

R113/R116 Pull-Type Rotary Disc Mower Conditioner

Unloading and Assembly Instruction (North America)

169821 Revision D

Original Instruction

R113 Pull-Type Rotary Disc Mower Conditioner



1011359

Introduction

This instructional manual describes the unloading, setup, and predelivery requirements for the MacDon R113/R116 Pull-Type Rotary Disc Mower Conditioner.

Use the “Table of Contents” to guide you to specific areas.

Retain this instruction for future reference.

Carefully read all the material provided before attempting to unload, assemble, or use the machine.

NOTE:

Keep your MacDon publications up-to-date. The most current version can be downloaded from our website (www.macdon.com) or from our Dealer-only site (<https://portal.macdon.com>) (login required).

List of Revisions

Summary of Change	Location
Added instruction to apply anti-sieze lubricant to wheel spindle bore in leg casting before spindle installation..	5.8 Installing Wheels, page 41
General revisions to Installing Transport Assembly installation procedure.	Installing Components, page 48
Revised fittings callouts.	Installing Fittings, page 54
Revised Figure titles.	Installing Electrical, page 61
Revised Tall Crop Divider installation.	5.12.3 Installing Tall Crop Divider, page 66
General revisions to Endwise Transport conversion procedures to improve readability.	8.16.1 Converting from Field to Transport Mode, page 118 8.16.2 Converting from Transport to Field Mode, page 120
Added instruction to remove top shield when repositioning center-link top anchor.	5.3 Repositioning Center-Link Top Anchor, page 28
Added instructions to “Performing Predelivery Checks” chapter for checking conditioner gear box, mower conditioner drive gearbox, forward and rear swivel gearboxes, and cutterbar lubricant levels.	8.7 Checking Conditioner Drive Gearbox Lubricant, page 105, 8.8 Checking Mower Conditioner Drive Gearbox Lubricant, page 106, 8.9 Checking Forward and Rear Swivel Gearbox Lubricant, page 107, and 8.10 Checking Cutterbar Lubricant, page 109.
Added instructions to “Predelivery Checklist” topic for checking conditioner gear box, mower conditioner drive gearbox, forward and rear swivel gearboxes, and cutterbar lubricant levels.	Predelivery Checklist, page 127
Added instructions for unbolting cutterbar doors from centre channel frame and removing shipping wire from cutterbar curtains.	5.11 Unpacking Curtains, page 46

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1 Safety

1.1 Signal Words

Three signal words, *DANGER*, *WARNING*, and *CAUTION*, are used to alert you to hazardous situations. The appropriate signal word for each situation has been selected using the following guidelines:



DANGER

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



WARNING

Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury. It may also be used to alert against unsafe practices.



CAUTION

Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may be used to alert against unsafe practices.

1.2 General Safety

CAUTION

The following are general farm safety precautions that should be part of your operating procedure for all types of machinery.

Protect yourself.

- When assembling, operating, and servicing machinery, wear all the protective clothing and personal safety devices that **could** be necessary for the job at hand. Don't take chances. You may need the following:
 - Hard hat
 - Protective footwear with slip resistant soles
 - Protective glasses or goggles
 - Heavy gloves
 - Wet weather gear
 - Respirator or filter mask
- Be aware that exposure to loud noises can cause hearing impairment or loss. Wear suitable hearing protection devices such as ear muffs or ear plugs to help protect against objectionable or loud noises.

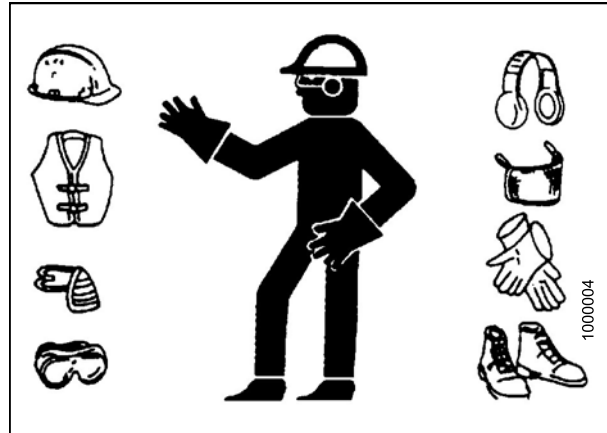


Figure 1.1: Safety Equipment



Figure 1.2: Safety Equipment

- Provide a first aid kit for use in case of emergencies.
- Keep a fire extinguisher on the machine. Be sure the fire extinguisher is properly maintained. Be familiar with its proper use.
- Keep young children away from the machinery at all times.
- Be aware that accidents often happen when the Operator is tired or in a hurry. Take the time to consider the safest way. Never ignore the warning signs of fatigue.

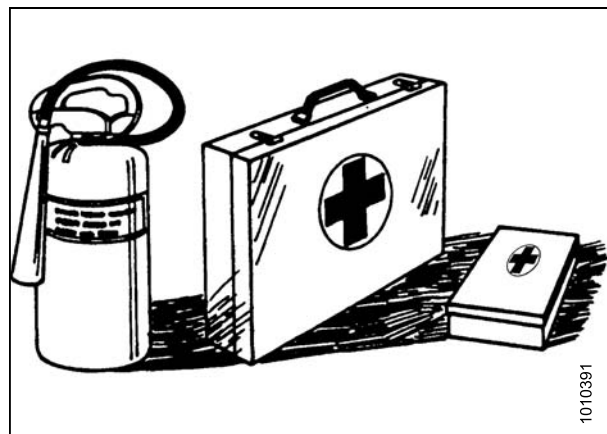


Figure 1.3: Safety Equipment

SAFETY

- Wear close-fitting clothing and cover long hair. Never wear dangling items such as scarves or bracelets.
- Keep all shields in place. Never alter or remove safety equipment. Make sure driveline guards can rotate independently of the shaft and can telescope freely.
- Use only service and repair parts made or approved by the equipment manufacturer. Substituted parts may not meet strength, design, or safety requirements.



Figure 1.4: Safety Around Equipment

- Keep hands, feet, clothing, and hair away from moving parts. Never attempt to clear obstructions or objects from a machine while the engine is running.
- Do **NOT** modify the machine. Non-authorized modifications may impair machine function and/or safety. It may also shorten the machine's life.
- To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key from ignition before leaving operator's seat for any reason.

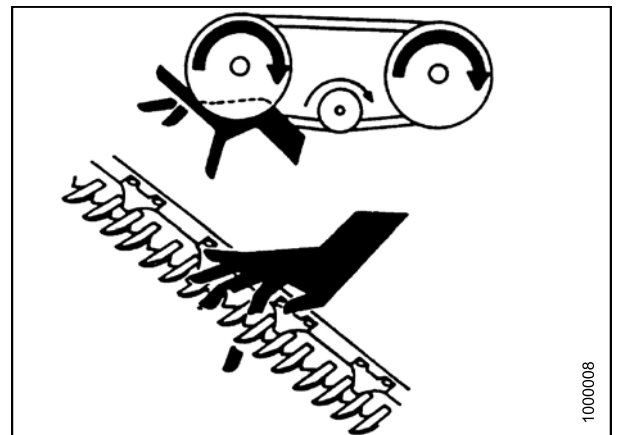


Figure 1.5: Safety Around Equipment

- Keep the service area clean and dry. Wet or oily floors are slippery. Wet spots can be dangerous when working with electrical equipment. Be sure all electrical outlets and tools are properly grounded.
- Keep work area well lit.
- Keep machinery clean. Straw and chaff on a hot engine is a fire hazard. Do **NOT** allow oil or grease to accumulate on service platforms, ladders, or controls. Clean machines before storage.
- Never use gasoline, naphtha, or any volatile material for cleaning purposes. These materials may be toxic and/or flammable.
- When storing machinery, cover sharp or extending components to prevent injury from accidental contact.



Figure 1.6: Safety Around Equipment

1.3 Safety Signs

- Keep safety signs clean and legible at all times.
- Replace safety signs that are missing or become illegible.
- If original parts on which a safety sign was installed are replaced, be sure the repair part also bears the current safety sign.
- Safety signs are available from MacDon Parts.

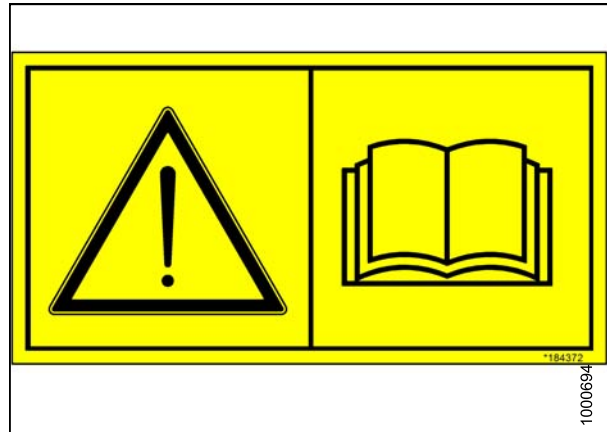


Figure 1.7: Operator's Manual Decal

2 Recommended Torques

2.1 Torque Specifications

The following tables provide the correct torque values for various bolts, cap screws, and hydraulic fittings.

- Tighten all bolts to the torque values specified in the charts (unless otherwise noted throughout this manual).
- Replace hardware with the same strength and grade of bolt.
- Use the torque value tables as a guide and periodically check tightness of bolts.
- Understand torque categories for bolts and cap screws by using their identifying head markings.

2.1.1 SAE Bolt Torque Specifications

Torque values shown in the following tables are valid for non-greased, or non-oiled threads and heads; therefore, do **NOT** grease or oil bolts or cap screws unless otherwise specified in this manual.

Table 2.1 SAE Grade 5 Bolt and Grade 5 Free Spinning Nut

Nominal Size (A)	Torque (ft-lbf) (*in-lbf)		Torque (N-m)	
	Min.	Max.	Min.	Max.
1/4-20	*106	*117	11.9	13.2
5/16-18	*218	*241	24.6	27.1
3/8-16	32	36	44	48
7/16-14	52	57	70	77
1/2-13	79	87	106	118
9/16-12	114	126	153	170
5/8-11	157	173	212	234
3/4-10	281	311	380	420
7/8-9	449	496	606	669
1-8	611	676	825	912

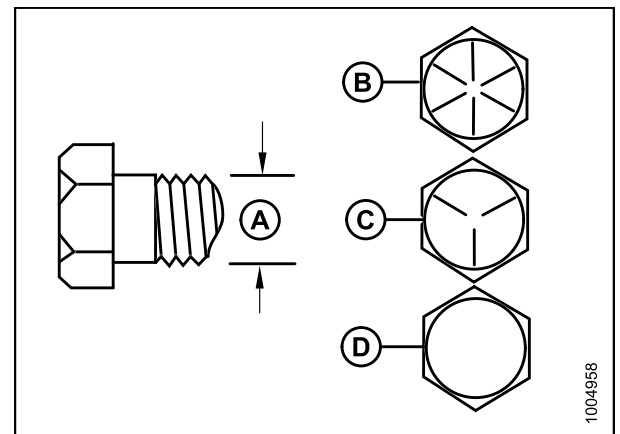


Figure 2.1: Bolt Grades

A - Nominal Size
C - SAE-5

B - SAE-8
D - SAE-2

RECOMMENDED TORQUES

Table 2.2 SAE Grade 5 Bolt and Grade F Distorted Thread Nut

Nominal Size (A)	Torque (ft-lbf) (*in-lbf)		Torque (N-m)	
	Min.	Max.	Min.	Max.
1/4-20	*72	*80	8.1	9
5/16-18	*149	*164	16.7	18.5
3/8-16	22	24	30	33
7/16-14	35	39	48	53
1/2-13	54	59	73	80
9/16-12	77	86	105	116
5/8-11	107	118	144	160
3/4-10	192	212	259	286
7/8-9	306	338	413	456
1-8	459	507	619	684

Table 2.3 SAE Grade 8 Bolt and Grade G Distorted Thread Nut

Nominal Size (A)	Torque (ft-lbf) (*in-lbf)		Torque (N-m)	
	Min.	Max.	Min.	Max.
1/4-20	*150	*165	16.8	18.6
5/16-18	18	19	24	26
3/8-16	31	34	42	46
7/16-14	50	55	67	74
1/2-13	76	84	102	113
9/16-12	109	121	148	163
5/8-11	151	167	204	225
3/4-10	268	296	362	400
7/8-9	432	477	583	644
1-8	647	716	874	966

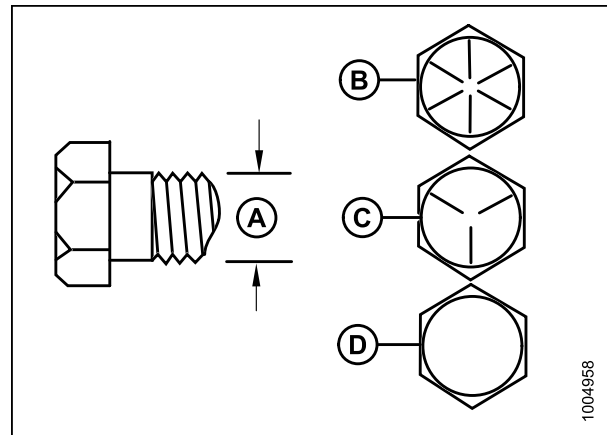


Figure 2.2: Bolt Grades

A - Nominal Size
C - SAE-5

B - SAE-8
D - SAE-2

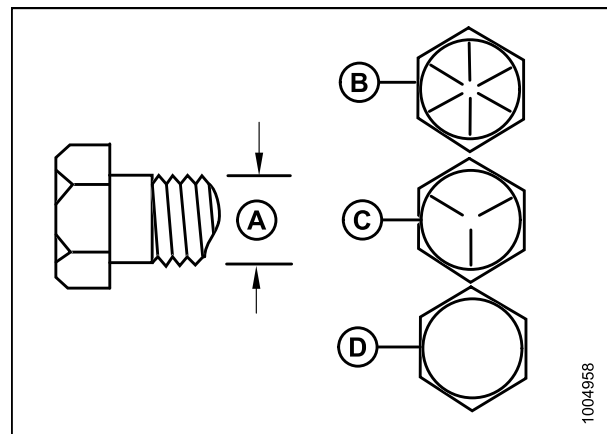


Figure 2.3: Bolt Grades

A - Nominal Size
C - SAE-5

B - SAE-8
D - SAE-2

RECOMMENDED TORQUES

Table 2.4 SAE Grade 8 Bolt and Grade 8 Free Spinning Nut

Nominal Size (A)	Torque (ft·lbf) (*in·lbf)		Torque (N·m)	
	Min.	Max.	Min.	Max.
1/4-20	*150	*165	16.8	18.6
5/16-18	26	28	35	38
3/8-16	46	50	61	68
7/16-14	73	81	98	109
1/2-13	111	123	150	166
9/16-12	160	177	217	239
5/8-11	221	345	299	330
3/4-10	393	435	531	587
7/8-9	633	700	855	945
1-8	863	954	1165	1288

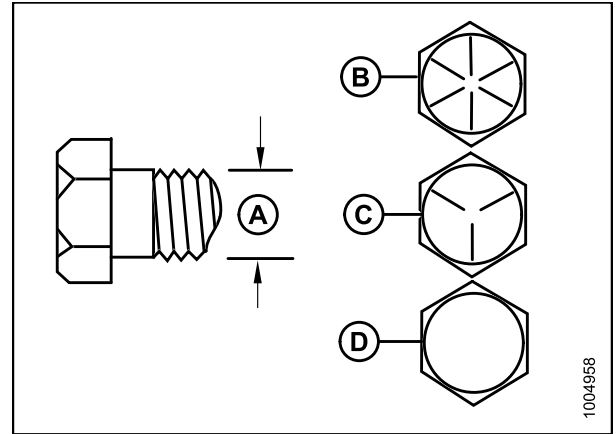


Figure 2.4: Bolt Grades

A - Nominal Size
C - SAE-5

B - SAE-8
D - SAE-2

2.1.2 Metric Bolt Specifications

Table 2.5 Metric Class 8.8 Bolts and Class 9 Free Spinning Nut

Nominal Size (A)	Torque (ft·lbf) (*in·lbf)		Torque (N·m)	
	Min.	Max.	Min.	Max.
3-0.5	*13	*14	1.4	1.6
3.5-0.6	*20	*22	2.2	2.5
4-0.7	*29	*32	3.3	3.7
5-0.8	*59	*66	6.7	7.4
6-1.0	*101	*112	11.4	12.6
8-1.25	20	23	28	30
10-1.5	40	45	55	60
12-1.75	70	78	95	105
14-2.0	113	124	152	168
16-2.0	175	193	236	261
20-2.5	341	377	460	509
24-3.0	589	651	796	879

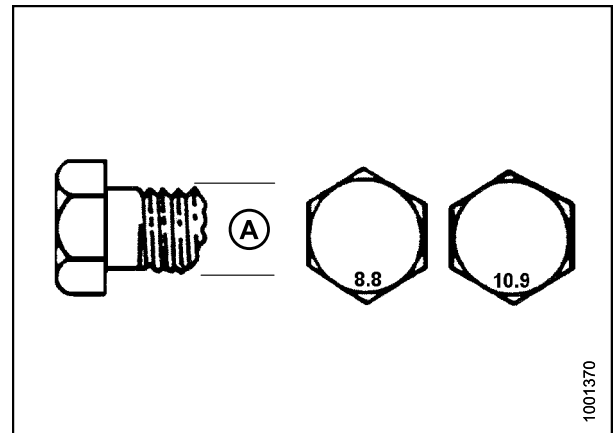


Figure 2.5: Bolt Grades

RECOMMENDED TORQUES

Table 2.6 Metric Class 8.8 Bolts and Class 9 Distorted Thread Nut

Nominal Size (A)	Torque (ft·lbf) (*in·lbf)		Torque (N·m)	
	Min.	Max.	Min.	Max.
3-0.5	*9	*10	1	1.1
3.5-0.6	*14	*15	1.5	1.7
4-0.7	*20	*22	2.3	2.5
5-0.8	*40	*45	4.5	5
6-1.0	*69	*76	7.7	8.6
8-1.25	*167	*185	18.8	20.8
10-1.5	28	30	37	41
12-1.75	48	53	65	72
14-2.0	77	85	104	115
16-2.0	119	132	161	178
20-2.5	233	257	314	347
24-3.0	402	444	543	600

