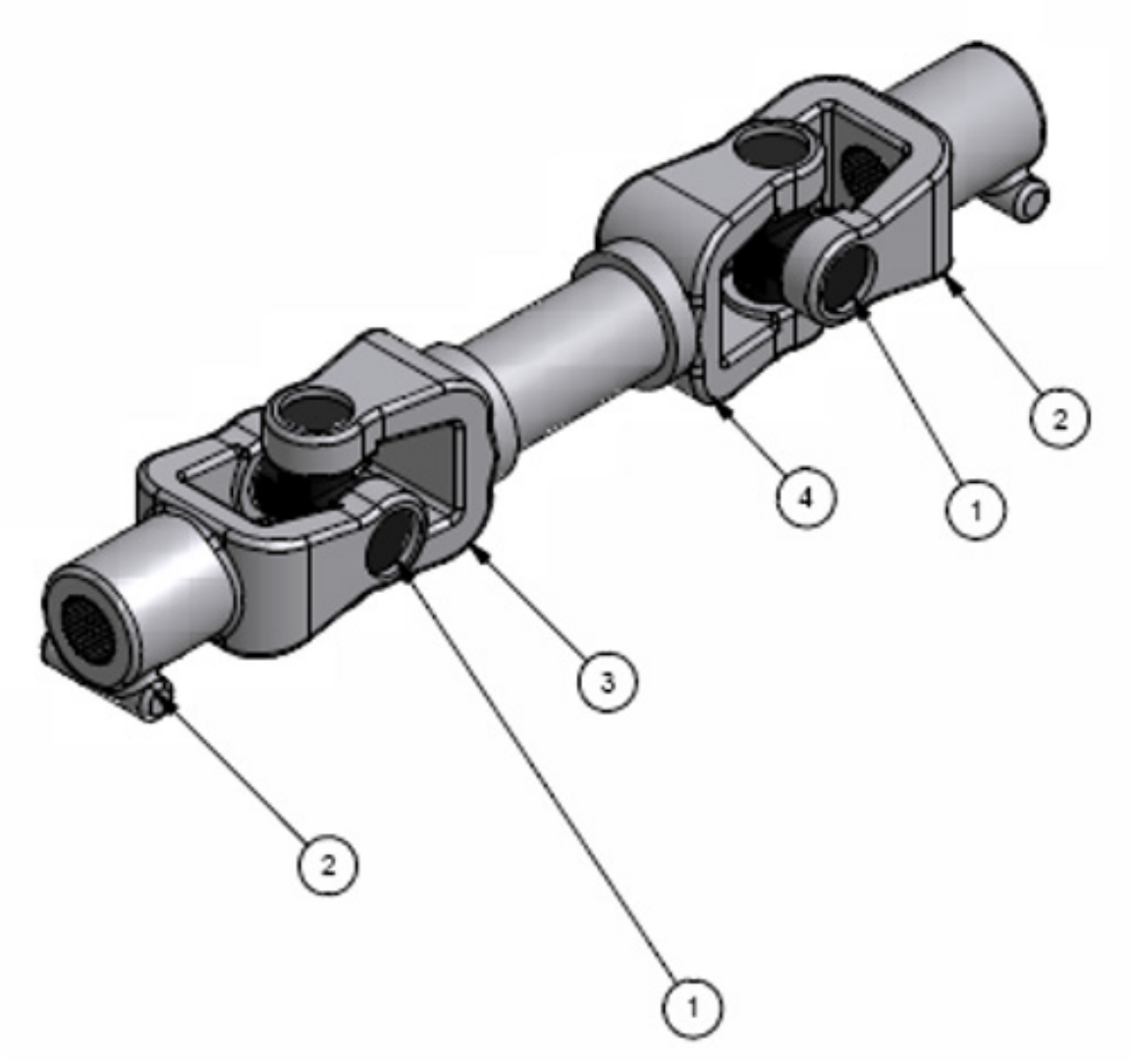
PP-00338 PTO

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	PP-00963	Auto lock yoke ass./35031-1015
2	2	PP-00964	35e cross and bearing kit/03-15303
3	1	PP-00967	Outer guard/97-24673
4	6	PP-00968	Inner Guard/97-24673
5	1	PP-00969	35e clutch yoke/38-20015
6	1	PP-00970	Over running friction clutch pack/38-51014
7	2	PP-00984	Auto lock repair kit/36-15120
8	1	PP-00985	Yoke, tube and slip sleeve/98-24673
9	1	PP-00986	Yoke and shaft/99-24673

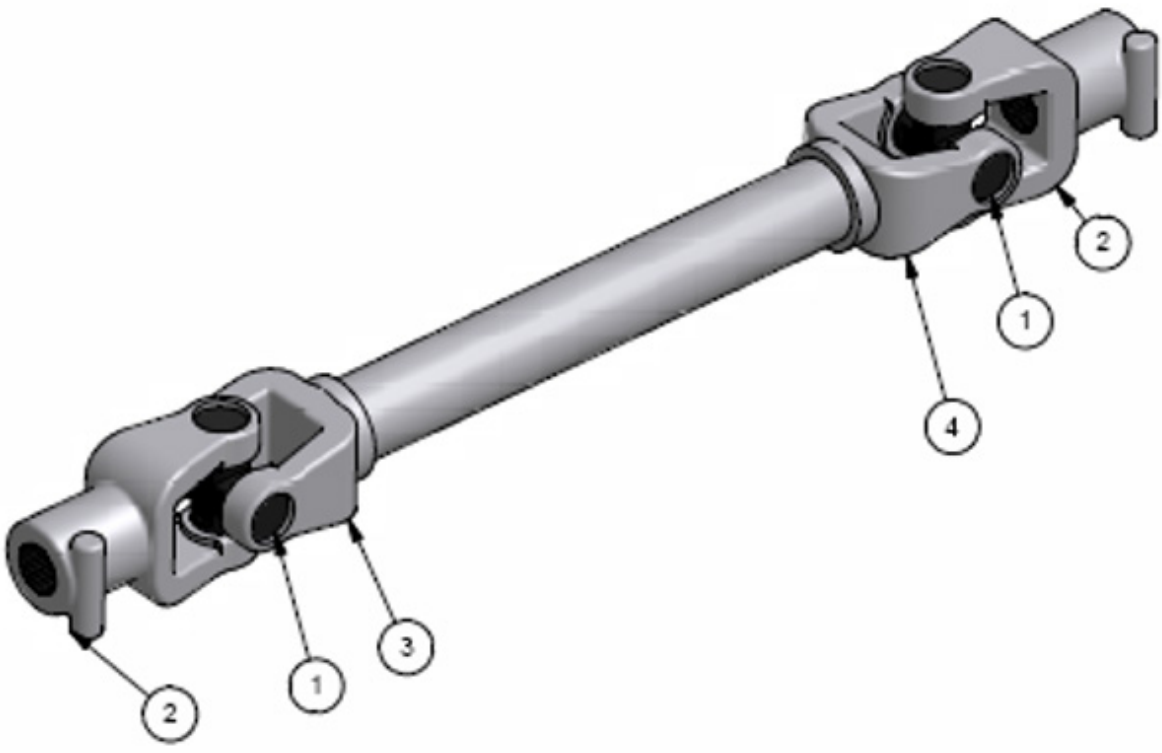
PP-00339 PTO

ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	PP-00953	Auto lock yoke ass./35031-1015
2	2	PP-00954	35e cross and bearing kit/03-15303
3	1	PP-00955	Outer guard/97-24672
4	1	PP-00956	Inner guard/95-24672
5	2	PP-00984	Auto lock repair kit/26-15120
6	1	PP-00997	Yoke and shaft/99-24672
7	1	PP-00998	Yoke tube and slip sleeve/98-24672

PP-00836 PTO



PP-008367 PTO



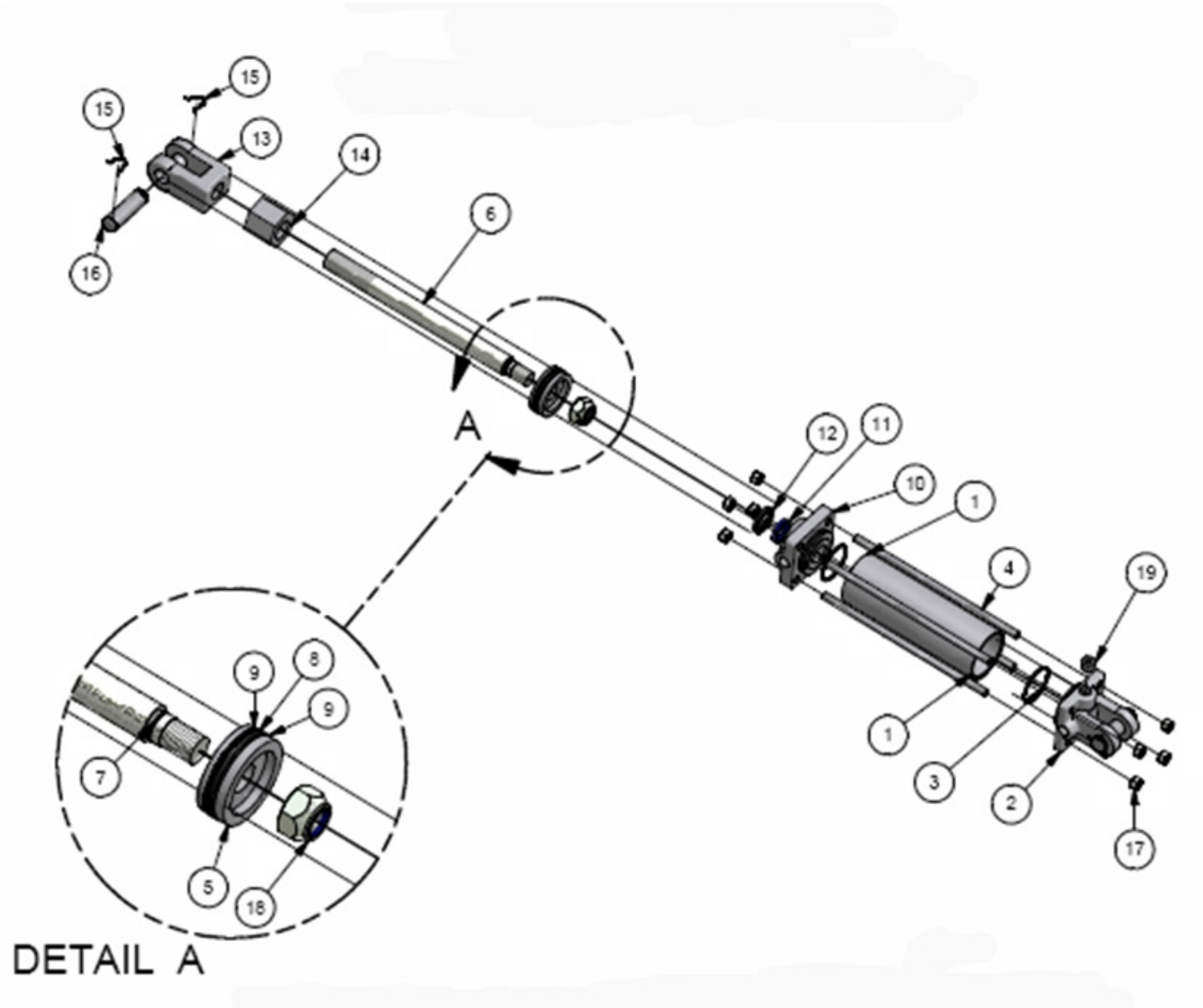
PP-00836 PTO

ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	PP-0954	35e cross and bearing kit/03-15303
2	2	PP-0971	Yoke/35190-1001
3	1	PP-01001	Yoke tube and slip sleeve/98-24674
4	1	PP-01002	Yoke and shaft/99-24674

PP-008367 PTO

ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	PP-00964	35e cross and bearing kit/03-15303
2	2	PP-0971	Yoke/35190-1001
3	1	PP-0999	Yoke tube and slip sleeve/98-24675
4	1	PP-0100	Yoke and shaft/99-24675

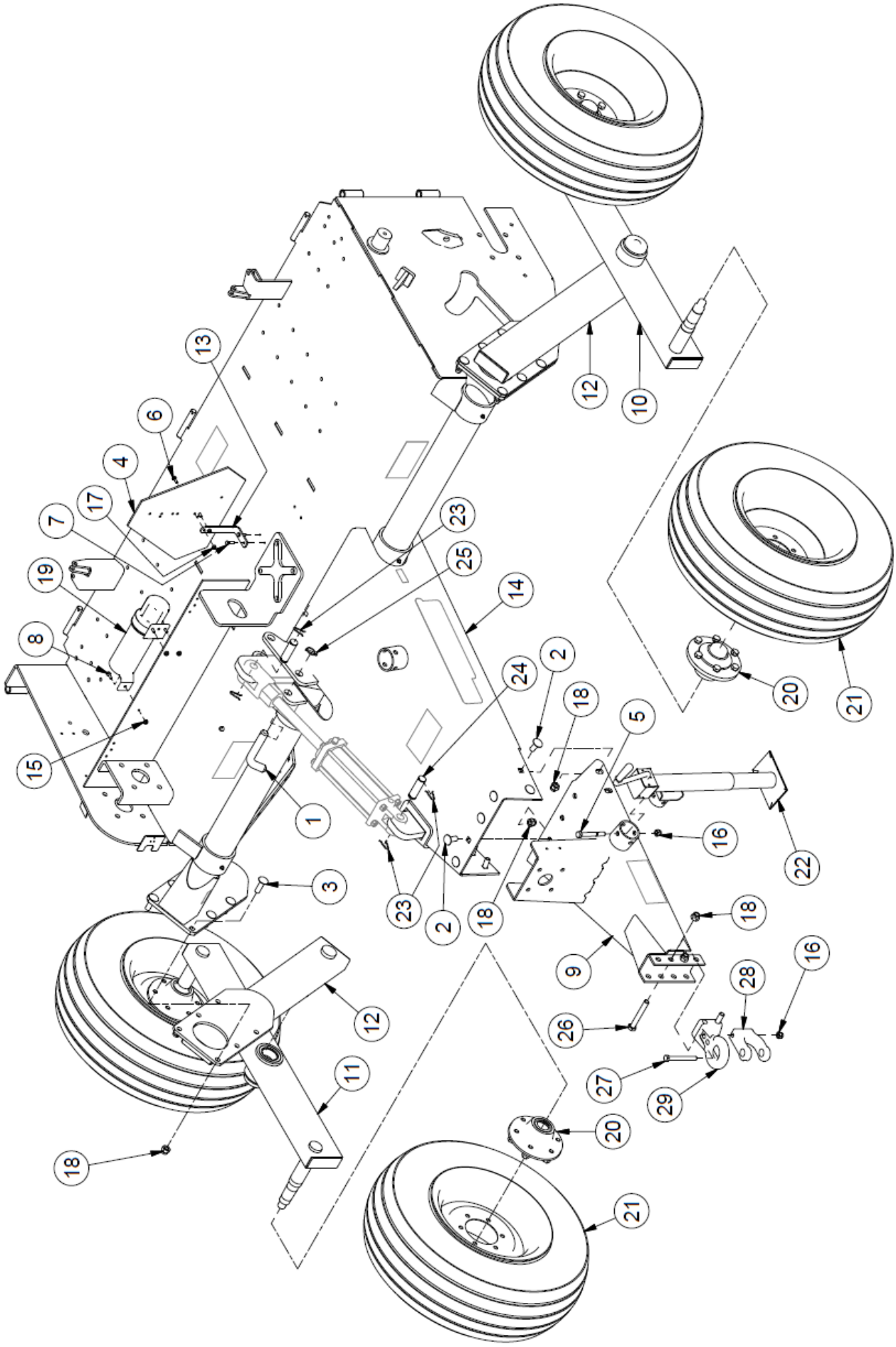
CY-30008-02 Cylinder



CY-30008-02 Cylinder

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	CY-30008-02-03	Body
2	1	CY-30008-02-04	Body Head
3	2	CY-30008-02-05	Barrel Seal
4	4	CY-30008-02-06	Tightening Rod
5	1	CY-30008-02-07	Piston
6	1	CY-30008-02-08	Rod
7	1	CY-30008-02-09	Rod Seal
8	1	CY-30008-02-10	Piston Seal
9	2	CY-30008-02-11	Piston Wear Ring
10	1	CY-30008-02-12	Head Plate
11	1	CY-30008-02-13	Head Seal
12	1	CY-30008-02-14	Cylinder Head Wiper
13	1	CY-30008-02-15	Cylinder Head
14	1	CY-30008-02-16	Cylinder Nut Head
15	4	Obtain Locally	¾ Id, Hair Pin Cotter
16	2	PP-00347	Cylinder Pin
17	8	Obtain Locally	Gr.5 M12 x 1.75 Finished Hex Nut
18	1	LN 1.0-14 N	Locknuts - 1-14 Zinc Plated Nylon Insert
19	1	Obtain Locally	7/8-14 UNF Set Screw