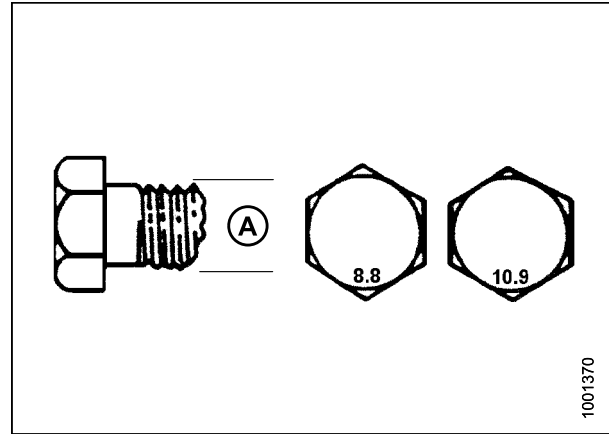


Figure 2.6: Bolt Grades

Table 2.7 Metric Class 10.9 Bolts and Class 10 Free Spinning Nut

Nominal Size (A)	Torque (ft·lbf) (*in·lbf)		Torque (N·m)	
	Min.	Max.	Min.	Max.
3-0.5	*18	*19	1.8	2
3.5-0.6	*27	*30	2.8	3.1
4-0.7	*41	*45	4.2	4.6
5-0.8	*82	*91	8.4	9.3
6-1.0	*140	*154	14.3	15.8
8-1.25	28	31	38	42
10-1.5	56	62	75	83
12-1.75	97	108	132	145
14-2.0	156	172	210	232
16-2.0	242	267	326	360
20-2.5	472	521	637	704
24-3.0	815	901	1101	1217

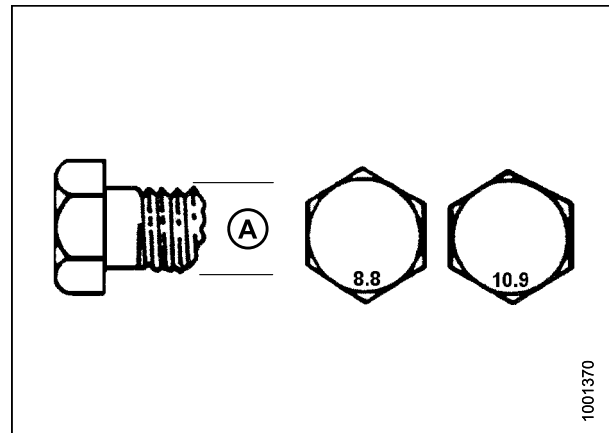


Figure 2.7: Bolt Grades

RECOMMENDED TORQUES

Table 2.8 Metric Class 10.9 Bolts and Class 10 Distorted Thread Nut

Nominal Size (A)	Torque (ft·lbf) (*in·lbf)		Torque (N·m)	
	Min.	Max.	Min.	Max.
3-0.5	*12	*13	1.3	1.5
3.5-0.6	*19	*21	2.1	2.3
4-0.7	*28	*31	3.1	3.4
5-0.8	*56	*62	6.3	7
6-1.0	*95	*105	10.7	11.8
8-1.25	19	21	26	29
10-1.5	38	42	51	57
12-1.75	66	73	90	99
14-2.0	106	117	143	158
16-2.0	165	182	222	246
20-2.5	322	356	434	480
24-3.0	556	614	750	829

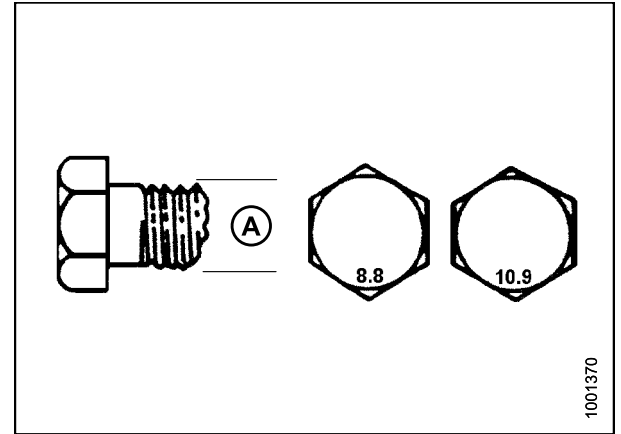


Figure 2.8: Bolt Grades

RECOMMENDED TORQUES

2.1.3 Metric Bolt Specifications Bolting into Cast Aluminum

Table 2.9 Metric Bolt Bolting into Cast Aluminum

Nominal Size (A)	Bolt Torque			
	8.8 (Cast Aluminum)		10.9 (Cast Aluminum)	
	ft-lbf	N-m	ft-lbf	N-m
M3	–	–	1	–
M4	–	–	2.6	4
M5	–	–	5.5	8
M6	6	9	9	12
M8	14	20	20	28
M10	28	40	40	55
M12	52	70	73	100
M14	–	–	–	–
M16	–	–	–	–

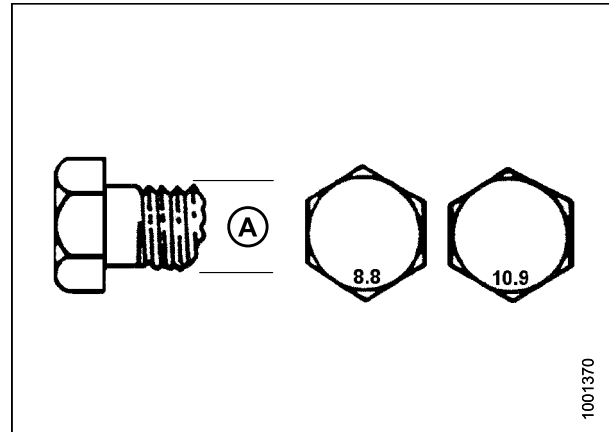


Figure 2.9: Bolt Grades

2.1.4 Flare-Type Hydraulic Fittings

1. Check flare (A) and flare seat (B) for defects that might cause leakage.
2. Align tube (C) with fitting (D) and thread nut (E) onto fitting without lubrication until contact has been made between the flared surfaces.
3. Torque the fitting nut (E) to the specified number of flats from finger tight (FFFT) or to a given torque value shown in Table [2.10 Flare-Type Hydraulic Tube Fittings, page 11](#).
4. Use two wrenches to prevent fitting (D) from rotating. Place one wrench on the fitting body (D) and tighten nut (E) with the other wrench to the torque shown.
5. Assess the final condition of the connection.

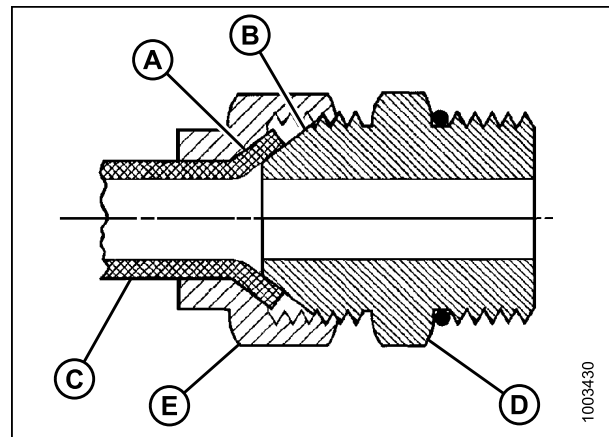


Figure 2.10: Hydraulic Fitting

RECOMMENDED TORQUES

Table 2.10 Flare-Type Hydraulic Tube Fittings

SAE No.	Tube Size O.D.(in.)	Thread Size (in.)	Nut Size Across Flats (in.)	Torque Value ¹		Flats from Finger Tight (FFFT)	
				ft·lbf	N·m	Flats	Turns
3	3/16	3/8	7/16	6	8	1	1/6
4	1/4	7/16	9/16	9	12	1	1/6
5	5/16	1/2	5/8	12	16	1	1/6
6	3/8	9/16	11/16	18	24	1	1/6
8	1/2	3/4	7/8	34	46	1	1/6
10	5/8	7/8	1	46	62	1	1/6
12	3/4	1-1/16	1-1/4	75	102	3/4	1/8
14	7/8	1-3/8	1-3/8	90	122	3/4	1/8
16	1	1-5/16	1-1/2	105	142	3/4	1/8

1. Torque values shown are based on lubricated connections as in reassembly.

RECOMMENDED TORQUES

2.1.5 O-Ring Boss (ORB) Hydraulic Fittings (Adjustable)

1. Inspect O-ring (A) and seat (B) for dirt or obvious defects.
2. Back off the lock nut (C) as far as possible. Ensure that washer (D) is loose and is pushed toward the lock nut (C) as far as possible.
3. Check that O-ring (A) is **NOT** on the threads and adjust if necessary.
4. Apply hydraulic system oil to the O-ring (A).

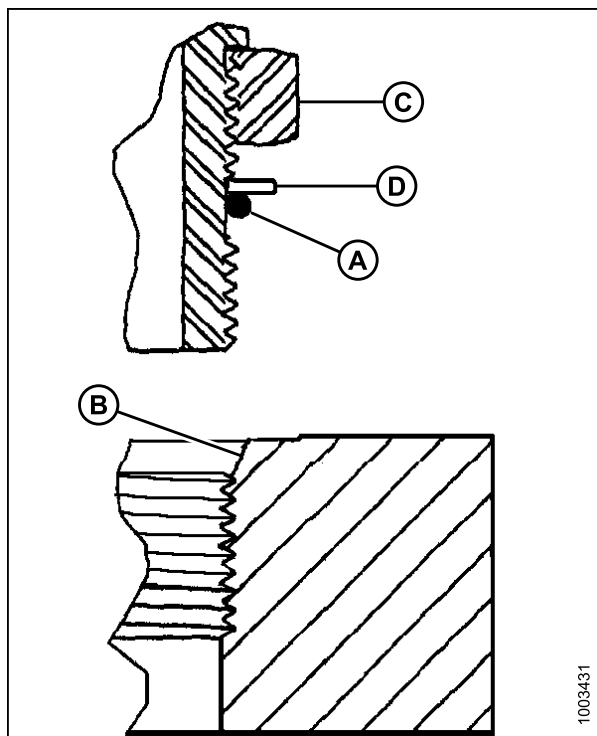


Figure 2.11: Hydraulic Fitting

5. Install fitting (B) into port until back up washer (D) and O-ring (A) contact the part face (E).
6. Position angle fittings by unscrewing no more than one turn.
7. Turn lock nut (C) down to washer (D) and tighten to torque shown. Use two wrenches, one on fitting (B) and the other on lock nut (C).
8. Check the final condition of the fitting.

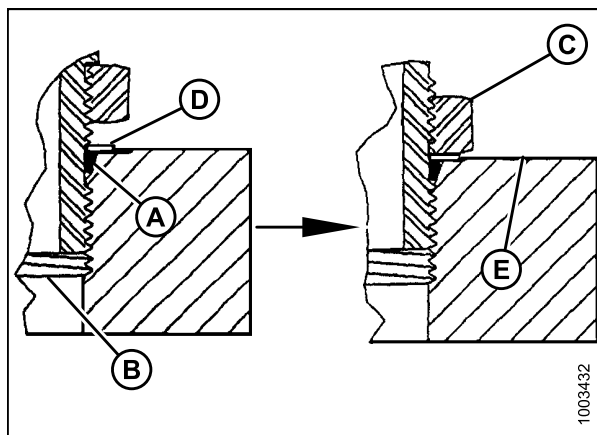


Figure 2.12: Hydraulic Fitting

RECOMMENDED TORQUES

Table 2.11 O-Ring Boss (ORB) Hydraulic Fittings (Adjustable)

SAE Dash Size	Thread Size (in.)	Torque Value ²	
		ft·lbf (*in·lbf)	N·m
-3	3/8–24	*106–115	12–13
-4	7/16–20	14–15	19–21
-5	1/2–20	15–24	21–33
-6	9/16–18	19–21	26–29
-8	3/4–16	34–37	46–50
-10	7/8–14	55–60	75–82
-12	1-1/16–12	88–97	120–132
-14	1-3/8–12	113–124	153–168
-16	1-5/16–12	130–142	176–193
-20	1-5/8–12	163–179	221–243
-24	1-7/8–12	199–220	270–298

2. Torque values shown are based on lubricated connections as in reassembly.

RECOMMENDED TORQUES

2.1.6 O-Ring Boss (ORB) Hydraulic Fittings (Non-Adjustable)

1. Inspect O-ring (A) and seat (B) for dirt or obvious defects.
2. Check that O-ring (A) is **NOT** on the threads and adjust if necessary.
3. Apply hydraulic system oil to the O-ring.
4. Install fitting (C) into port until fitting is hand tight.
5. Torque fitting (C) according to the values in Table 2.12 *O-Ring Boss (ORB) Hydraulic Fittings (Non-Adjustable)*, page 14.
6. Check the final condition of the fitting.

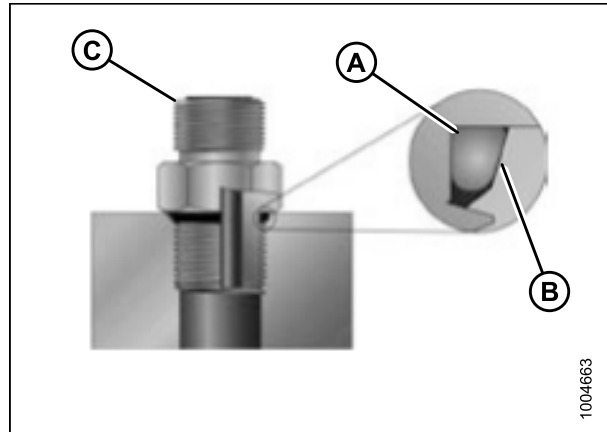


Figure 2.13: Hydraulic Fitting

Table 2.12 O-Ring Boss (ORB) Hydraulic Fittings (Non-Adjustable)

SAE Dash Size	Thread Size (in.)	Torque Value ³	
		ft·lbf (*in·lbf)	N·m
-3	3/8–24	*106–115	12–13
-4	7/16–20	14–15	19–21
-5	1/2–20	15–24	21–33
-6	9/16–18	19–21	26–29
-8	3/4–16	34–37	46–50
-10	7/8–14	55–60	75–82
-12	1-1/16–12	88–97	120–132
-14	1-3/8–12	113–124	153–168
-16	1-5/16–12	130–142	176–193
-20	1-5/8–12	163–179	221–243
-24	1-7/8–12	199–220	270–298

3. Torque values shown are based on lubricated connections as in reassembly.

RECOMMENDED TORQUES

2.1.7 O-Ring Face Seal (ORFS) Hydraulic Fittings

1. Check components to ensure that the sealing surfaces and fitting threads are free of burrs, nicks, scratches, or any foreign material.



Figure 2.14: Hydraulic Fitting

2. Apply hydraulic system oil to the O-ring (B).
3. Align the tube or hose assembly so that the flat face of the sleeve (A) or (C) comes in full contact with O-ring (B).
4. Thread tube or hose nut (D) until hand-tight. The nut should turn freely until it is bottomed out.
5. Torque fittings according to the values in Table 2.13 *O-Ring Face Seal (ORFS) Hydraulic Fittings, page 15.*

NOTE:

If applicable, hold the hex on the fitting body (E) to prevent rotation of fitting body and hose when tightening the fitting nut (D).

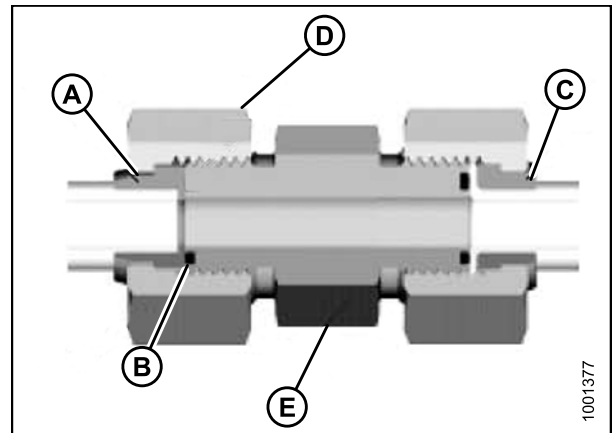


Figure 2.15: Hydraulic Fitting

6. Use three wrenches when assembling unions or joining two hoses together.
7. Check the final condition of the fitting.

Table 2.13 O-Ring Face Seal (ORFS) Hydraulic Fittings

SAE Dash Size	Thread Size (in.)	Torque Value ⁴	
		ft·lbf	N·m
-3	Note ⁵	–	–
-4	9/16–18	18–21	25–28
-5	Note ⁵	–	–
-6	11/16–16	29–32	40–44
-8	13/16–16	41–45	55–61
-10	1–14	59–65	80–88

4. Torque values and angles shown are based on lubricated connection as in reassembly.
5. O-ring face seal type end not defined for this tube size.