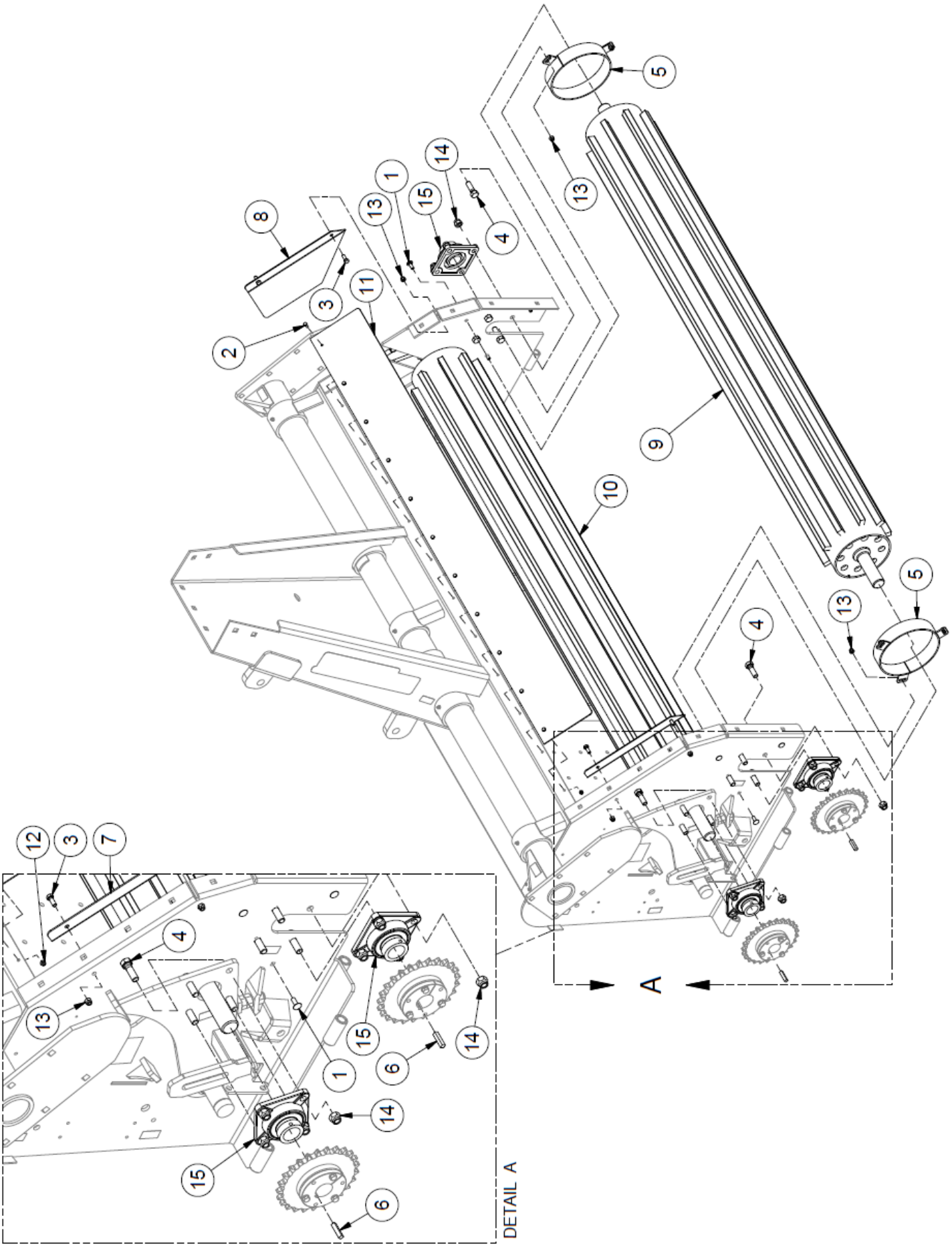
Main Frame Components



Main Frame Components

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	43404	Transport Lock Pin
2	8	CB 5/8-11 X1.5 Z5	Carriage Bolt - 5/8-11 x 1 1/2” Grade 5 Zinc
3	12	CB 5/8-11 X2 Z5	Carriage Bolt - 5/8-11 x 2” Grade 5 Zinc
4	1	DESMV	Slow Moving Vehicle Sign
5	1	HB 1/2-13X4 Z5	Hex Bolt 1/2-13x4 Grade 5 Zinc Plated Hex Cap Screw
6	24	HB 1/4-20X0.75 Z5	Hex Bolt 1/4-20x3/4 Grade 5 Zinc Plated Hex Cap Screw
7	6	HB 1/4-20X1 Z5	Hex Bolt 1/4-20x1 Grade 5 Zinc Plated Hex Cap Screw
8	3	HBC1/4X0.75	Hex Bolt Cerrated 1/4-20 x 3/4 Zinc Flange Bolt
9	1	HC-01b	Tongue
10	1	HC-02	Left Tandem Axle
11	1	HC-02M	Right Tandem Axle
12	2	HC-03	Lift Arm
13	1	HC-157	Yield Bracket
14	1	HC-7501c	Frame
15	3	HNC1/4	Serrated Hex Nut
16	26	LN 1/2 N	LN 1/2-13 Zinc Plated Nylon Insert Lock Nut
17	41	LN 1/4 N	LN 1/4-20 Zinc Plated Nylon Insert Lock Nut
18	46	LN 5/8 N	LN 5/8-11 Zinc Plated Nylon Insert Lock Nut
19	1	OM67000999	Operator Manual Holder
20	4	PP00210	4000lb Hub Assembly
21	4	PP00296	Tire and Rim 11L 15
22	1	PP00302	15” Implement Jack
23	4	PP00346	3/4 id, Hair Pin Cotter
24	2	PP00347	Cylinder Pin
25	1	PP00357	3/16” Lynch Pin
26	2	PP00429	Grade 5 5/8-11 x 4.5 UNC Hex Head Cap Screw
27	1	PP00720	Grade 3, 1/2-13 UNC x 4.5” Hex Head Cap Screw
28	1	PP00893	Clevis, PPI-107VR
29	1	PP00894	Implement Hitch, Base Hitch PPI-126VR

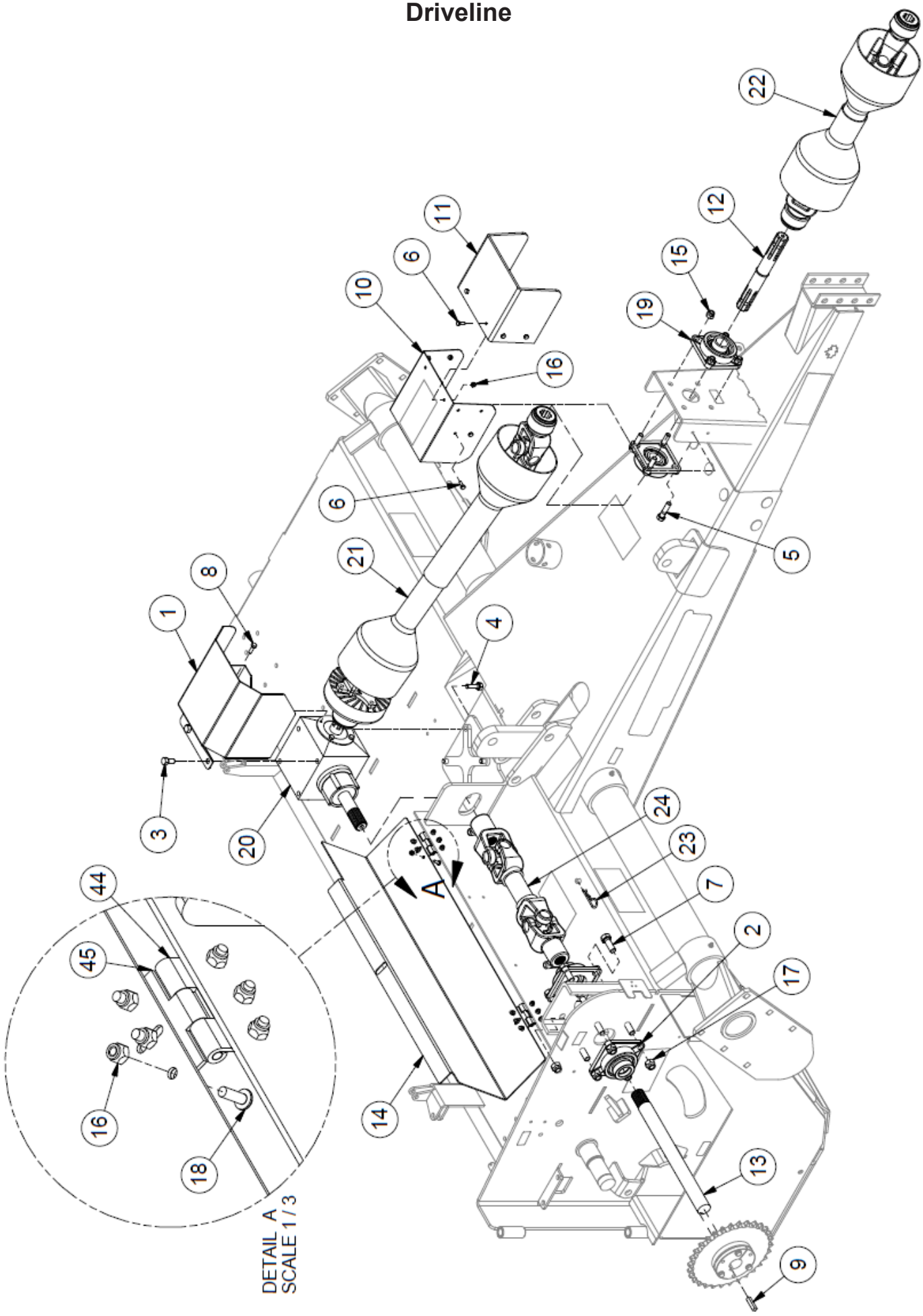
Rollers



Rollers

ITEM	QTY	PART NUMBER	DESCRIPTION
1	6	CB 3/8-16 X1 Z5	Carriage Bolt - 3/8-16 x 1” Grade 5 Zinc
2	11	HB 1/4-20X0.75 Z5	Hex Bolt 1/4-20x3/4 Grade 5 Zinc Plated Hex Cap Screw
3	4	HB 3/8-16X1 Z5	Hex Bolt 3/8-16x1 Grade 5 Zinc Plated Hex Cap Screw
4	16	HB 5/8-11X2 Z5	Hex Bolt 5/8-11x2 Grade 5 Zinc Plated Hex Cap Screw
5	2	HC-04	Hay Guard
6	3	HC-063	Key
7	1	HC-106	Right Roller Guard
8	1	HC-106M	Left Roller Guard
9	1	HC-7502	Bottom Roller
10	1	HC-7503	Top Roller
11	1	HC-7508	Stone Guard for Accelerator
12	39	LN 1/4 N	LN 1/4-20 Zinc Plated Nylon Insert Lock Nut
13	25	LN 3/8 N	LN 3/8-16 Zinc Plated Nylon Insert Lock Nut
14	46	LN 5/8 N	LN 5/8-11 Zinc Plated Nylon Insert Lock Nut
15	4	PP00315	FS209-28 - 1.75 - 4 Bolt with Locking Collar