RECOMMENDED TORQUES

SAE Dash Size	Thread Size (in.)	Torque Value ⁴	
		ft·lbf	N·m
-12	1-3/16-12	85-94	115-127
-14	Note ⁵	—	—
-16	1-7/16-12	111-122	150-165
-20	1-11/16-12	151-167	205-226
-24	2-12	232-256	315-347
-32	2-1/2-12	376-414	510-561

3 Conversion Chart

Table 3.1 Conversion Chart

Quantity	Inch-Pound Units		Factor	SI Units (Metric)	
	Unit Name	Abbreviation		Unit Name	Abbreviation
Area	Acres	acres	$\times 0.4047 =$	Hectares	ha
Flow	US gallons per minute	gpm	$\times 3.7854 =$	Liters per minute	L/min
Force	Pounds force	lbf	$\times 4.4482 =$	Newtons	N
Length	Inch	in.	$\times 25.4 =$	Millimeters	mm
	Foot	ft.	$\times 0.305 =$	Meters	m
Power	Horsepower	hp	$\times 0.7457 =$	Kilowatts	kW
Pressure	Pounds per square inch	psi	$\times 6.8948 =$	Kilopascals	kPa
			$\times .00689 =$	Megapascals	MPa
			$\div 14.5038 =$	Bar (Non-SI)	bar
Torque	Pound feet or foot pounds	ft-lbf	$\times 1.3558 =$	Newton meters	N-m
	Pound inches or inch pounds	in-lbf	$\times 0.1129 =$	Newton meters	N-m
Temperature	Degrees Fahrenheit	°F	$(^{\circ}\text{F}-32) \times 0.56 =$	Celsius	°C
Velocity	Feet per minute	ft/min	$\times 0.3048 =$	Meters per minute	m/min
	Feet per second	ft/s	$\times 0.3048 =$	Meters per second	m/s
	Miles per hour	mph	$\times 1.6063 =$	Kilometres per hour	km/h
Volume	US gallons	US gal	$\times 3.7854 =$	Liters	L
	Ounces	oz.	$\times 29.5735 =$	Milliliters	ml
	Cubic inches	in. ³	$\times 16.3871 =$	Cubic centimeters	cm ³ or cc
Weight	Pounds	lbs	$\times 0.4536 =$	Kilograms	kg

4 Definitions

The following terms and acronyms may be used in this manual.

Term	Definition
API	American Petroleum Institute
APT	Articulated Power Turn
ASTM	American Society of Testing and Materials
Bolt	A headed and externally threaded fastener that is designed to be paired with a nut
Center-link	A hydraulic cylinder link between the header and the machine to which it is attached: It is used to change header angle
CGVW	Combined vehicle gross weight
Export mower conditioner	Machine configuration typical outside North America
Finger tight	Finger tight is a reference position where sealing surfaces or components are making contact with each other and the fitting has been tightened to a point where the fitting is no longer loose
FFFT	Flats from finger tight
GSL	Ground speed lever
GVW	Gross vehicle weight
Hard joint	A joint made with the use of a fastener where the joining materials are highly incompressible
Hex key	A hex key or Allen key (also known by various other synonyms) is a tool of hexagonal cross-section used to drive bolts and screws that have a hexagonal socket in the head (internal-wrenching hexagon drive)
hp	Horsepower
ISC	Intermediate Speed Control
JIC	Joint Industrial Council: A standards body that developed the standard sizing and shape for original 37° flared fitting
Mower conditioner	A machine that cuts and conditions hay and is pulled by an agricultural tractor
n/a	Not applicable
Nut	An internally threaded fastener that is designed to be paired with a bolt
North American mower conditioner	Machine configuration typical in North America
NPT	National Pipe Thread: A style of fitting used for low pressure port openings Threads on NPT fittings are uniquely tapered for an interference fit
ORB	O-ring boss: A style of fitting commonly used in port opening on manifolds, pumps, and motors
ORFS	O-ring face seal: A style of fitting commonly used for connecting hoses and tubes This style of fitting is also commonly called ORS, which stands for O-ring seal
PTO	Power take-off
RoHS (Reduction of Hazardous Substances)	A directive by the European Union to restrict the use of certain hazardous substances (such as hexavalent chromium used in some yellow zinc platings)

DEFINITIONS

Term	Definition
SAE	Society of Automotive Engineers
Screw	A headed and externally threaded fastener that threads into preformed threads or forms its own thread in one of the mating parts
Soft joint	A joint made with the use of a fastener where the joining materials are compressible or experience relaxation over a period of time
spm	Strokes per minute
Tractor	Agricultural type tractor
Truck	A four-wheel highway/road vehicle weighing no less than 7500 lbs (3400 kg)
Tension	Axial load placed on a bolt or screw, usually measured in pounds (lb) or Newtons (N)
TFFT	Turns from finger tight
Torque	The product of a force X lever arm length, usually measured in foot-pounds (ft·lbf) or Newton-meters (N·m)
Torque angle	A tightening procedure where the fitting is assembled to a precondition (finger tight) and then the nut is turned further a number of degrees or a number of flats to achieve its final position
Torque-tension	The relationship between the assembly torque applied to a piece of hardware and the axial load it induces in the bolt or screw
UCA	Upper cross auger
Washer	A thin cylinder with a hole or slot located in the center that is to be used as a spacer, load distribution element, or a locking mechanism

5 Unloading and Assembling the Mower Conditioner

Perform the following steps to unload and assemble the mower conditioner

5.1 Unloading Shipment

CAUTION

To avoid injury to bystanders from being struck by machinery, do NOT allow persons to stand in unloading area.

CAUTION

Equipment used for unloading must meet or exceed the requirements specified below. Using inadequate equipment may result in chain breakage, vehicle tipping or machine damage.

Lifting Vehicle	
Minimum Capacity	8000 lb. (3630 kg)
Minimum Height	15 ft. (4.5 m)

Chain	
Overhead Lifting Quality (1/2 inch)	5000 lb. (2270 kg) minimum working load

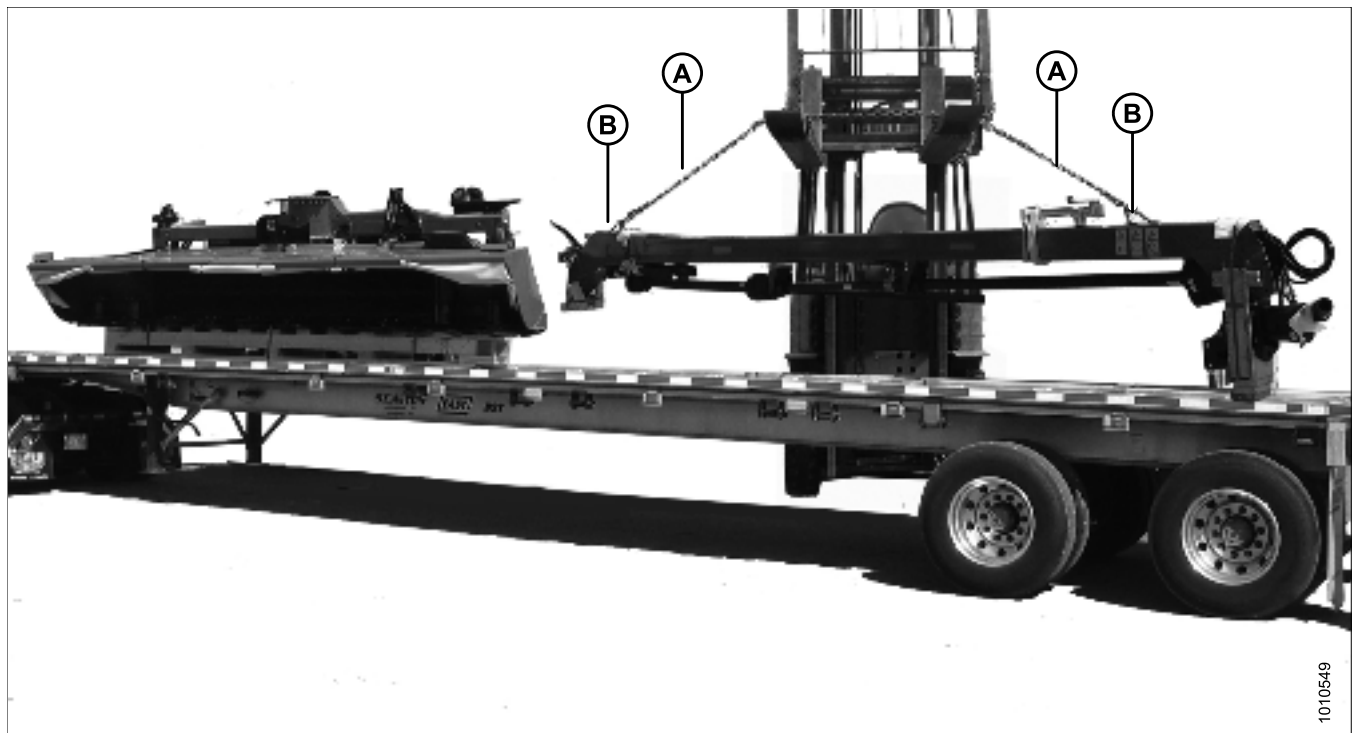


Figure 5.1: Unloading Hitch

1. Remove hauler's tie down straps and chains.
2. Attach chain (A) to two brackets (B) on top of hitch as shown.
3. Adjust chain lengths so hitch is lifted evenly.

UNLOADING AND ASSEMBLING THE MOWER CONDITIONER

4. Raise hitch off deck, back up until unit clears trailer, and slowly lower to 6 inches (150 mm) from ground.

IMPORTANT:

Take care not to contact the other machine if load is two-wide.

5. Take to storage or assembly area, and set hitch down securely on level ground.
6. Repeat for second hitch (if required).
7. Check for shipping damage and missing parts.
8. Approach mower conditioner (A) from back with forklift (B) as shown, and slide forks into pallet as far as possible.
9. Raise mower conditioner off deck.

IMPORTANT:

Take care not to contact the other machine if load is two-wide.

10. Back up until unit clears trailer, and slowly lower to 6 in. (150 mm) from ground.
11. Take to storage or set-up area, and set machine down securely on level ground.

NOTE:

When possible, approach from the backside to minimize potential for contacting the unit.

12. Repeat for second mower conditioner (if required).
13. Check for shipping damage and missing parts.

IMPORTANT:

Do **NOT** remove header from pallet until instructed.

14. Unload remaining pallets and boxes, and take to assembly area.

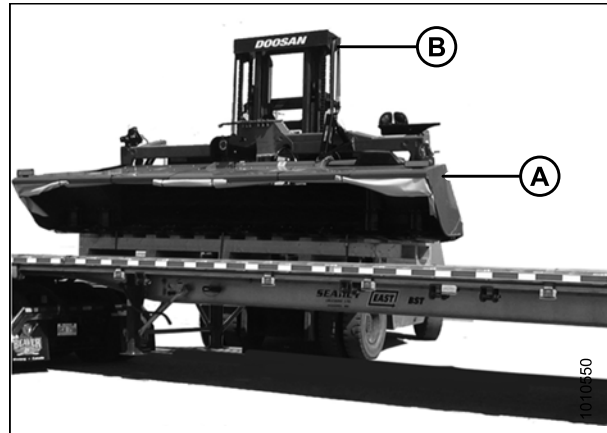


Figure 5.2: Unloading Header

5.2 Setting Up Forming Shields

Each type of conditioner uses a different configuration for the swath forming shield. Refer to the applicable instruction for the conditioner supplied with the machine.

5.2.1 Setting Up Forming Shield for Finger Conditioner

1. Remove shipping wire (A) securing forming shield covers (B) to pallet.

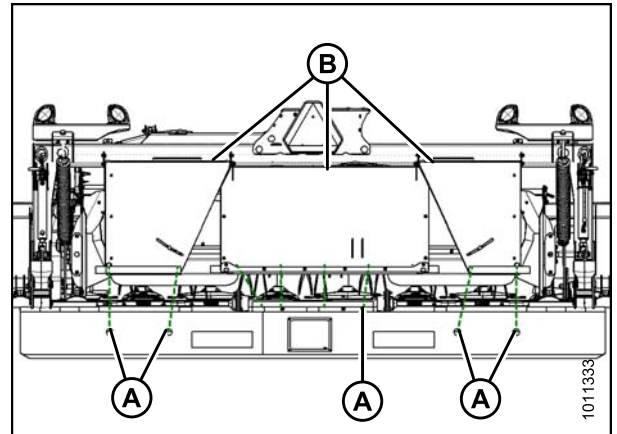


Figure 5.3: Forming Shield Top Covers

2. Remove the two outboard forming shield top covers as follows:
 - a. Remove nut from hex head bolt (A). Do **NOT** remove the bolt.
 - b. Support top cover (B) and remove nut and carriage bolt (C).
 - c. Slide top cover off bolt (A).
 - d. Remove the two carriage bolts (D) from lugs.

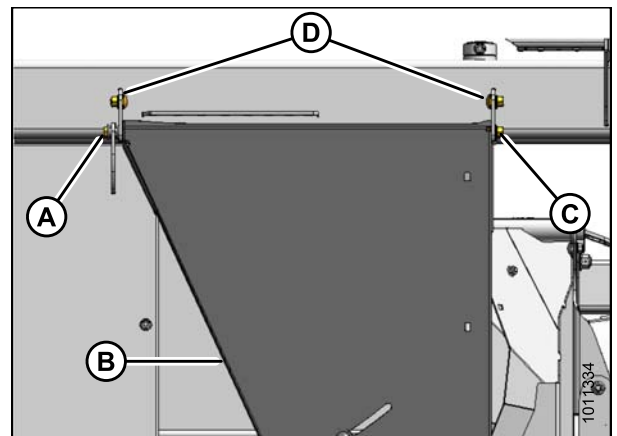


Figure 5.4: Outboard Top Cover

3. Flip top cover horizontally and install as follows:
 - a. Position top cover (A) as shown and position onto hex head bolt (B). Loosely install nut to hold top cover in place.

NOTE:
If installing endwise transport system, install top cover (A) after endwise transport system is in place.

 - b. Install carriage bolts (C) with heads facing towards center of top cover. Install nuts and tighten.
 - c. Repeat for opposite top cover.

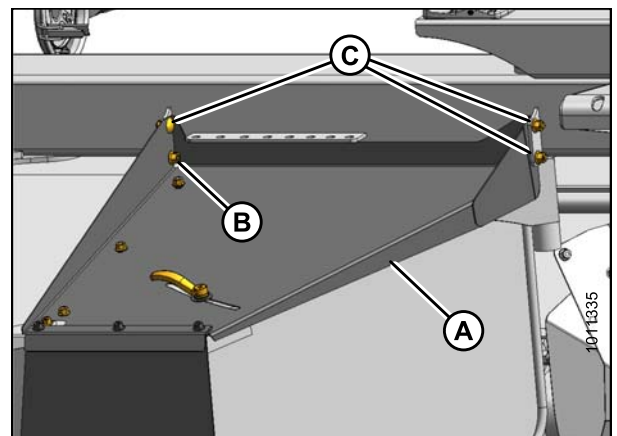


Figure 5.5: Outboard Top Cover

UNLOADING AND ASSEMBLING THE MOWER CONDITIONER

4. Remove two M10 carriage bolts securing left-hand deflector shield in shipping position.
5. Reposition deflector shield so the holes align with the fixed shield, and secure with four M10 carriage bolts (B) and hex head flange nuts.
6. Repeat for opposite deflector shield.

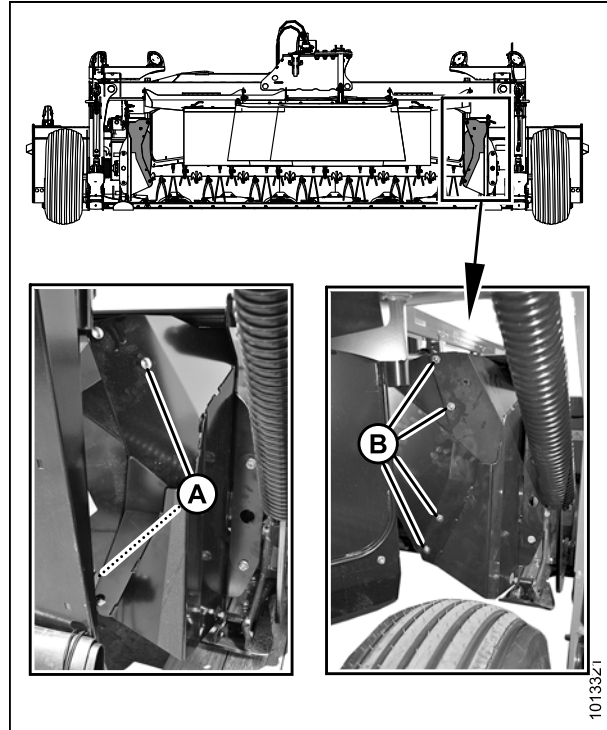


Figure 5.6: Left-Hand Deflector Shield Shown – Right-Hand Deflector Shield Opposite

NOTE:

This step applies only if installing the endwise transport system. Install endwise transport system before installing top covers and spring. If not installing the endwise transport system, skip this step.

7. Retrieve bag 50181 from the manual case for the necessary parts to complete this procedure.
8. Secure joint weldment (A) to link bracket (B) using M12 hex head bolt and flanged center lock nut (C).

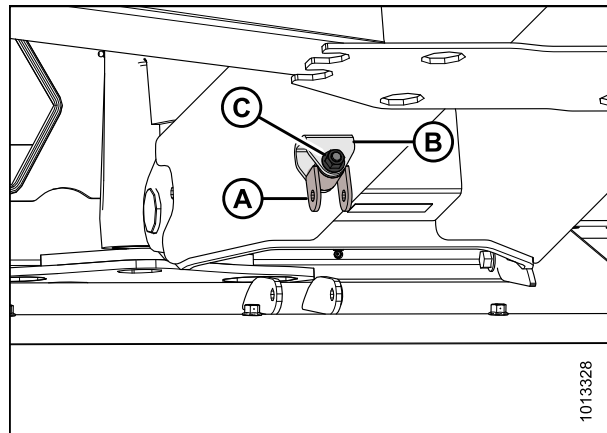


Figure 5.7: Joint Weldment on Link Bracket

UNLOADING AND ASSEMBLING THE MOWER CONDITIONER

9. Attach spring (B) to spacer (A), position spacer into joint weldment, and secure with M12 x 55 hex head bolt (C) and flanged center lock nut (D).

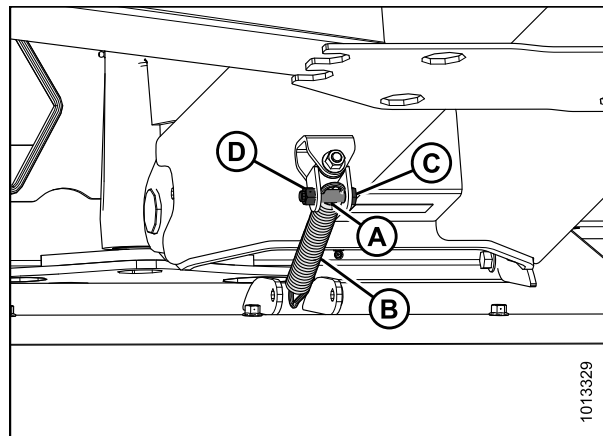


Figure 5.8: Spring Attached to Transport

10. Lift center top cover, attach spring (C) to spacer (A), position spacer into shield pivots (B), and secure with M12 x 100 hex head bolt (D) and flanged center lock nut (E).

IMPORTANT:

Do **NOT** attach center cover to outboard covers.

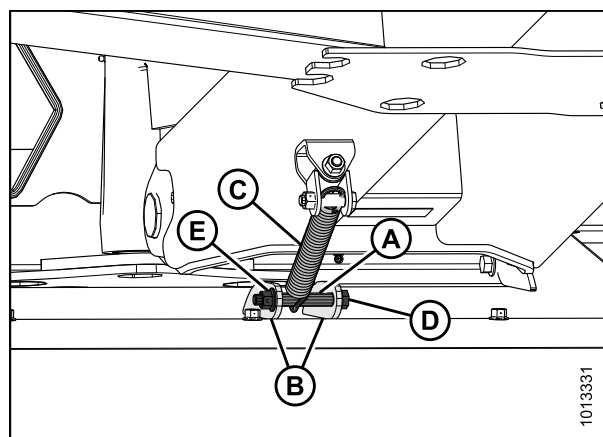


Figure 5.9: Spring Attached to Transport and Top Cover

NOTE:

Perform this step if endwise transport system will not be installed.

11. Lift center cover (A) and install six M10 x 20 carriage bolts and lock nuts (B) (three per side) to secure center cover (A) to outboard covers (C). Tighten bolts.

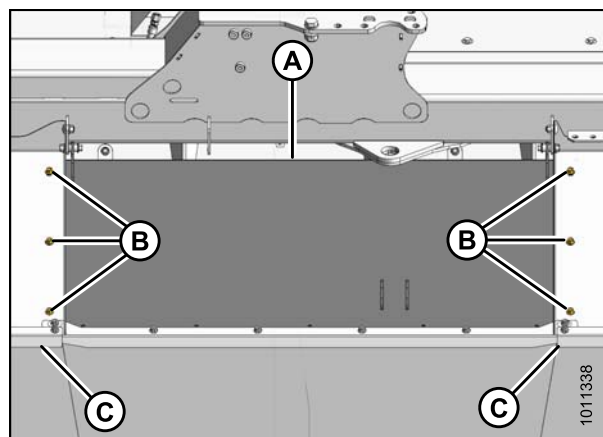


Figure 5.10: Center Cover Assembly

UNLOADING AND ASSEMBLING THE MOWER CONDITIONER

12. Remove and discard bolt (A) securing deflector (B) to frame.

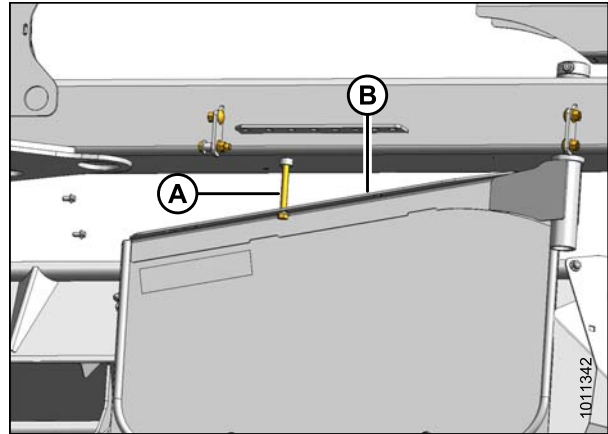


Figure 5.11: Side Deflector Assembly

13. Remove handle (A), washers, and bolt from top cover (B).
14. Swing deflector (C) under outboard top cover (B) so that handle can be installed into deflector and top cover.

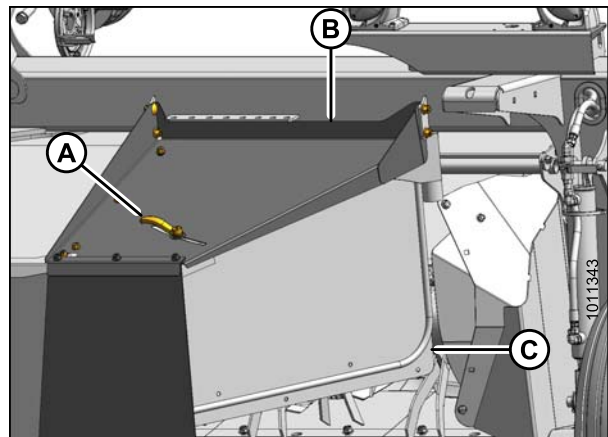


Figure 5.12: Side Deflector Assembly

15. Install carriage bolt (A), washer (B), spring washer (C) and handle (D) as shown.
16. Position deflector so the handle (D) is approximately centered in slot, and tighten handle.

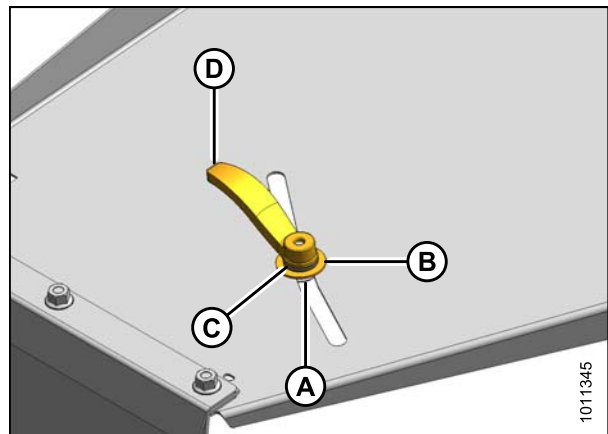


Figure 5.13: Deflector Adjustment

UNLOADING AND ASSEMBLING THE MOWER CONDITIONER

17. Remove shipping wires (A) securing curtains (B) to covers (C). Allow curtains to unfold before operating machine.

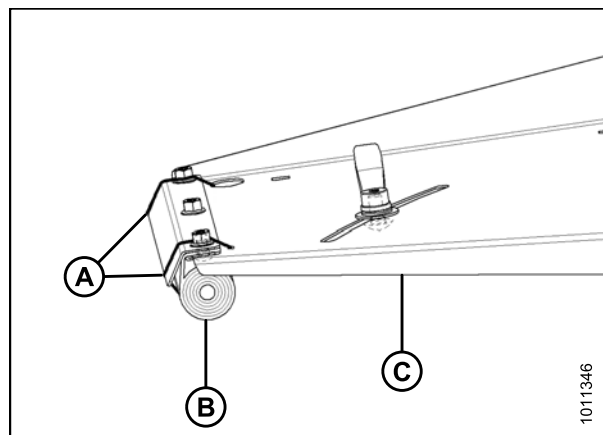


Figure 5.14: Forming Shield Curtain

5.2.2 Setting Up Forming Shield for Roll Conditioner

Use these instructions to set up the forming shield on a machine with a roll conditioner.

1. Remove and discard bolt (A) securing deflector (B) to frame.
2. Remove lynch pins from adjuster bar (C) and remove bar.
3. Swivel deflector (B) to open position.

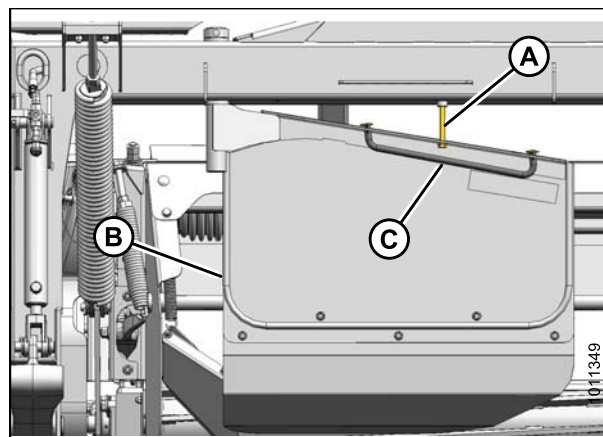


Figure 5.15: Side Deflector

4. Install adjuster bar (A) as shown using hole on carrier plate (B), and hole (C) closest to pivot in deflector (D).
5. Repeat above steps for opposite deflector.

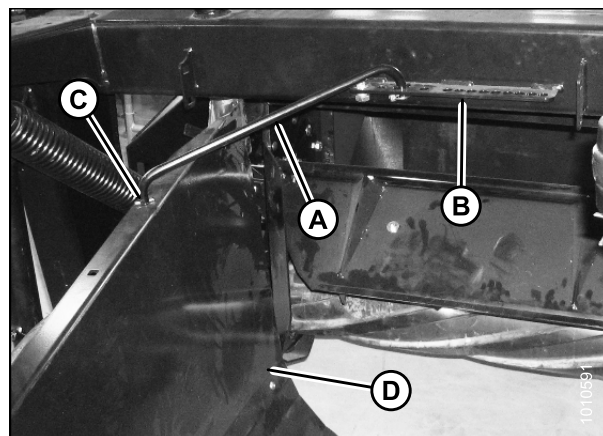


Figure 5.16: Adjuster Bar

5.3 Repositioning Center-Link Top Anchor

Perform this procedure to reposition the center-link top anchor into working position.

1. Cut strapping (A) securing cutterbar to pallet (B).

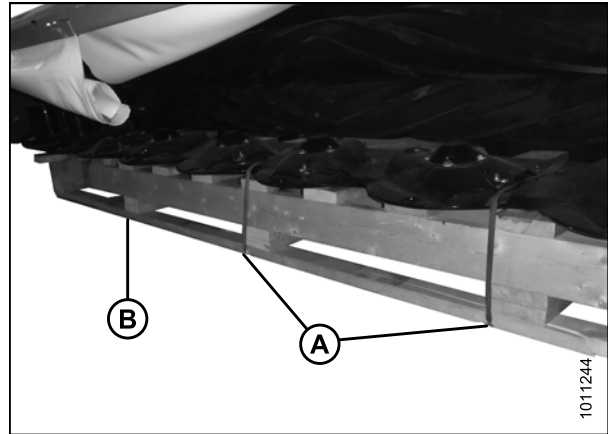


Figure 5.17: Strapping

2. Place forklift forks (B) under top beam and lift carrier frame (A) slightly until pin at base of center-link anchor is loose. Use a piece of wood (C) to protect paint on frame.

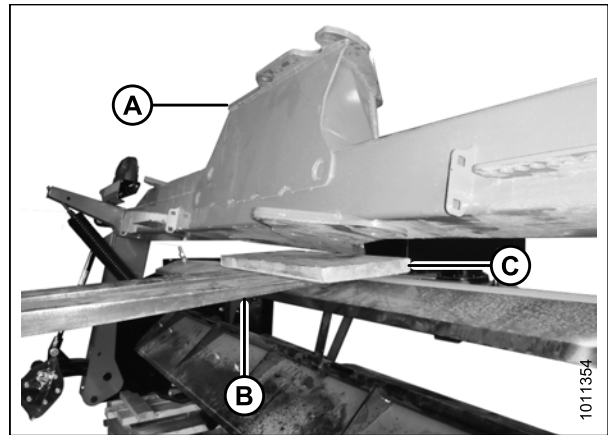


Figure 5.18: Carrier

3. Loosen jam nut (A) and fully loosen float springs (B).

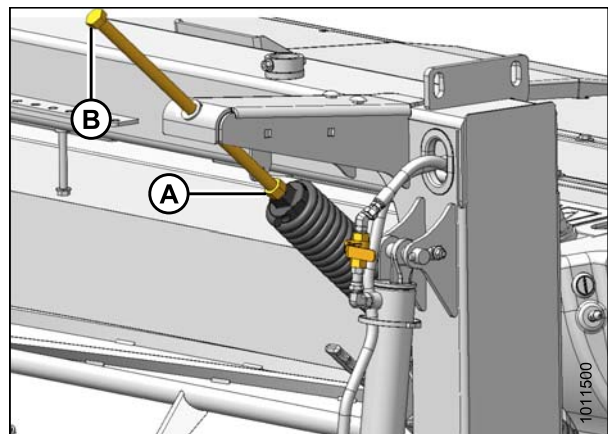


Figure 5.19: Float Spring

UNLOADING AND ASSEMBLING THE MOWER CONDITIONER

4. Remove four M10 hex head bolts (A) and flat washers, and remove top shield (B).

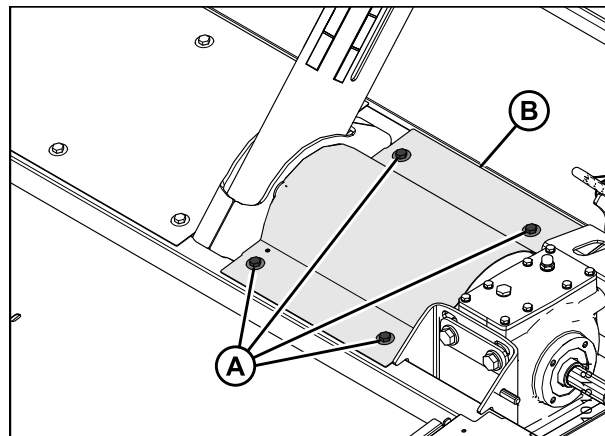


Figure 5.20: Top Shield

CAUTION

To avoid injury, keep fingers clear of opening at base of anchor.

5. Remove pin (A) from center location and lower forks on forklift.

NOTE:

Pin should slide out freely. Adjust forklift or move carrier until pin is loose. Avoid using a hammer to remove pin.

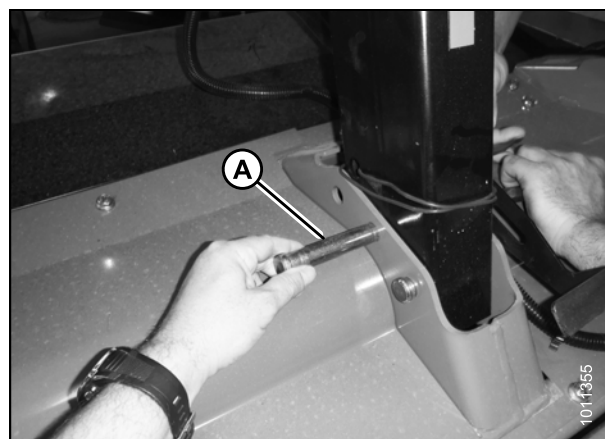


Figure 5.21: Center-Link Anchor

6. Install pin (A) and secure with washer (B) and cotter pin (C). Move the carrier and anchor so the pin can be installed in working location.

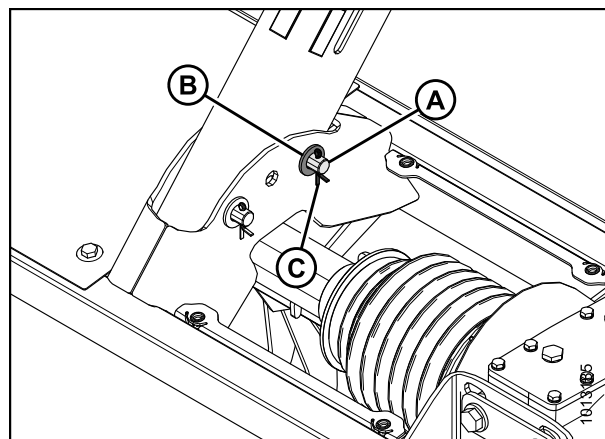


Figure 5.22: Center-Link Anchor

UNLOADING AND ASSEMBLING THE MOWER CONDITIONER

7. Install top shield (B) and secure with four M10 hex head bolts (A) and flat washers.

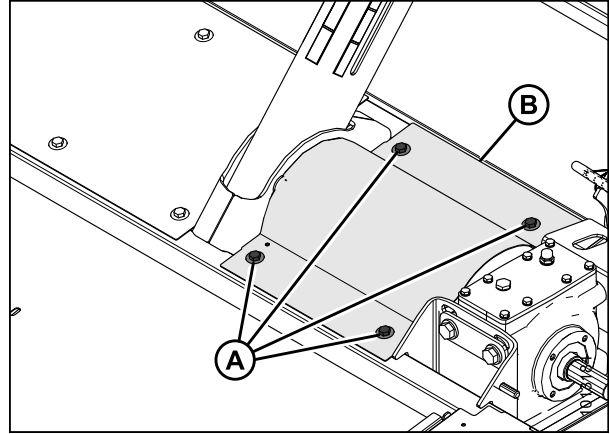


Figure 5.23: Top Shield

5.4 Attaching Hitch to Carrier

1. Attach chain or sling (A) from lifting vehicle or hoist to hitch (B), and raise it approximately 24 in. (610 mm) off ground.

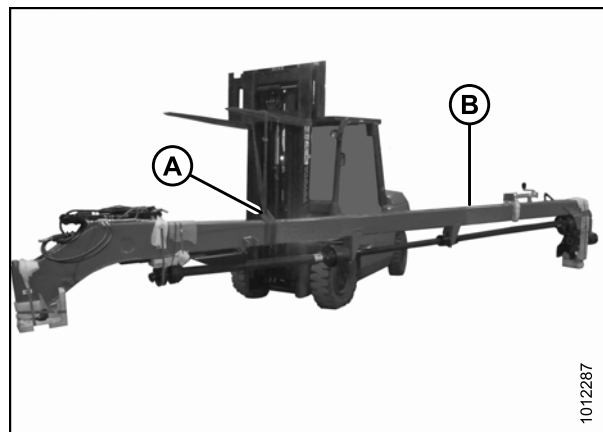


Figure 5.24: Lifting Hitch

2. Cut banding (C) securing wood supports, and remove supports.
3. Remove the two bolts securing wood support to hitch pin (D). Discard bolts.



CAUTION

Hold pin before removing bolt to keep pin from dropping to floor.