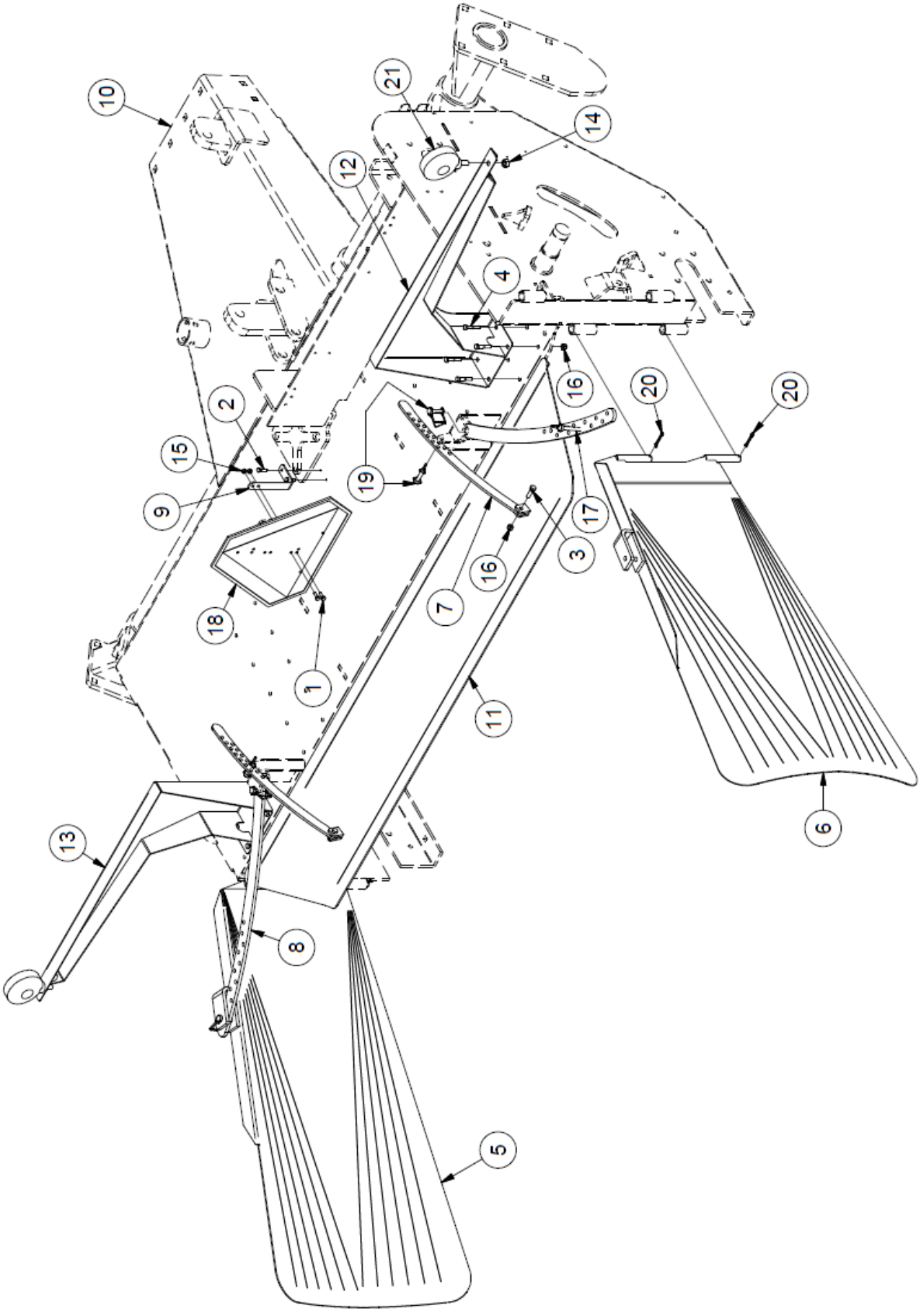
Driveline



Driveline

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	28596	Accelerator PTO Shield Cover
2	1	BEA UCF208-24R3	Flange Bearing 4 Bolt -Triple Seal- Ductile Iron
3	2	HB 1/2-13X1 Z5	Hex Bolt 1/2-13x1 Grade 5 Zinc Plated Hex Cap Screw
4	4	HB 1/2-13X1.5 Z5	Hex Bolt 1/2-13x1 1/2 Grade 5 Zinc Plated Hex Cap Screw
5	4	HB 1/2-13X2 Z5	Hex Bolt 1/2-13x2 Grade 5 Zinc Plated Hex Cap Screw
6	10	HB 1/4-20X0.75 Z5	Hex Bolt 1/4-20x3/4 Grade 5 Zinc Plated Hex Cap Screw
7	8	HB 5/8-11X1.75 Z5	Hex Bolt 5/8-11x1 3/4 Grade 5 Zinc Plated Hex Cap Screw
8	4	HB 5/16-18X1 Z5	Hex Bolt 5/16-18x1 Grade 5 Zinc Plated Hex Cap Screw
9	1	HC-063	Key
10	1	HC-072	Shield
11	1	HC-094	Rubber Shield
12	1	HC-117	540 Stub Shaft
13	1	HC-142	Drive Shaft 1.5 “ x 17.88
14	1	HC-144c	Small Shield
15	4	LN 1/2 N	LN 1/2-13 Zinc Plated Nylon Insert Lock Nut
16	22	LN 1/4 N	LN 1/4-20 Zinc Plated Nylon Insert Lock Nut
17	8	LN 5/8 N	LN 5/8-11 Zinc Plated Nylon Insert Lock Nut
18	12	MS 1/4X20X0.75	Machine Screw - (Inch)
19	2	PP00309	UCF207-22 1.375 4 Bolt Flange Bearing
20	1	PP00337	T-27 Comer Gear Box
21	1	PP00338	Drive Shaft with Slip Clutch
22	1	PP00339	PTO Drive Shaft
23	1	PP00405	Hitch Pin Clip
24	1	PP00836	Cross Drive Shaft

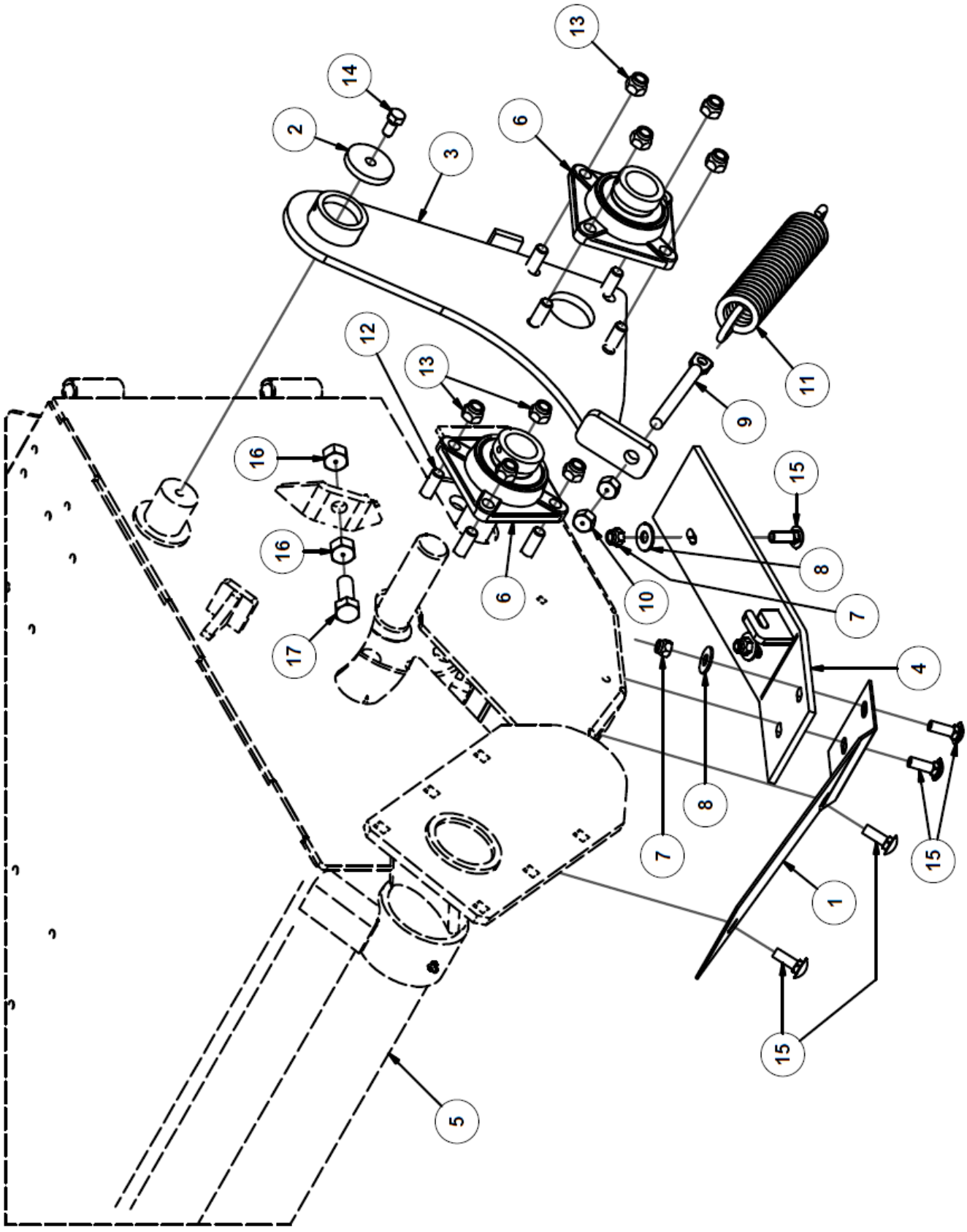
Discharge Shields



Discharge Shields

ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	HB 1/4-20X 3/4 Z5	Hex Bolt - 1/4”-20 x 3/4” Grade 5 Zinc Plated Hex Cap Screw NC
2	2	HB 1/4-20X1.0 Z5	Hex Bolt 1/4-20 x 1” Grade 5 Zinc Plated Hex Cap Screw NC
3	2	HC-105	Deflector Arm
4	8	HB 3/8-16X1.0 Z5	Hex Bolt 3/8-16 x 1” Grade 5 Zinc Plated Hex Cap Screw NC
5	1	HC-06b	Left Side Deflector Assembly
6	1	HC-06b_MIR	Right Side Deflector Assembly
7	1	HC-105	Deflector Arm
8	2	HC-109	Side Deflector Arm
9	1	HC-157	Yield Bracket
10	10	HC-7501c	Frame Assembly
11	1	HC-75A04	Deflector
12	1	HC-A27	Light Arm
13	2	HC-A27_MIR	Light Arm
14	2	HN 1/2	Hex Nut 1/2”-13 Grade 5 Zinc Plated Finished NC
15	8	LN 1/4 N	Locknuts - 1/4-20 Zinc Plated Nylon Insert
16	2	LN 3/8 N	Locknuts - 3/8-16 Zinc Plated Nylon Insert Lock Nut
17	2	PP-00052	3/8 x 2.25 Lock Pin
18	1	DESMV	SMV Sign
19	4	LP B1996	Pin - Lock Pin 3/8x1 3/8
20	7	CP 3/16 X 1.5	Pin, Cotter 3/16 x 1.5
21	2	PP-00770	Orange Flasher

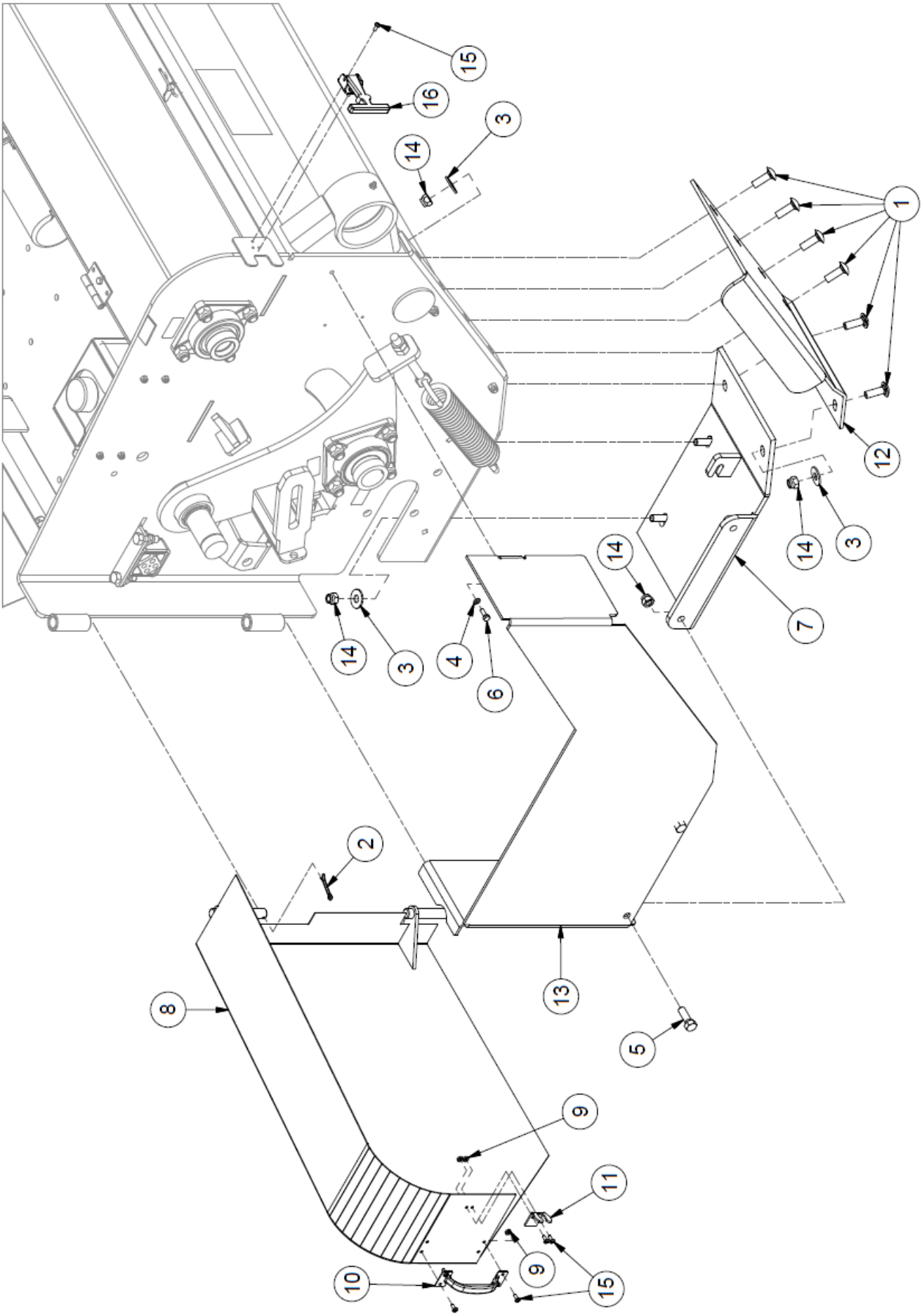
Left Side Panel



Left Side Panel

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	HC-067b	Left Hay Guard
2	1	HC-075	Pivot Washer
3	1	HC-12c	Left Pivot Arm
4	1	HC-13	Left Skid Shoe Assembly
5	1	HC-7501c	Frame Assembly
6	2	PP-00315	F209-28 Pillow Block
7	6	PP-00014	1/2-13 UNC Lock Nut
8	7	FW 1/2	Flatwasher - 1/2” Zinc Plated USS
9	1	PP-00051	Flat Spade Bolt 5/8 x 6
10	2	HN 5/8	Hex Nut - 5/8”-11 Grade 5 Zinc Plated Finished NC
11	1	PP-00054	Standard Snow Plow Spring
12	8	HB 5/8-11X2.0 Z5	Hex Bolt 5/8-11 x 2 Grade 5 Zinc Plated Hex Cap Screw NC
13	8	LN 5/8 N	Locknut - 5/8-11 Zinc Plated Nylon Insert Lock Nut
14	1	HB 1/2-13X1.0 Z5	Hex Bolt - 1/2”-13 x 1” Zinc Finish SAE J429 Grade 5 Hex Cap Plated
15	6	CB 1/2-13X1.1/2 Z5	Carriage Bolt - 1/2-13 x 1-1/2” Grade 5 Zinc
16	2	HN 3/4-16 YZ8	Hex Nut 3/4”-16 Yellow Zinc Finish
17	1	HB 3/4-16X2.5 Z5	Hex Bolt 3/4”-16 x 2.5” Grade 5 Zinc Hex Cap Screw