4. Remove bolt (A) and wood block (B) from top of pin, and remove pin (D).

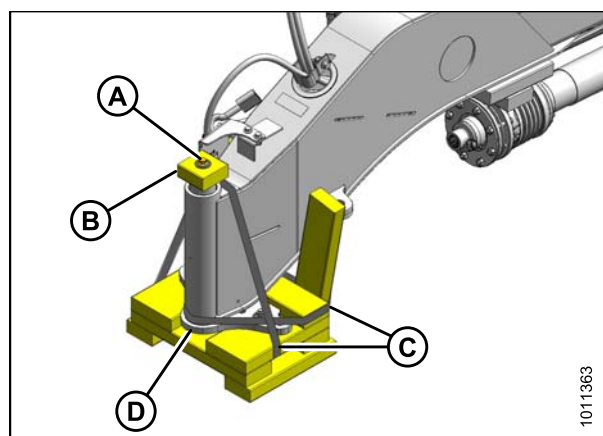


Figure 5.25: Hitch Packing

5. Install hitch pin (A) fully into hitch as shown.

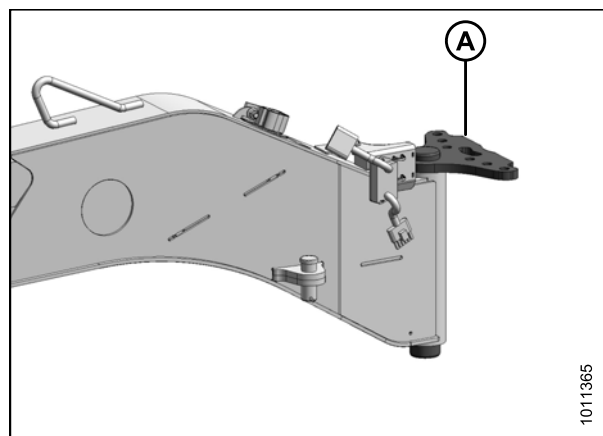


Figure 5.26: Pivot Pin

UNLOADING AND ASSEMBLING THE MOWER CONDITIONER

6. Remove M20 bolts (A) and nuts from carrier at the hitch attachment location. Retain bolts.

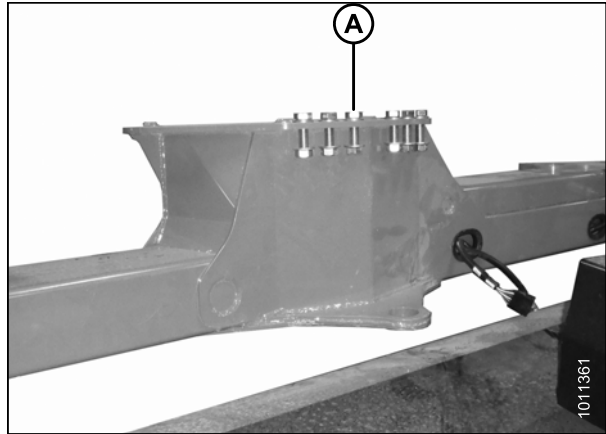


Figure 5.27: Carrier

7. Maneuver hitch pivot (C) into attachment location (D) on carrier and line up pin with hole in carrier.

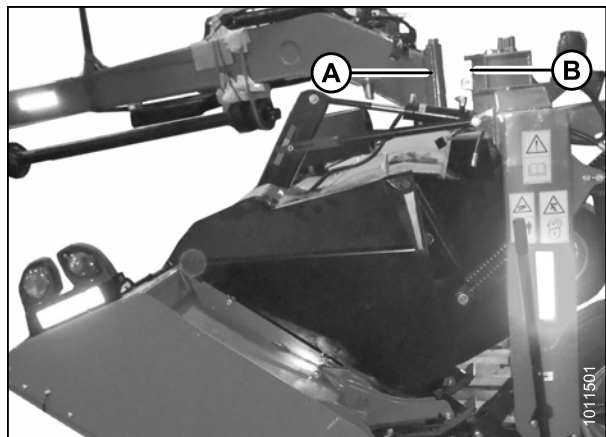


Figure 5.28: Hitch to Carrier

8. Slowly lower hitch while maintaining pin alignment until pin is fully inserted. Use a large soft hammer if necessary to seat pin.

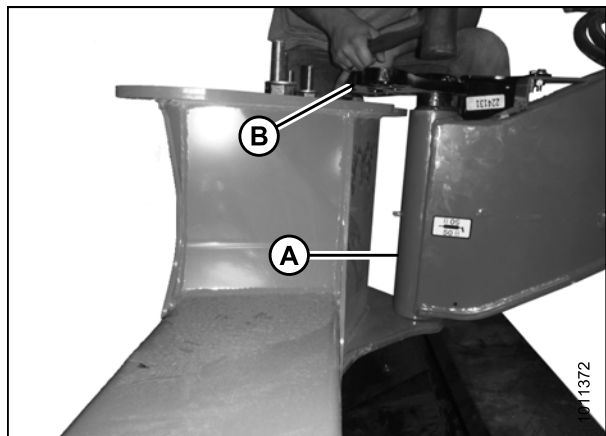


Figure 5.29: Pivot Pin

UNLOADING AND ASSEMBLING THE MOWER CONDITIONER

9. Line up holes in pin (A) with holes in carrier and install six M20 x 65 bolts (B), hardened washers, and lock nuts (C). Install bolts from the top with washers under head.

NOTE:

If endwise transport system will be installed, do not tighten the two middle bolts at this time.

10. Torque bolts to 340 lbf·ft (461 N·m).

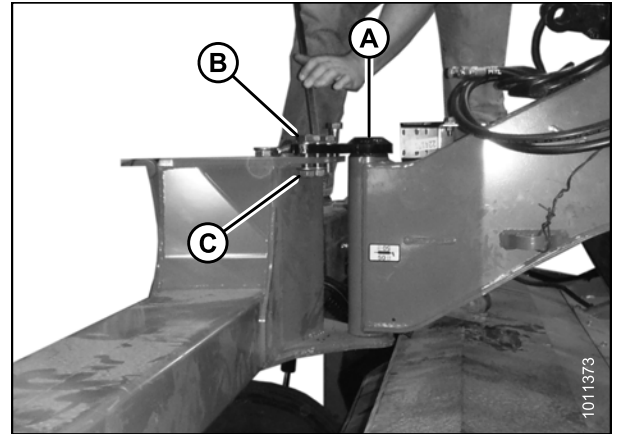


Figure 5.30: Pivot Pin

5.5 Installing Steering Cylinder

The steering cylinder can be installed on either side of the hitch, depending on whether or not the endwise transport system will be installed. Be sure to follow the instructions carefully.

1. Remove the banding (A) securing the steering cylinder (B) to the hitch.
2. Remove pin (C) securing cylinder (B) to hitch.

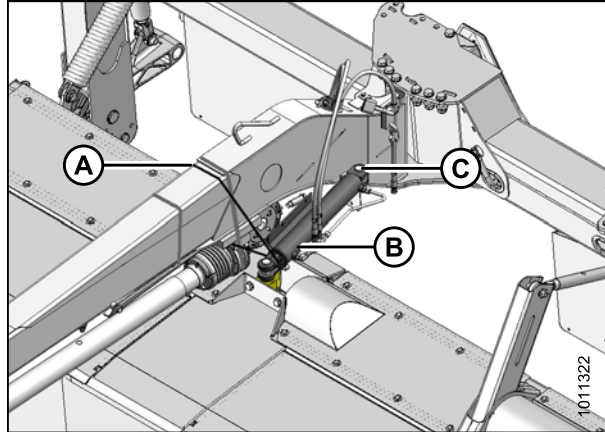


Figure 5.31: Steering Cylinder

To install cylinder on unit without the endwise transport system, proceed as follows:

3. Reposition cylinder (A) at left side of hitch and attach barrel end to carrier frame with pin (B). Secure with washer and cotter pin (C).
4. Remove pin (D) from clevis end.

NOTE:

Place a container or rag under cylinder to catch oil.

5. Loosen fittings on cylinder (A) and manually extend cylinder until clevis lines up with lug on hitch.
6. Install clevis pin (D) and secure with washer and cotter pin (E).
7. Tighten fittings on cylinder.

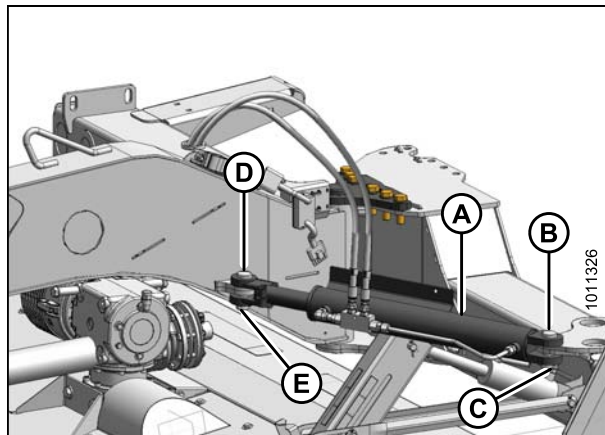


Figure 5.32: Steering Cylinder

UNLOADING AND ASSEMBLING THE MOWER CONDITIONER

To install cylinder on unit with the endwise transport system, proceed as follows:

8. Disconnect the hoses at the cylinder and cap off openings on cylinder and hoses.
9. Reposition cylinder (A) at right side of hitch and attach barrel end to lug (B) on hitch with pin (C). Secure with washer and cotter pin (D).

NOTE:

Clevis end of cylinder will be attached to endwise transport system casting when transport system is installed.

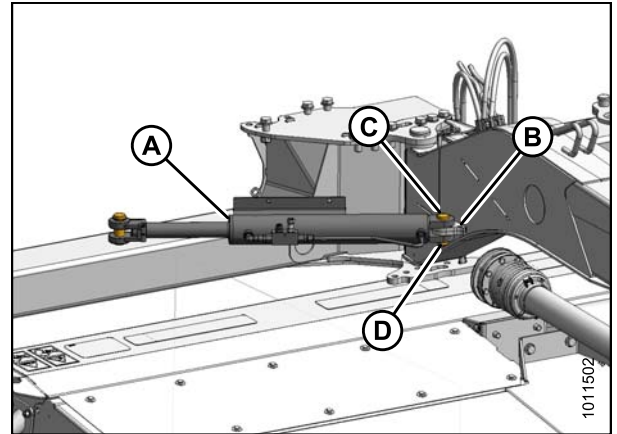


Figure 5.33: Steering Cylinder

5.6 Attaching Aft Driveline

This procedure describes the attachment of the driveline to the header drive gearbox.

IMPORTANT:

If a conditioner swap is required before delivery to the customer, do **NOT** perform this step at this time. Skip to [5.8 Installing Wheels, page 41](#)

1. Remove two bolts (A) with spacers (B) at top of aft gearbox.
2. Undo latches (C) securing driveshield cone (D) to gearbox and remove cone. If necessary, use a screwdriver or equivalent to undo latches (C).

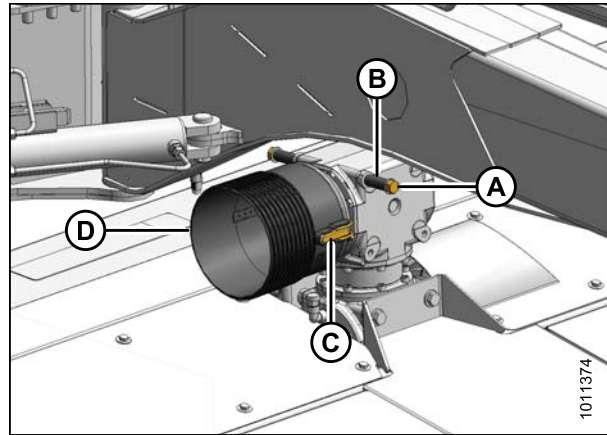


Figure 5.34: Driveline Shield

3. Remove strapping (A) securing driveline (B) to hitch, and remove all packing material.

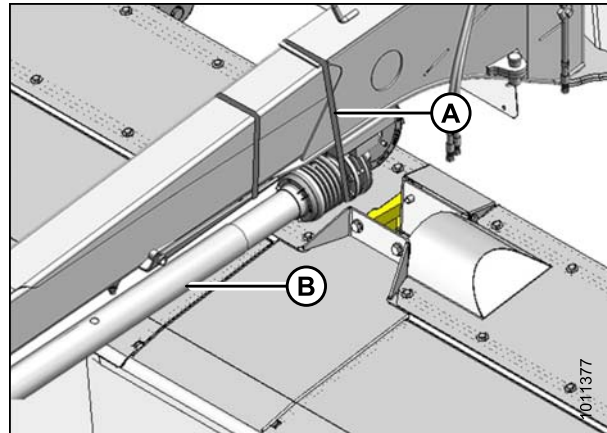


Figure 5.35: Driveline Strapping

4. Slide cone (A) onto driveline with latches (B) towards the gearbox.
5. Remove nut (C) and washer (E) from tapered pin (D) and tap out pin from yoke with a hammer.

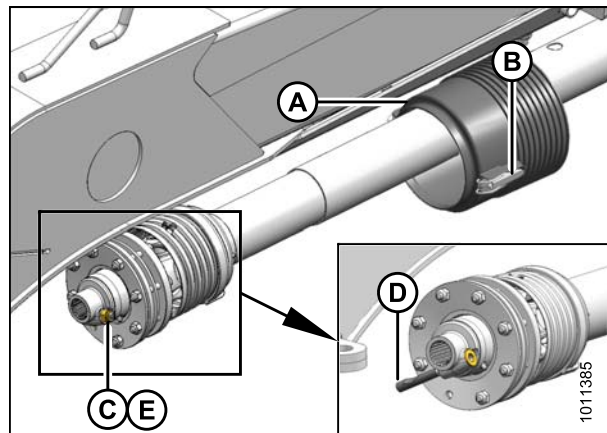


Figure 5.36: Clutch Driveline

UNLOADING AND ASSEMBLING THE MOWER CONDITIONER

6. Attach driveline (A) to gearbox shaft.
7. Insert tapered pin (B) ensuring pin lines up with groove in yoke. Notch in pin should be toward shaft.
8. Install washer (C) and nut (D) on tapered pin and torque to 110 lbf·ft (149 N·m).

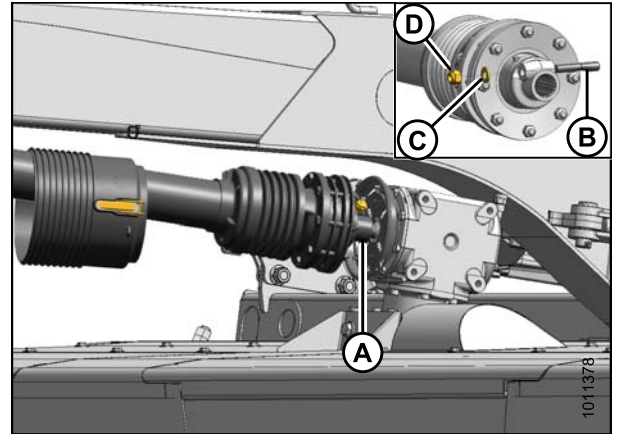


Figure 5.37: Clutch Driveline

5.7 Attaching Steering Arm

This procedure describes the attachment of the steering arm to the header drive gearbox.

IMPORTANT:

If a conditioner swap is required before delivery to the customer, do NOT perform this step at this time. Skip to [5.8 Installing Wheels, page 41](#)

1. Remove strapping (A) and packing material securing steering arm (B) to hitch.

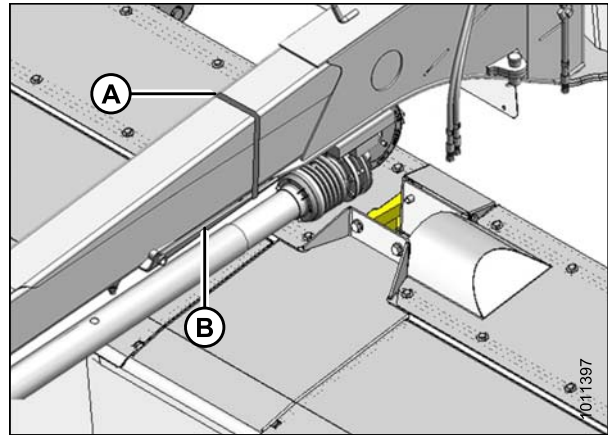


Figure 5.38: Steering Arm Strapping

2. Lower arm (A) from under the hitch and slide the arm weldment (B) off arm.
3. Install the arm weldment (C) onto arm in opposite orientation.
4. Position arm weldment (C) onto gearbox (D).

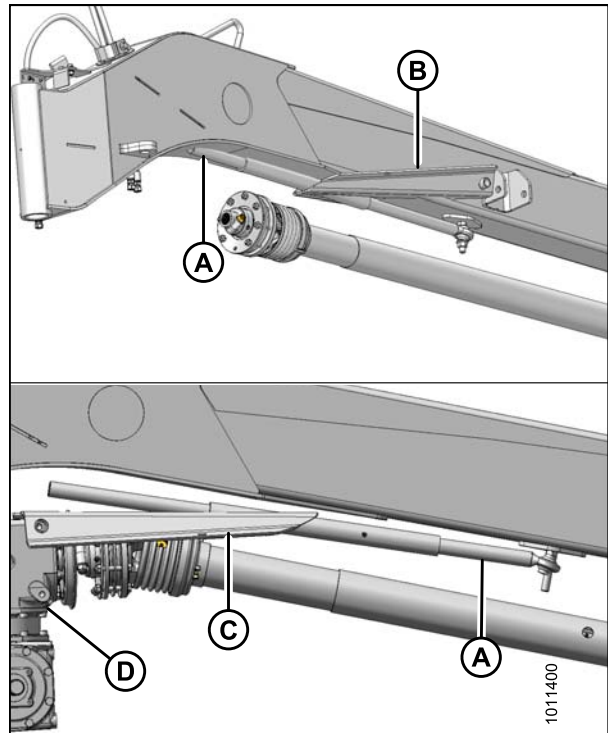


Figure 5.39: Steering Arm

UNLOADING AND ASSEMBLING THE MOWER CONDITIONER

5. Line up the two mounting holes in arm weldment and forward threaded holes in gearbox.
6. Install spacers (A) into arm weldment (B) and install M16 x 80 hex head bolts (C) with red Loctite®, and washers (D).
7. Torque bolts to 150 lbf·ft (203 N·m).