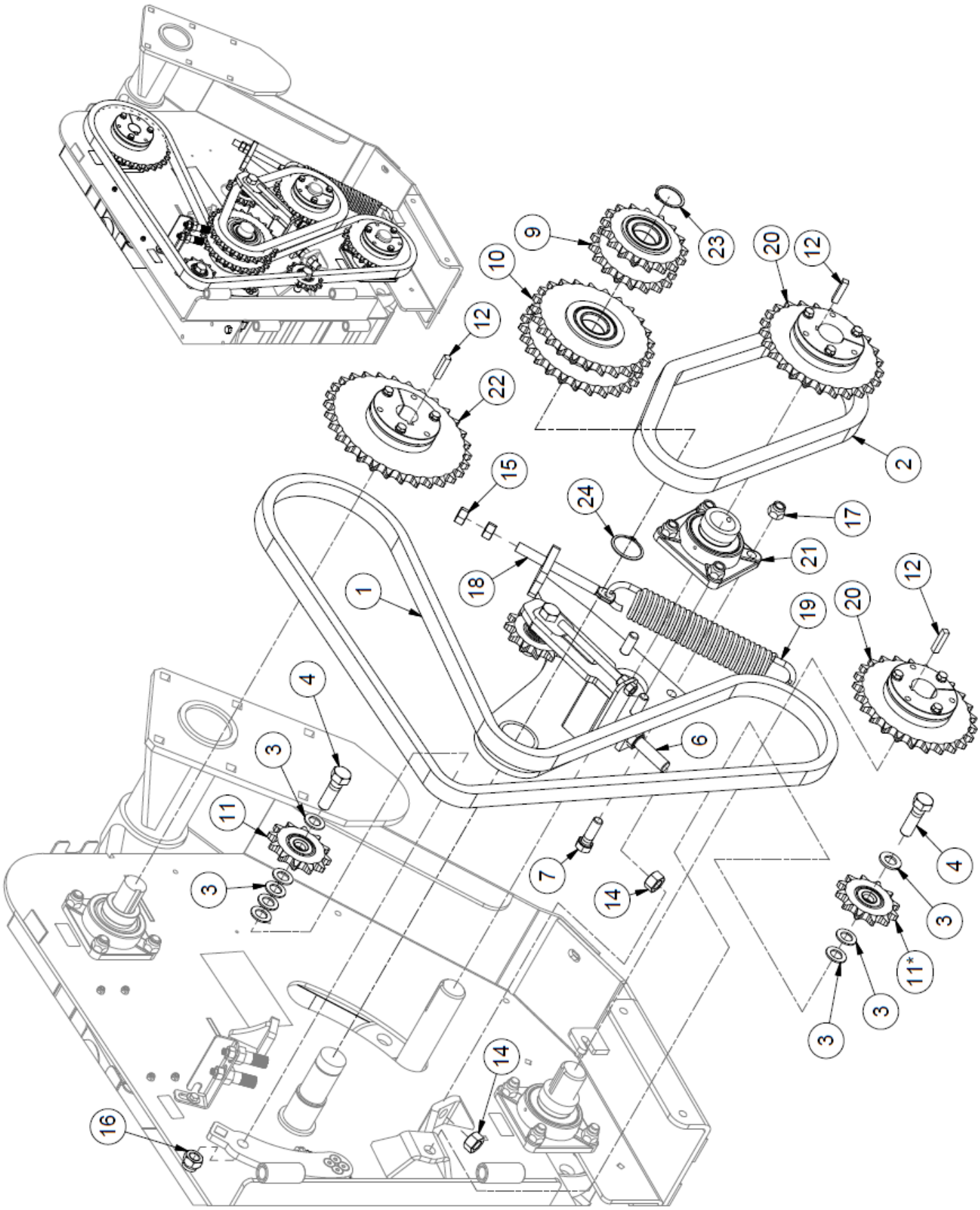
Right Side Shields



Right Side Shields

ITEM	QTY	PART NUMBER	DESCRIPTION
1	14	CB 1/2-13 X1.5 Z5	Carriage Bolt - 1/2-13 x 1 1/2” Grade 5 Zinc
2	6	CP 3/16 X 1.5	Pin, Cotter 3/16 x 1.5
3	15	FW 1/2	Flatwasher - 1/2” Zinc Plated USS
4	5	FW 1/4	Flatwasher - 1/4” Zinc Plated USS
5	10	HB 1/2-13X1.5 Z5	Hex Bolt 1/2-13x1 1/2 Grade 5 Zinc Plated Hex Cap Screw
6	28	HB 1/4-20X0.75 Z5	Hex Bolt 1/4-20x3/4 Grade 5 Zinc Plated Hex Cap Screw
7	1	HC-05b	Right Skid Shoe
8	1	HC-17c	Shield Assembly
9	6	HN 10-24	Nut - 10-24 Low Carbon Zinc Plated Machine Screw Nut
10	1	PP00920	Door Handle
11	1	PP00935	T-Strap Brace
12	1	HC-040b	Right Hay Guard
13	1	HC-147c	Bolt-On Bottom Shield
14	25	LN 1/2 N	LN 1/2-13 Zinc Plated Nylon Insert Lock Nut
15	8	MS 10X12	Machine Screw 10-24x1/2
16	1	PP00345	T-Strap

Right Side Chain



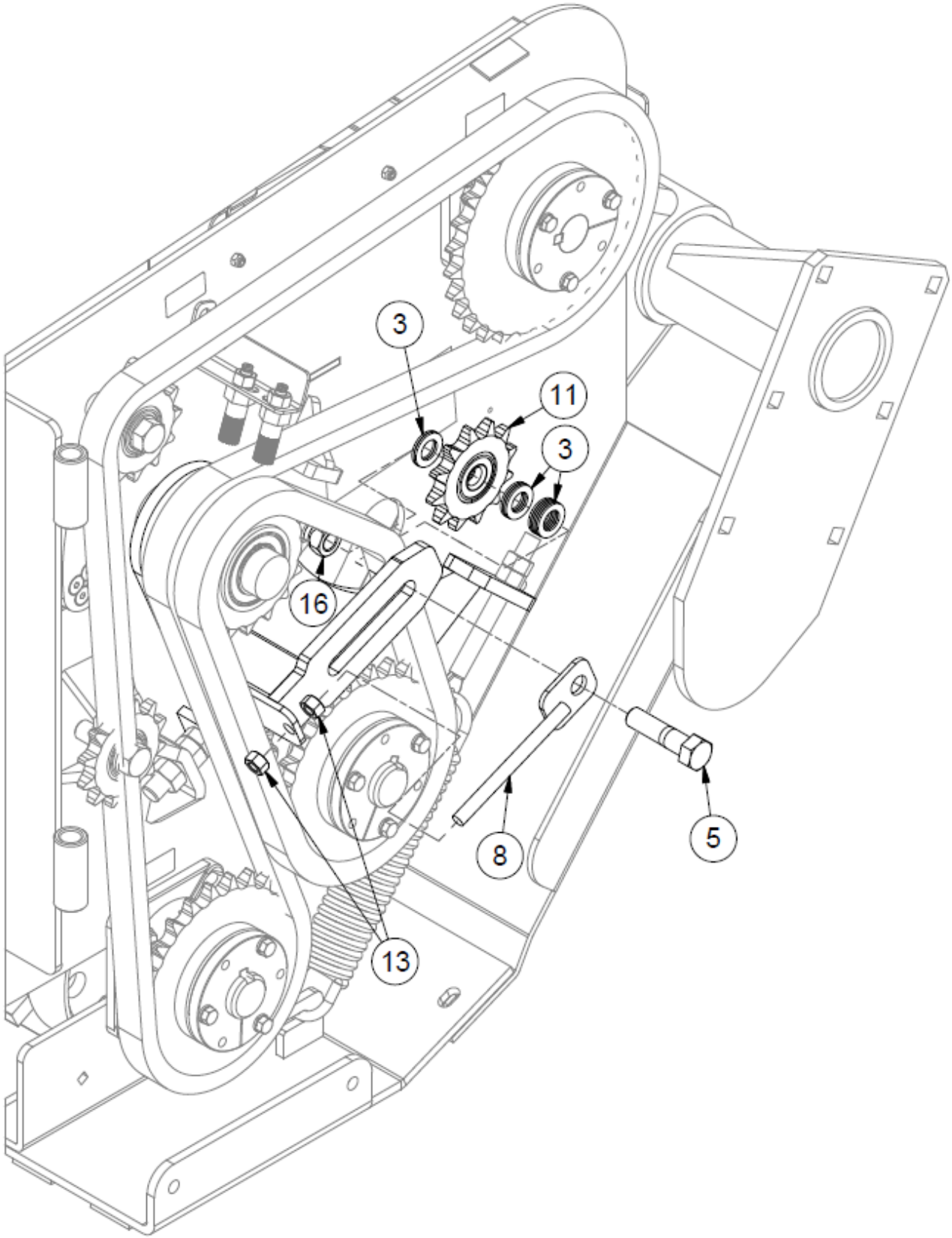
* Lower Inside Chain Idler Sprocket used as spacer for machines with larger sprocket (Item 10)