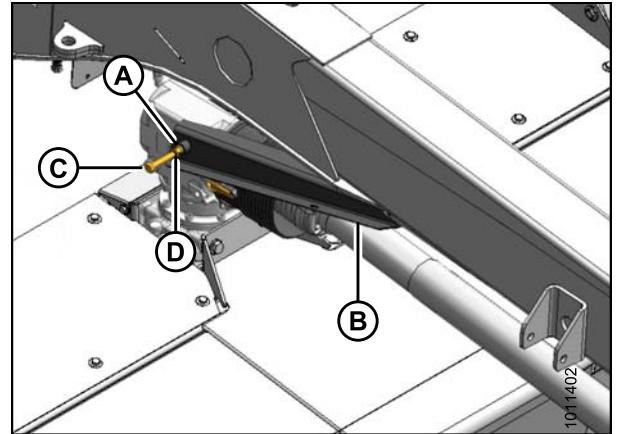


Figure 5.40: Steering Arm

8. Slide the driveshield cone onto the gearbox and close latches (A).

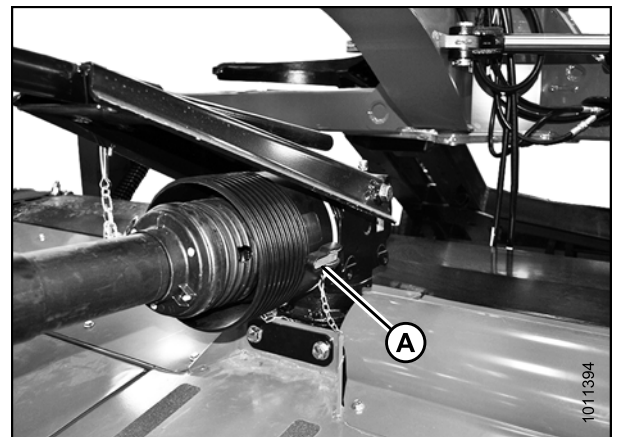


Figure 5.41: Driveline Shield

5.8 Installing Wheels

1. Retrieve wheel spindles (A) from pallet.

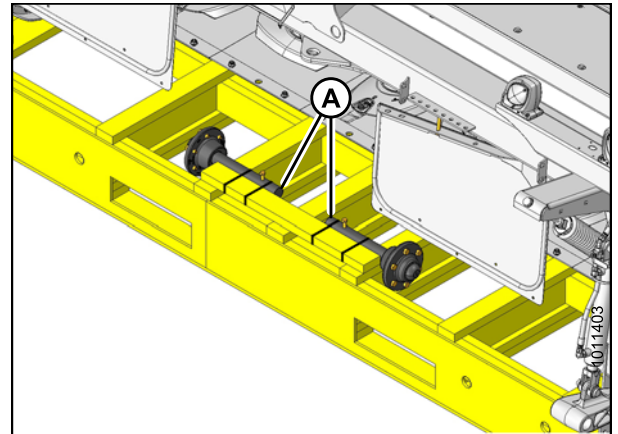


Figure 5.42: Wheel Spindles

2. Remove hex bolt and nut from spindle (A).
3. Using MD #135679 Never-Seez[®] anti-sieze lubricant (or similar), apply a uniform coating to the inside of wheel arm bore (B).
4. Install spindle into wheel arm (B). Spindle hub faces inboard.
5. Install hex bolt (C) into wheel arm to secure spindle. Install nut (D) and fully tighten.
6. Repeat above two steps for opposite side.
7. Remove wheel bolts (E) from spindles.

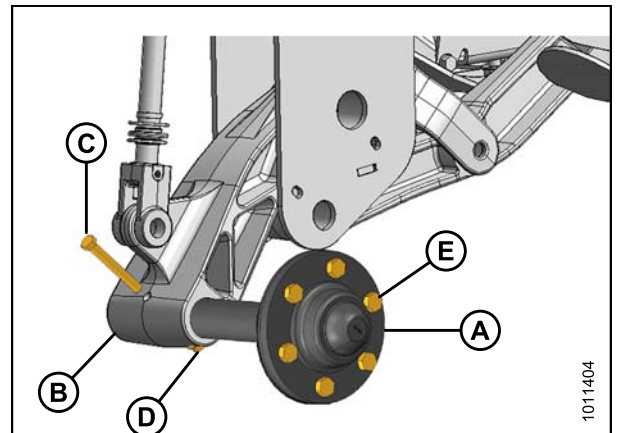


Figure 5.43: Wheel Spindle

CAUTION

When installing wheel, be sure to match countersunk holes with bolt head profiles. Holes that are not countersunk do NOT correctly seat the bolts.

8. Position wheel on spindle, install bolts, and partially tighten.

IMPORTANT:

Be sure valve stem points away from wheel support.

NOTE:

Wheel bolts will be fully torqued later in the set up procedure.

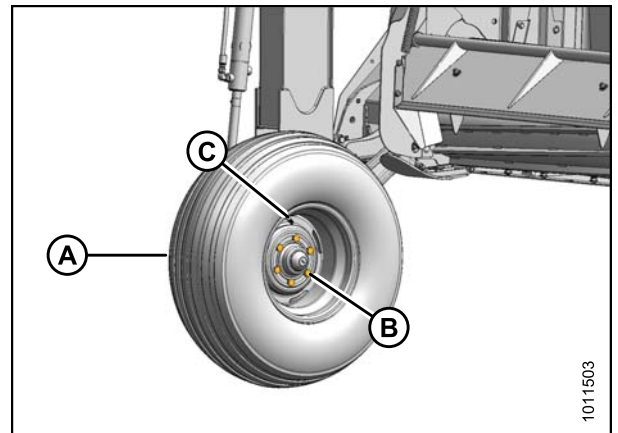


Figure 5.44: Tightening Sequence

5.9 Installing Drawbar Hitch

If the mower conditioner will be attached to a tractor drawbar, proceed as follows: If the mower conditioner will be attached to tractor 3-point hitch, refer to [5.10 Installing 2-Point Hitch \(Cat. II\) Adapter, page 44](#).

1. Remove shipping wire or banding (A) securing shipping blocks (B) at front of hitch, and remove blocks.

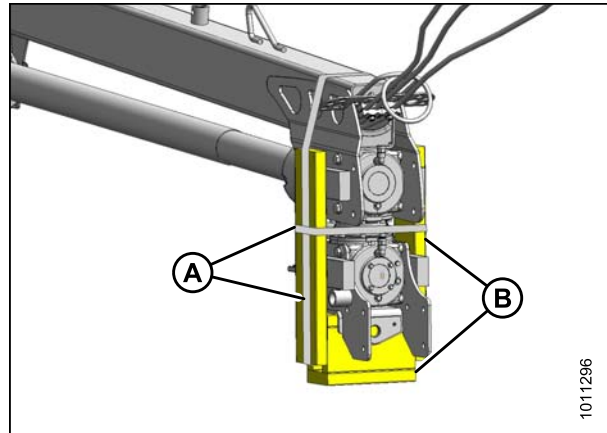


Figure 5.45: Hitch End Packing

2. Remove shipping wire (A) from jack (B) on drawbar hitch shipment, and remove jack from pallet.

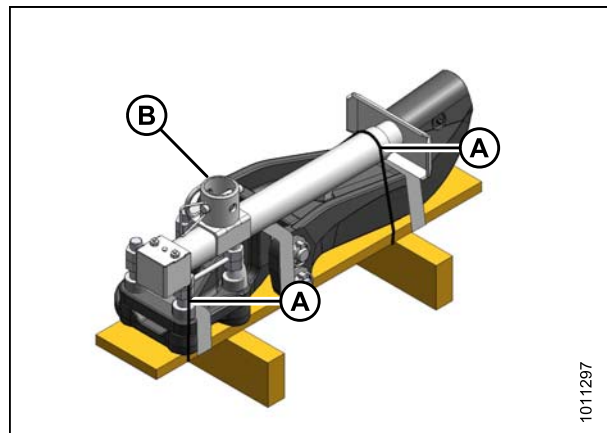


Figure 5.46: Jack Packing

3. Install at jack (A) location at front of hitch, and secure with pin (B).
4. Swivel driveline and lower gearbox (C) so that driveline (D) is facing forward.
5. Lower forklift until hitch is resting on hitch jack (A).

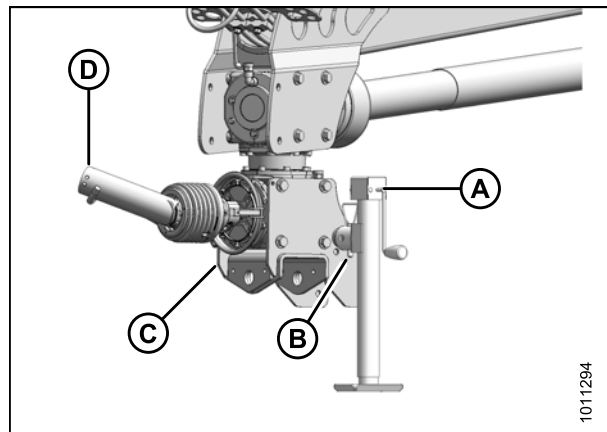


Figure 5.47: Hitch

UNLOADING AND ASSEMBLING THE MOWER CONDITIONER

6. Remove shipping wire (A) that secures pin (B) in casting. Do not remove other strapping.
7. Remove pin (B) from casting and remove bolt (C) and nut from pin.

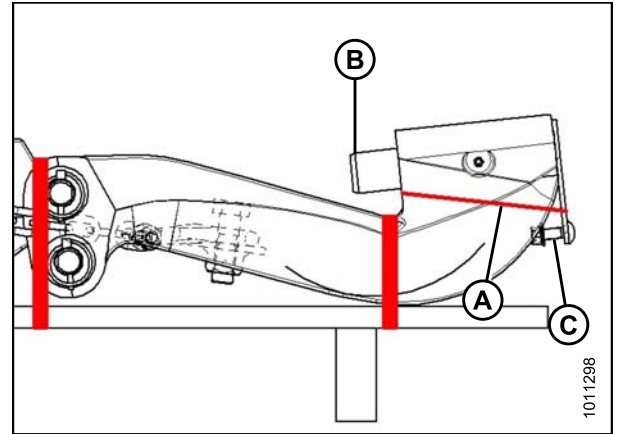


Figure 5.48: Hitch Casting

8. Using a floor jack or equivalent under pallet (A), raise hitch adapter (B) into position under the gearbox.
9. Maneuver hitch adapter (B) so that pin (C) can be installed to secure adapter to hitch.
10. Secure pin with bolt (D) and nut.
11. Remove floor jack and if necessary remove remaining strapping and pallet (A) from hitch adapter.

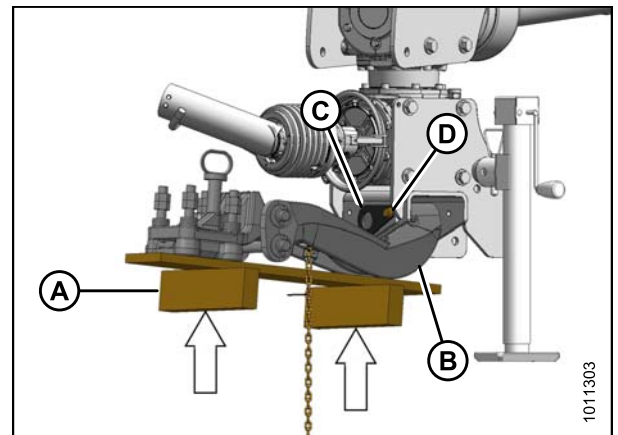


Figure 5.49: Drawbar Hitch

5.10 Installing 2-Point Hitch (Cat. II) Adapter

To set up the 2-point hitch:

1. Remove shipping wire or banding (A) securing shipping blocks (B) at front of hitch, and remove blocks.
2. Swivel driveline and gearbox so that driveline is facing forward.

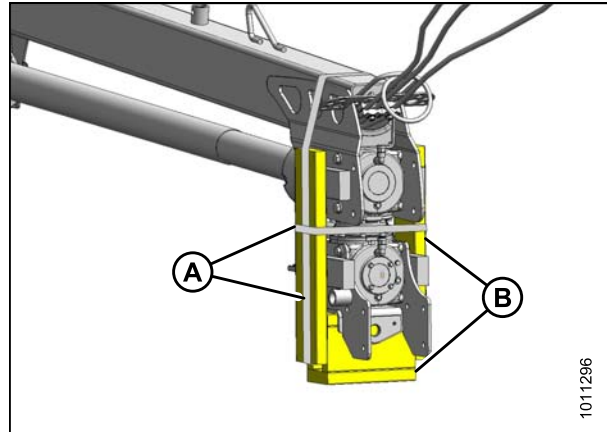


Figure 5.50: Hitch Packing

3. Retrieve 2-point hitch adapter shipment.
4. Remove shipping wire (A) and material from stand (B) and remove stand from hitch adapter (C). Set aside for later installation.

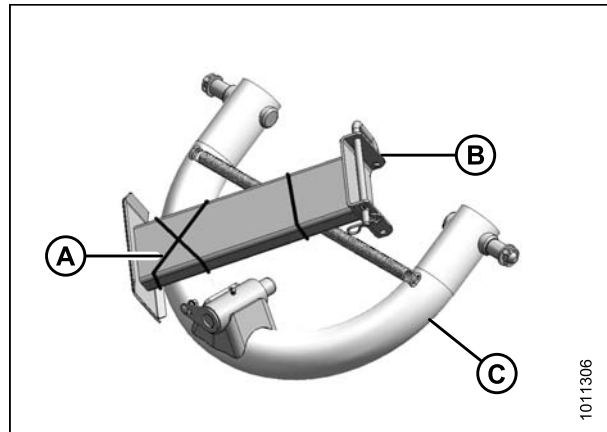


Figure 5.51: 2-Point Hitch Packing

5. Remove strapping that secures pin (A) to adapter (B). Do not remove other strapping.
6. Remove pin (A) from adapter, and remove bolt (C) and nut from pin (A).

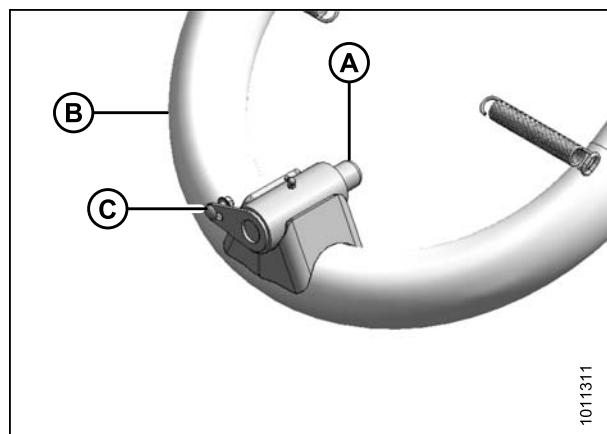


Figure 5.52: 2-Point Adapter

UNLOADING AND ASSEMBLING THE MOWER CONDITIONER

7. Using a floor jack or equivalent, raise 2-point hitch adapter (A) into position under the gearbox.
8. Maneuver adapter (A) so that pin (B) can be installed to secure adapter to hitch.
9. Secure pin with bolt (C) and nut.
10. Remove floor jack, and remove remaining strapping and pallet from hitch adapter.

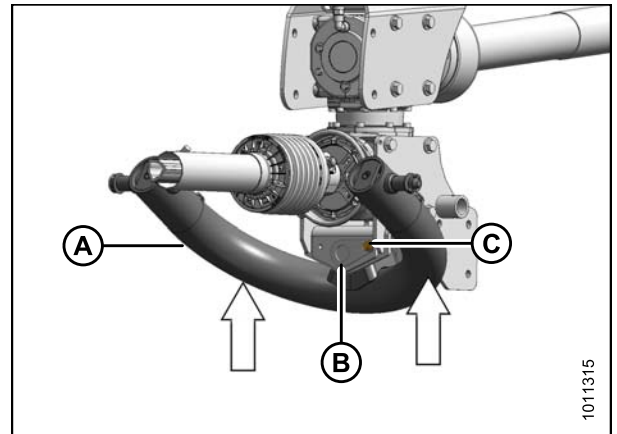


Figure 5.53: 2-Point Hitch Adapter

11. Install springs (A) as shown.
12. Assemble PTO driveline male half (B) onto female half on hitch gearbox. Push male half so that PTO shaft is at its fully compressed length.
13. Locate driveline on hook (C).

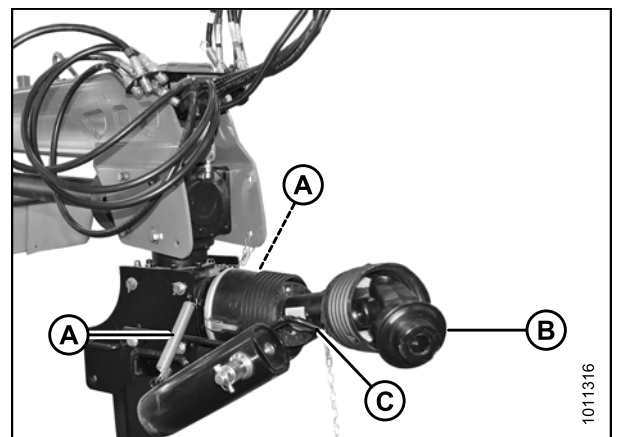


Figure 5.54: Driveline

14. Retrieve stand (A).
15. Position stand (A) under gearbox as shown, and install hitch pin (B) to secure stand.
16. Install hairpins (C) to secure hitch pin (B).
17. Lower hitch onto stand.