Right Side Chain

ITEM	QTY	PART NUMBER	DESCRIPTION	SERIAL BREAK
1	1	AC-Chain-01	80 series/ 59 Links	
2	1	AC-Chain-02	80 series/ 23 Links	
3	8	FW 3/4	Flatwasher - 3/4" Zinc Plated USS	
4	2	HB 3/4-10X2.5 Z5	Hex Bolt 3/4-10x2 1/2 Grade 5 Zinc Plated Hex Cap Screw	
5	1	HB 3/4-10X3 Z5	Hex Bolt 3/4-10x3 Grade 5 Zinc Plated Hex Cap Screw	
6	2	HB 3/4-16 X2.5 YZ8	Hex Bolt 3/4-16x2 1/2 Grade 8 Zinc Hex Cap Screw	
7	16	HB 5/8-11X2 Z5	Hex Bolt 5/8-11x2 Grade 5 Zinc Plated Hex Cap Screw	
8	1	HC-14c	Threaded Rod	
9	1	HC-28	17 Tooth Double Sprocket	Used Up 11HCT15
10	1	30275	25 Tooth Double 80 Sprocket (Acelerator)	12HCT01 to Current
11	3	PP00342	Sprocket -80SF11 x .75 Bore Idler	*See Note*
12	3	HC-063	Key	
13	6	HN 1/2	Hex Nut 1/2"-13 Grade 5 Zinc Plated Finished	
14	4	HN 3/4 - 16	Hex Nut 3/4-16 NF Fine Thread	
15	4	HN 5/8	Hex Nut 5/8"-11 Grade 5 Zinc Plated Finished	
16	2	LN 3/4 N	LN 3/4-10 Zinc Plated Nylon Insert Lock Nut	
17	46	LN 5/8 N	LN 5/8-11 Zinc Plated Nylon Insert Lock Nut	
18	2	PP00051	Flat Eye Bolt 5/8 x 7.0	
19	2	PP00054	Snowplow Spring (LA-11-1515)	
20	2	PP00303	SPR80F25 Taper Lock Sprocket Assembly 1.75 " Bore	
21	4	PP00315	FS209-28 - 1.75 - 4 Bolt with Locking Collar	
22	1	PP00318	SPR80F30 Taper Lock Sprocket Assembly 1.50 " Bore	
23	1	RR 1.75	Retaining Ring-1 3/4- External	
24	1	RR 2	Retaining Ring-2- External	

* Lower Inside Chain Idler Sprocket used as spacer for machines with larger sprocket (Item 10)

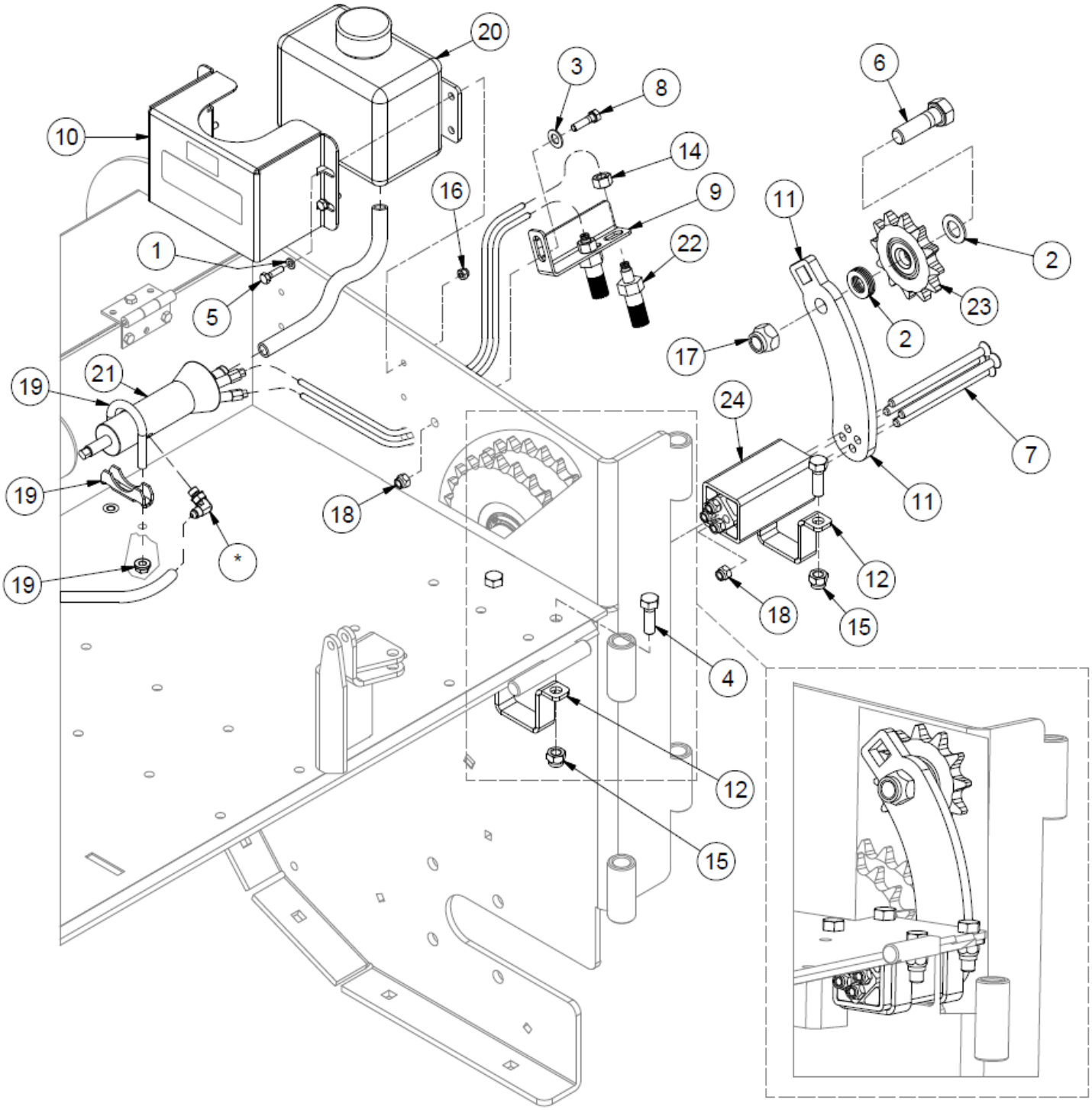
Right Side Chain - Idler Sprocket



Right Side Chain - Idler Sprocket

ITEM	QTY	PART NUMBER	DESCRIPTION
3	10	FW 3/4	Flatwasher - 3/4” Zinc Plated USS
5	1	HB 3/4-10X3 Z5	Hex Bolt 3/4-10x3 Grade 5 Zinc Plated Hex Cap Screw
8	1	HC-14c	Threaded Rod
11	1	PP00342	Sprocket -80SF11 x .75 Bore Idler
13	2	HN 1/2	Hex Nut 1/2”-13 Grade 5 Zinc Plated Finished
16	1	LN 3/4 N	LN 3/4-10 Zinc Plated Nylon Insert Lock Nut