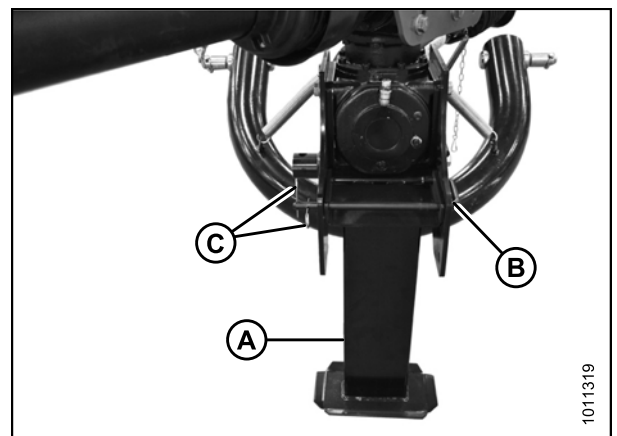


Figure 5.55: Stand

5.11 Unpacking Curtains

1. Remove two M10 hex head bolts (A) and centre lock flange nuts securing cutterbar door supports to center channel frame.

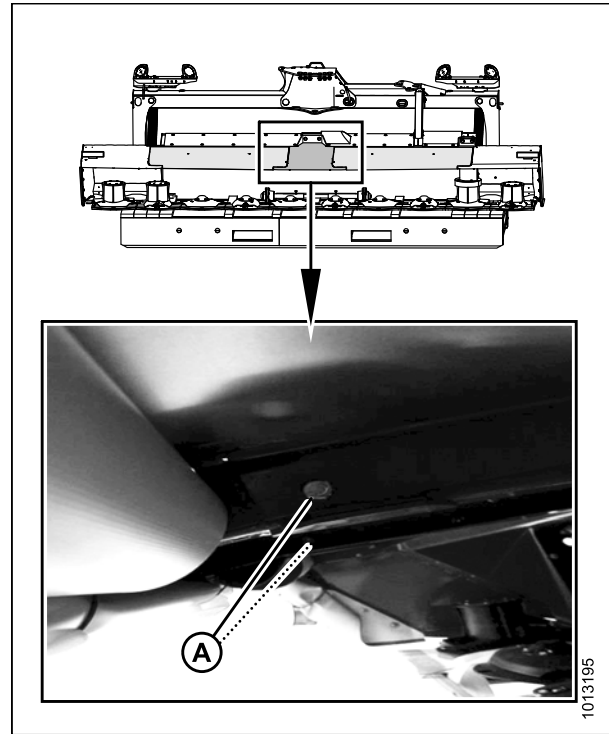


Figure 5.56: Underside of Cutterbar Doors

2. Remove shipping wire (A) from cutterbar door curtains and forming shield covers and pull down.

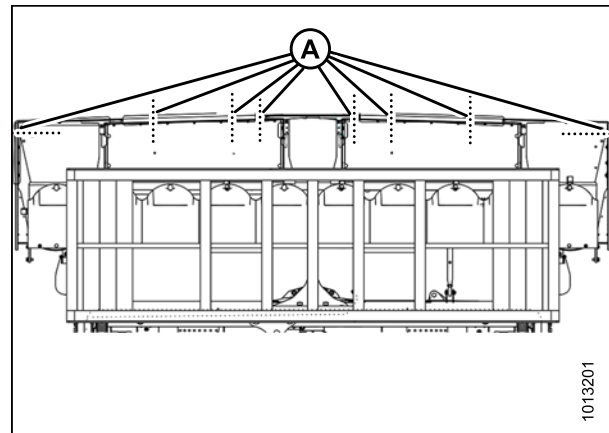


Figure 5.57: Underside of Mower Conditioner

UNLOADING AND ASSEMBLING THE MOWER CONDITIONER

3. Straighten cutterbar door curtains (A) and forming shield covers (B) and remove folds or creases (minor creases will eventually straighten out).

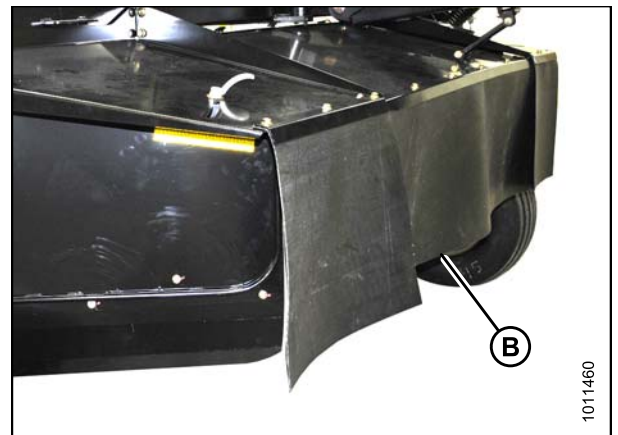
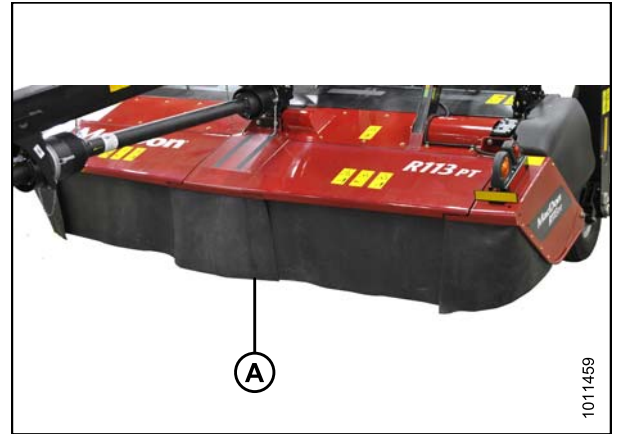


Figure 5.58: Cutterbar Door Curtains and Forming Shield Covers

4. Ensure cutterbar door curtains and forming shield covers hang properly and completely enclose cutterbar area.

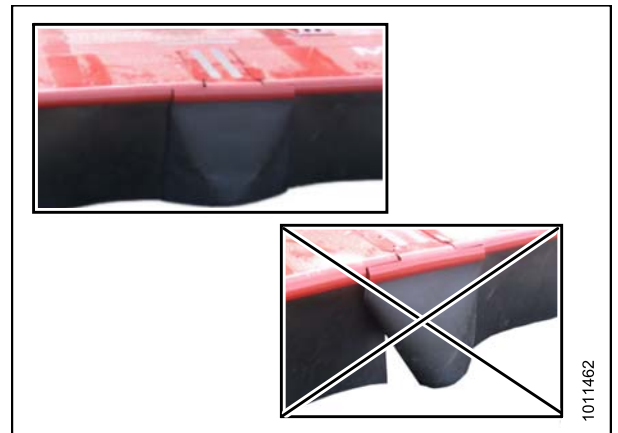


Figure 5.59: Cutterbar Door Curtains

5.12 Installing Options

Install the following optional kits which may have been supplied with your header. Use the instructions supplied with the kit, or as specified below:

5.12.1 Installing Endwise Transport System

This section describes the installation of the endwise transport system. The basic components are installed first, the hydraulic systems are connected, and the lighting and signage are installed last.

Installing Components

This section describes the installation of the basic parts of the endwise transport system.

Installing Latch Assembly

1. Remove shipping banding and packing material from latch assembly (A) on transport pallet, and remove latch assembly.
2. Remove the two M20 mounting bolts (B) from latch assembly.
3. Locate latch assembly (A) onto carrier frame as shown and secure with the M20 bolts and nuts (B). Do not fully tighten bolts as it may be necessary to adjust position of latch assembly for proper operation.

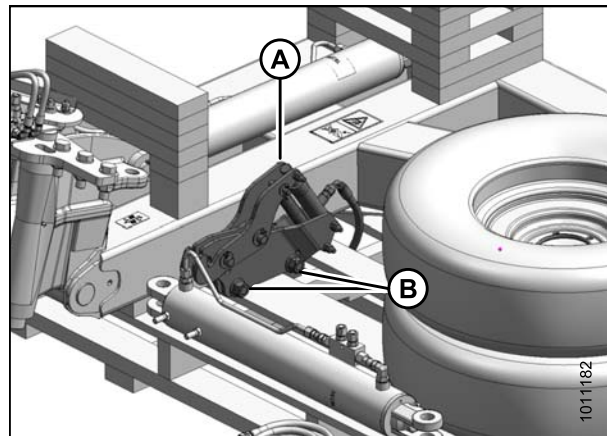


Figure 5.60: Latch Packing

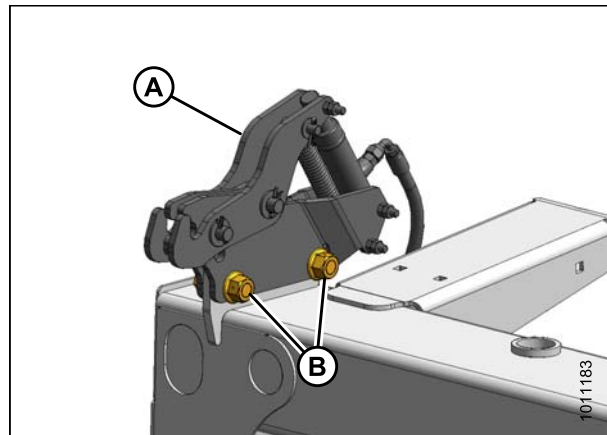


Figure 5.61: Latch Assembly

UNLOADING AND ASSEMBLING THE MOWER CONDITIONER

4. Ensure lift cylinder lock out valve (A) is closed.
5. Disconnect hose (B) from 45° fitting (C) at lift cylinder.
6. Remove plug and cap from tee (D) on hose (E).
7. Connect tee (D) to 45° fitting (C) and connect hose (B) to tee (D).
8. Tighten fittings.

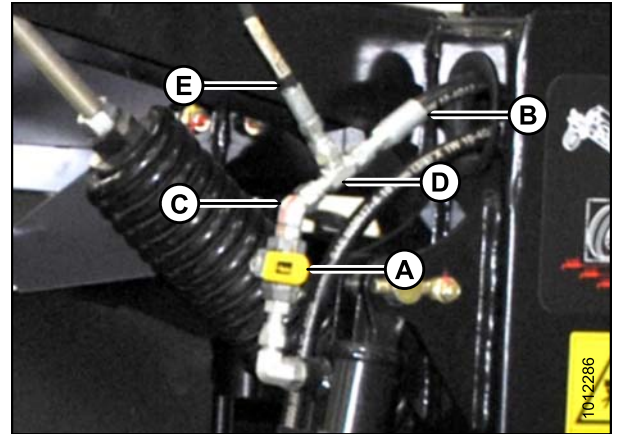


Figure 5.62: Latch Plumbing

9. Retrieve clevis pin (A) and cotter pin (B) from shipping bag and install onto hitch bracket at side of hitch.

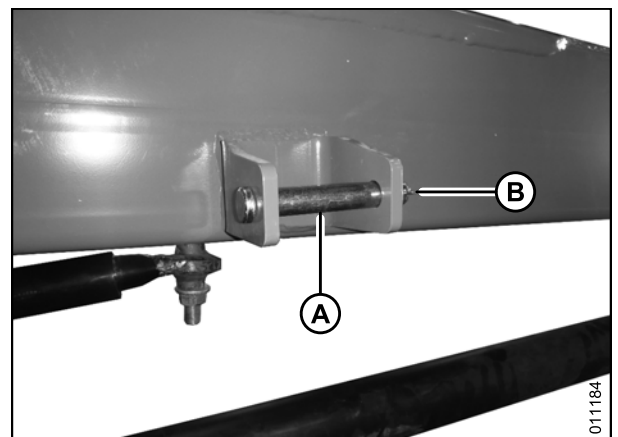


Figure 5.63: Latch Pin

Installing Transport Assembly

10. Remove bolt (A), hardened washer, and nut securing slow moving vehicle (SMV) sign (B) to carrier frame and remove sign. Retain sign and hardware for reinstallation.

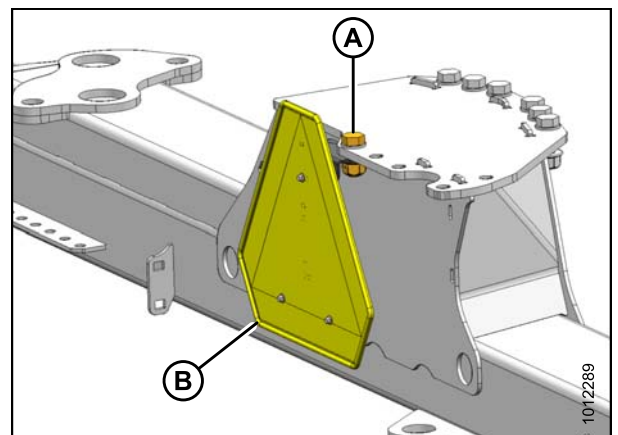


Figure 5.64: SMV Sign Attached to Carrier Frame

UNLOADING AND ASSEMBLING THE MOWER CONDITIONER

11. Remove transport wheels (C) from pallet.
12. Remove the five M20 hex head bolts (A) and nuts in transport assembly pin (B). Do not remove pin.
13. Move valve and hoses (D) off the pin.

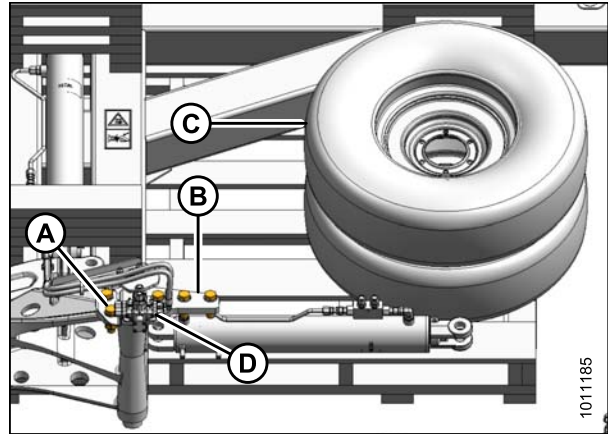


Figure 5.65: Transport Packing

14. Pick up pallet with transport assembly (A) using a forklift and approach the rear of the mower conditioner.
15. Position assembly up to frame and align pin (B) in transport assembly with hole (C) in carrier.
16. Maneuver assembly until pin can be inserted into hole. Use a soft hammer or equivalent to fully insert pin.

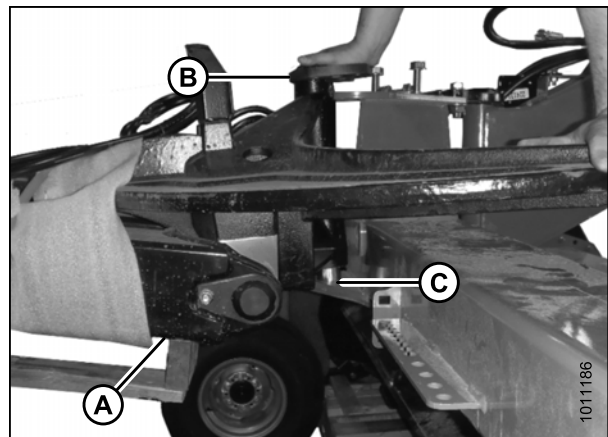


Figure 5.66: Endwise Transport

17. Align bolt holes and install three M20 x 65 bolts (A), hardened washers (B), and nuts at locations shown.
18. Position control valve assembly (C) on pin and install two M20 x 65 bolts (D), hardened washers, and nuts.
19. Torque bolts to 340 lbf·ft (461 N·m).

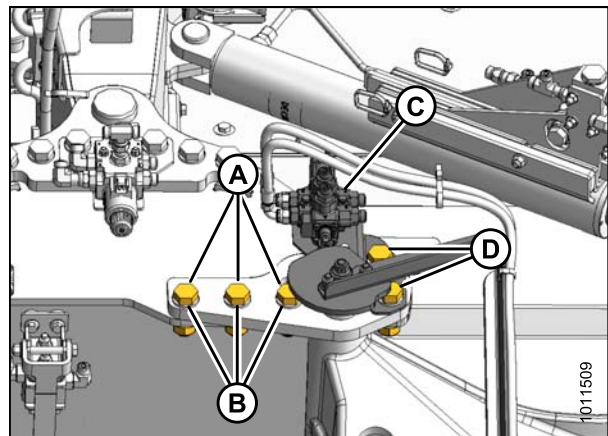


Figure 5.67: Endwise Transport

UNLOADING AND ASSEMBLING THE MOWER CONDITIONER

Installing Swing Cylinder

20. Remove shipping bag from pallet.
21. Retrieve 32 mm x 90 mm clevis pin (A) from shipping bag.
22. Cut straps securing swing cylinder (B) to pallet while supporting cylinder.

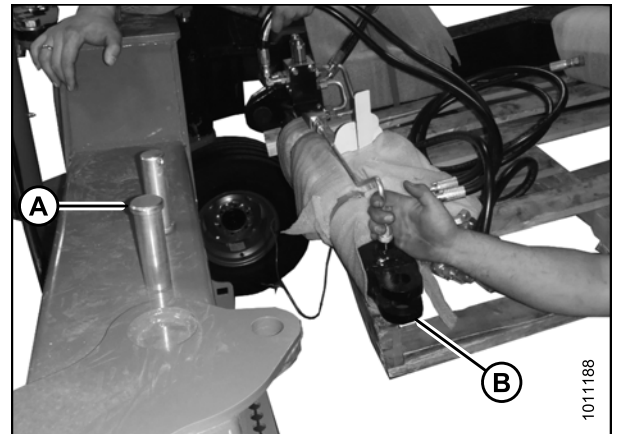


Figure 5.68: Swing Cylinder

23. Maneuver cylinder (A) into position and install barrel end of cylinder onto carrier frame with clevis pin (B). Secure clevis pin with cotter pin (C).