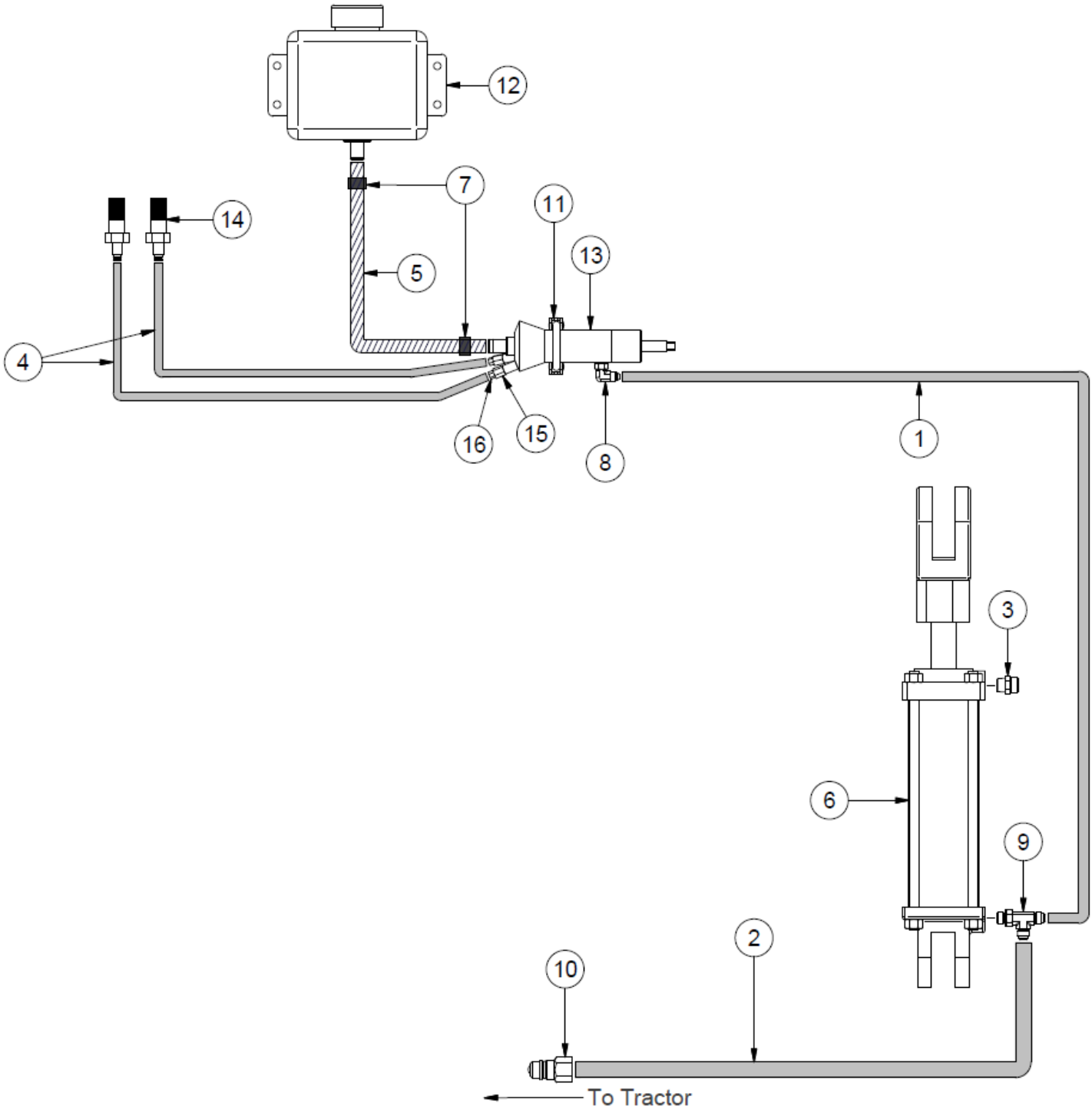
Rosta Tensioner - Chain Oiler



Rosta Tensioner - Chain Oiler

ITEM	QTY	PART NUMBER	DESCRIPTION
1	4	FW 1/4	Flatwasher - 1/4” Zinc Plated USS
2	5	FW 3/4	Flatwasher - 3/4” Zinc Plated USS
3	1	FW 7/16	Flatwasher - 7/16” Zinc Plated USS
4	4	HB 1/2-13X1.5 Z5	Hex Bolt 1/2-13x1 1/2 Grade 5 Zinc Plated Hex Cap Screw
5	4	HB 1/4-20X1 Z5	Hex Bolt 1/4-20x1 Grade 5 Zinc Plated Hex Cap Screw
6	1	HB 3/4-10X2.5 Z5	Hex Bolt 3/4-10x2 1/2 Grade 5 Zinc Plated Hex Cap Screw
7	4	HB 3/8-16X6 FHSCS	Hex Bolt - 3/8”-16 x 6” Flat Socket Cap Screw
8	1	HB 5/16-18X1.25 Z5	Hex Bolt 5/16-18x1 1/4 Grade 5 Zinc Plated Hex Cap Screw
9	1	HC-098b	HRP 10 GA
10	1	HC-132	HRP 12 GA
11	1	HC-166c	HRP .5
12	2	HC-167c	HRP .188
14	2	HN 1/2	Hex Nut 1/2”-13 Grade 5 Zinc Plated Finished
15	4	LN 1/2 N	LN 1/2-13 Zinc Plated Nylon Insert Lock Nut
16	4	LN 1/4 N	LN 1/4-20 Zinc Plated Nylon Insert Lock Nut
17	1	LN 3/4 N	LN 3/4-10 Zinc Plated Nylon Insert Lock Nut
18	1	LN 3/8 N	LN 3/8-16 Zinc Plated Nylon Insert Lock Nut
19	1	MC1 1/2	Muffler Clamp 1 1/2” Pipe (MC7112)
20	1	PP00072	Oil Reservoir- 2 Quart
21	1	PP00087	Lube Minder - 2 Port Pump
22	2	PP00088	Oiler Brush
23	1	PP00342	Sprocket -80SF11 x .75 Bore Idler
24	1	PP-00982	Rosta Tensioner
*		*Pg. 9-36*	See Hydraulic Layout for hydraulic components

Hydraulic Layout

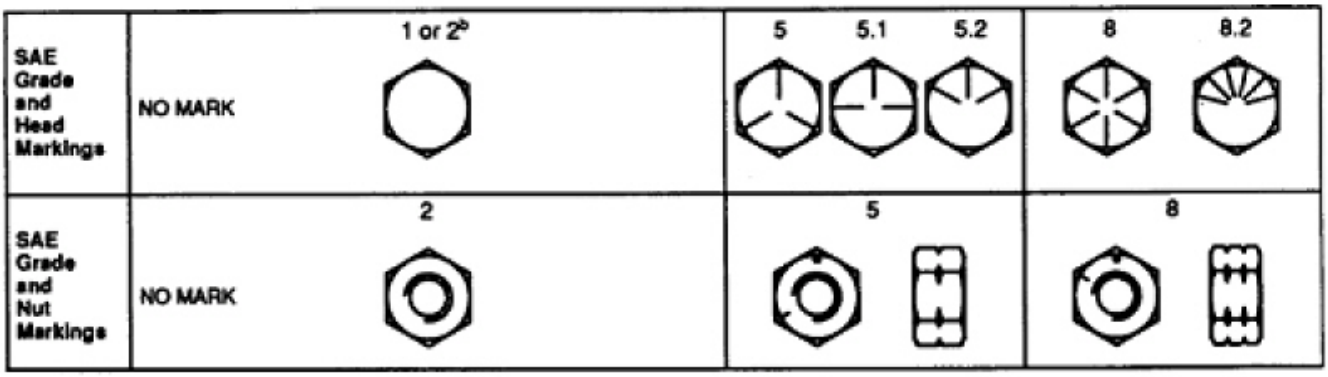


Hydraulic Layout

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	28294	HH64” 6FJXH90S,4FJXH
2	1	28597	HH72” 8Mp, 6FJXH
3	1	28598	Breather Vent
4	2	37710	1/8 Oiler Line
5	1	37711	5/8 Braided Hose
6	1	CYL 30008-02	Hydraulic Cylinder 3 x 8 Stroke
7	2	GC 20	#20 Gear Clamp (.75-1.75)
8	1	HF 6801-4-4	Hydraulic Elbow Fitting
9	1	HF 6804-6-6-6	Hydraulic Tee Fitting
10	1	HF 8010-4	Pioneer Quick Coupler
11	1	MC 1 1/2	Muffler Clamp 1 1/2" Pipe (MC7112)
12	1	PP-00072	Oil Reservoir (2 Quart)
13	1	PP-00087	Lube Minder Pump (2 Port)
14	2	PP-00088	Oil Brush
15	1	PP-01026	5/32 Ferrule
16	1	PP-01027	Sleeve Nut

Torque Values - Imperial

UNIFIED INCH BOLT AND CAP SCREW TORQUE VALUES



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	36	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.

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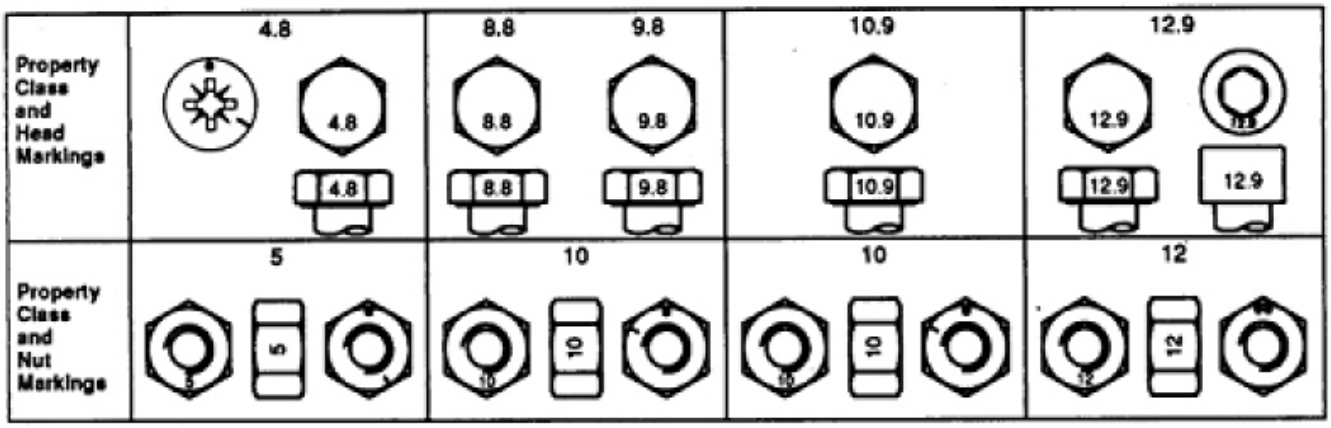
Torque Values - Metric

METRIC BOLT AND CAP SCREW TORQUE VALUES



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.

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.*

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