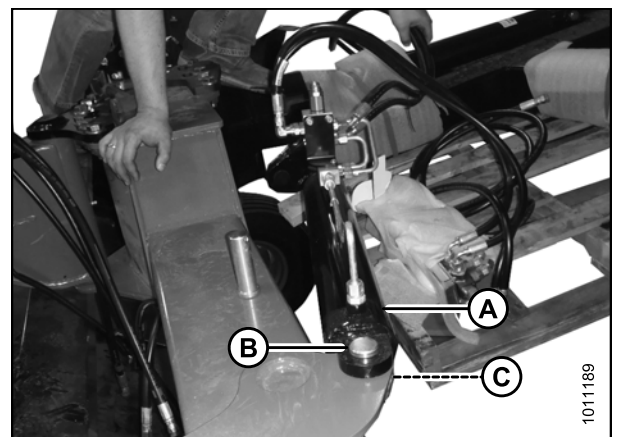


Figure 5.69: Swing Cylinder

24. Connect the tractor swing hoses (not shown) to the pressure valve fittings (A) on the swing cylinder (B).
25. Prime the swing cylinder (B) to fill the cylinder with hydraulic oil and release trapped air. Use the tractor cylinder controls to fully extend and fully retract the swing cylinder.

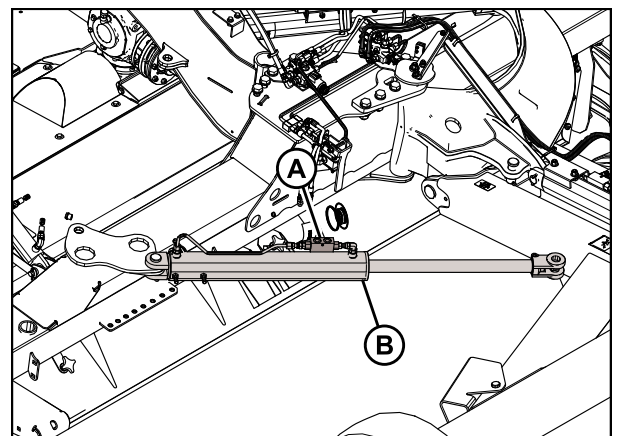


Figure 5.70: Priming the Swing Cylinder

UNLOADING AND ASSEMBLING THE MOWER CONDITIONER

26. Cut straps securing transport assembly to pallet.
27. Slowly lower forklift until transport assembly wheel spindles (A) are approximately 12 in. (305 mm) off the ground.
28. Remove wheel bolts (B) from spindles.

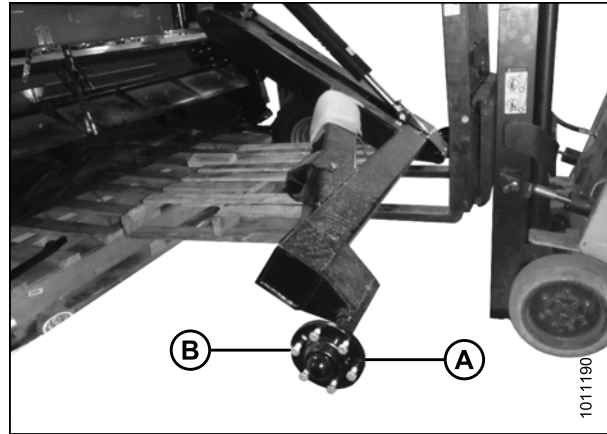


Figure 5.71: Transport Wheel

29. Retrieve transport wheels and install wheels with wheel bolts. Ensure valve stem faces outboard. Do not fully tighten bolts.
30. Lower wheels to ground and back away forklift.
31. Torque wheel bolts to 120 ft·lbf (160 N·m) following the tightening sequence shown.

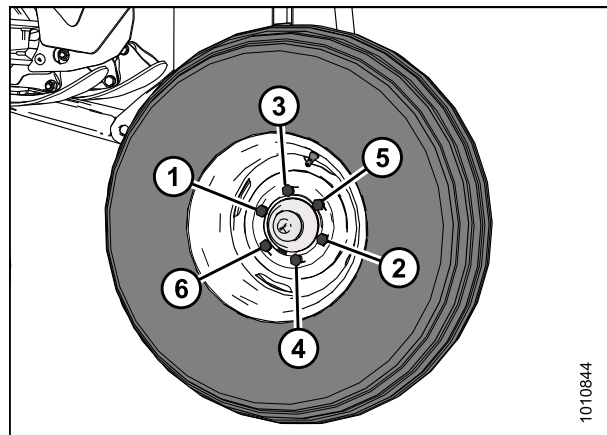


Figure 5.72: Tightening Sequence

Attaching Swing Cylinder

32. Open fittings on rear swing cylinder (A) and hydraulically extend cylinder to approximately 56 in. (1420 mm) between pins using the tractor swing hoses.

NOTE:

Ensure swing cylinder (A) has been properly primed before securing clevis end (B) to transport casting. Refer to Step [24., page 51](#) for cylinder priming instructions.

33. Connect clevis end (B) to transport casting. Align holes and install 32 mm x 90 mm clevis pin (C). Secure with cotter pin (D).

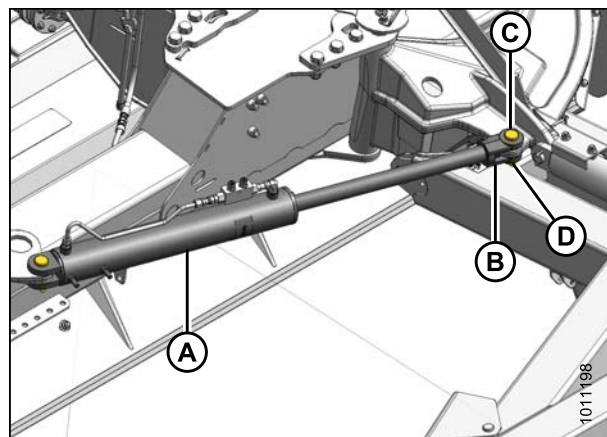


Figure 5.73: Swing Cylinder

UNLOADING AND ASSEMBLING THE MOWER CONDITIONER

Installing Transport Alignment Control

34. Retrieve cam assembly (A), 32 mm x 90 mm clevis pin and cam arm (B) from shipping bag.
35. Remove nuts (C) from assembly mounting bolts.

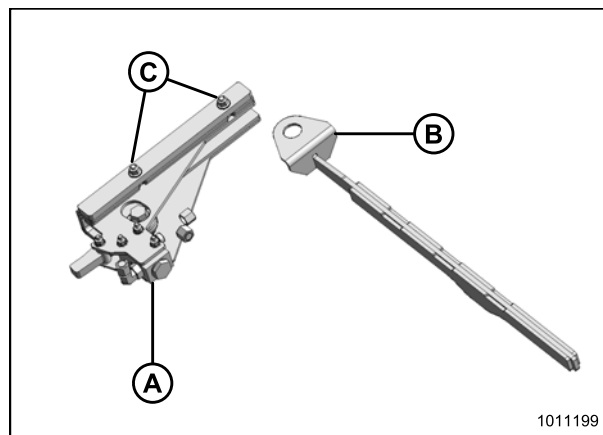


Figure 5.74: Alignment Controls

36. Locate cam assembly (A) onto cylinder plate (B) with bolts picking up existing holes in plate. Install nuts (C) and torque to 40–45 lbf·ft (55–60 N·m).

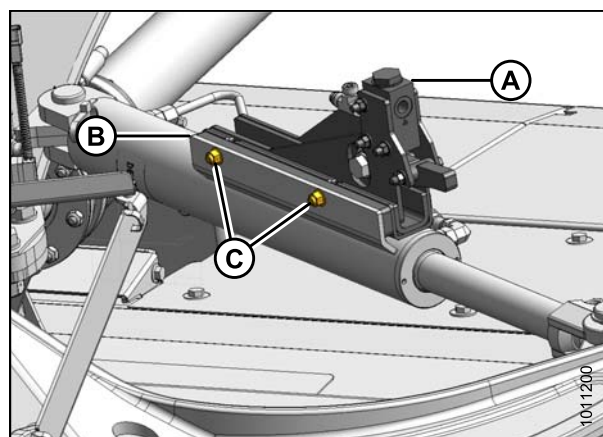


Figure 5.75: Alignment Control

37. Locate cam arm (A) into cam assembly (B).
38. Attach cam arm (A) and cylinder clevis (C) to transport casting (D) with clevis pin (E). Secure with cotter pin (not shown).

NOTE:

Install washer (F) if there is play in clevis pin (E). Ensure clevis pin extends far enough to secure with cotter pin when washer is installed. If the clevis pin fits snugly without the washer, discard washer and secure with cotter pin.

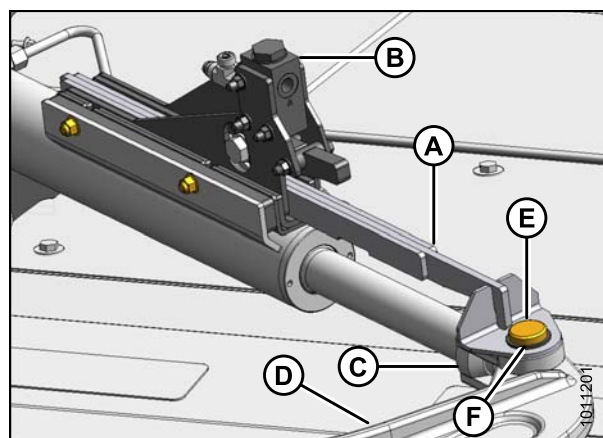


Figure 5.76: Alignment Control

UNLOADING AND ASSEMBLING THE MOWER CONDITIONER

39. Retrieve completion valve assembly (A) and three M12 x 25 flanged hex head bolts from shipping bag.
40. Attach valve assembly (A) to standoffs (B) on rear of carrier with three M12 x 25 flanged hex head bolts (C) provided.

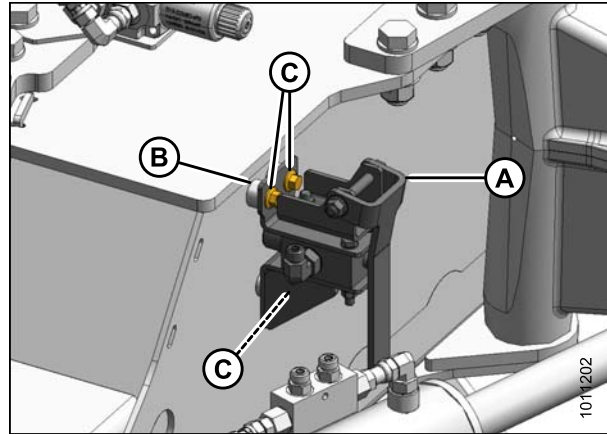


Figure 5.77: Control Valve

Installing Transport Selector Valve

41. Retrieve selector valve (A) from shipping bag.
42. Remove the middle two previously installed bolts (B) from hitch pin.
43. Position valve (A) on carrier hitch pin as shown and install two M20 x 65 bolts (B), hardened washers (C) and nuts.
44. Torque bolts to 340 lbf·ft (461 N·m).

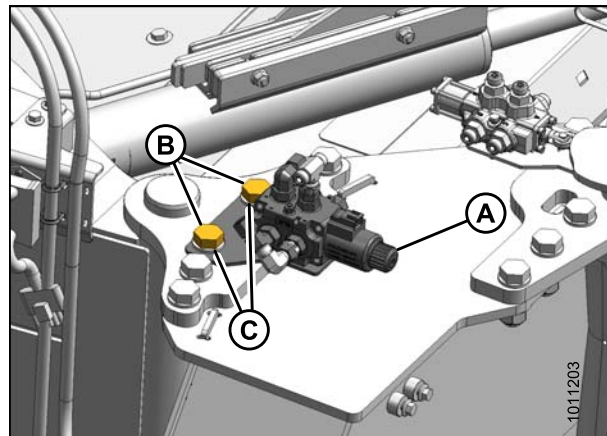


Figure 5.78: Selector Valve

Installing Hydraulics

This section describes the installation of the transport hydraulic control system.

Installing Fittings

Several fittings need to be replaced to suit the control system hydraulics.

NOTE:

Refer to [2 Recommended Torques, page 5](#) for hydraulic fitting installation details.

UNLOADING AND ASSEMBLING THE MOWER CONDITIONER

1. Place a container or rag under fitting on hitch steering cylinder.
2. Remove existing fitting at location (A) from block.
3. Retrieve ORFS-6 x ORB-6 connector (B) from shipping bag and install into location (A).
4. Retrieve ORFS-6 tee (C) and install onto connector (B).
5. Retrieve ORFS-6 check valve (D) from shipping bag and install onto tee (C).

IMPORTANT:

Ensure arrow on check valve points in direction shown.

6. Retrieve ORFS-6, 90 degree elbow (E) from shipping bag and install onto existing fitting on alignment control (F) as shown.
7. Retrieve ORFS-6, 90 degree elbow (A) from shipping bag and install as shown at location on selector valve (B).
8. Retrieve ORFS-6 tee (C) from shipping bag and install as shown onto existing fitting on selector valve (B).

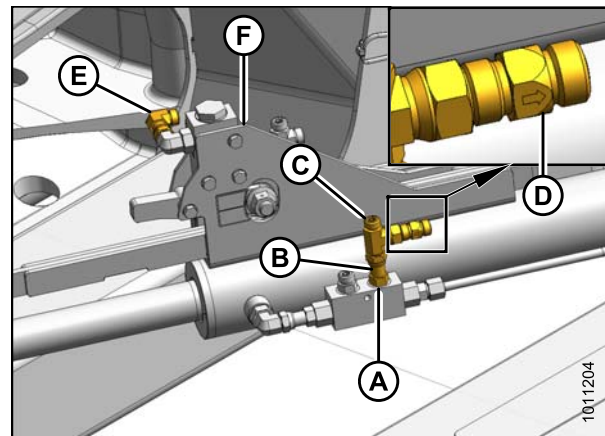


Figure 5.79: Alignment Valve Fittings

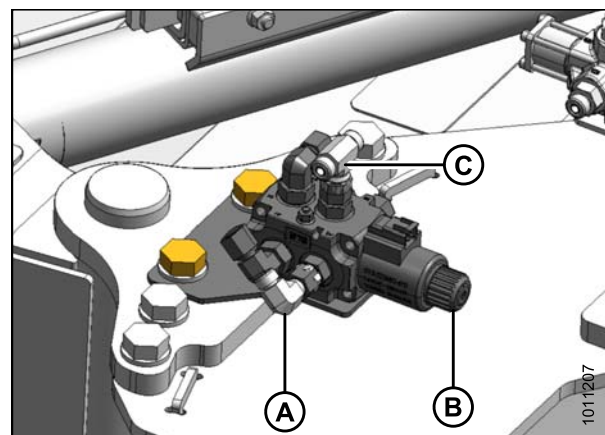


Figure 5.80: Selector Valve Fittings

Installing Lines and Hoses

NOTE:

Refer to [2 Recommended Torques, page 5](#) for hydraulic fitting installation details.

UNLOADING AND ASSEMBLING THE MOWER CONDITIONER

1. Retrieve steel lines and hoses from shipping bag.
2. Install line (A) between transport alignment assembly fitting (B) and hitch steering cylinder fitting (C).

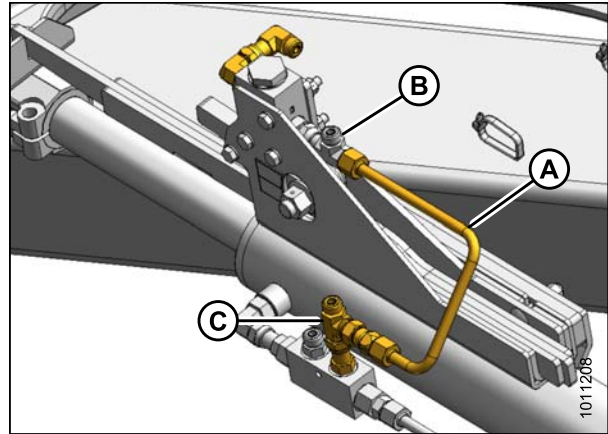


Figure 5.81: Alignment Plumbing

3. Install hoses (A) and (B) between steering cylinder (D) and transport selector valve (C).

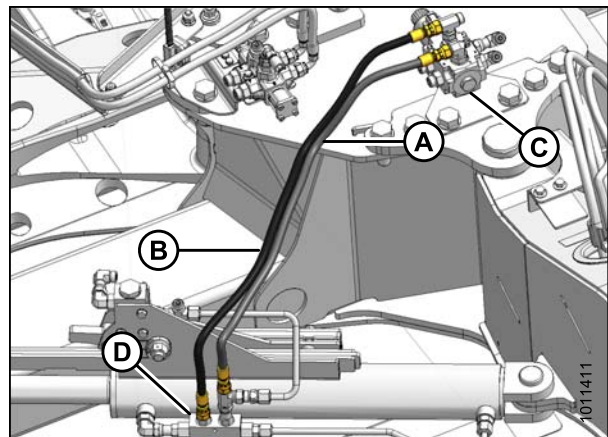


Figure 5.82: Selector Valve Plumbing

4. Install hose (A) between alignment control (B) and selector valve (C).
5. Install hose (D) between alignment control (B) and transport swing control (E).

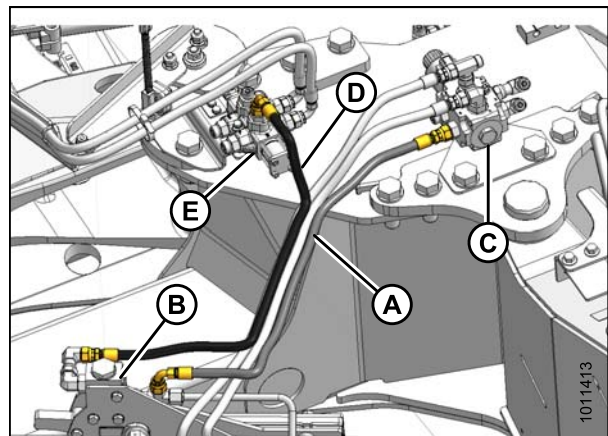


Figure 5.83: Alignment Plumbing

UNLOADING AND ASSEMBLING THE MOWER CONDITIONER

6. Install steel line (A) between selector valve (B) and transport swing control (C).

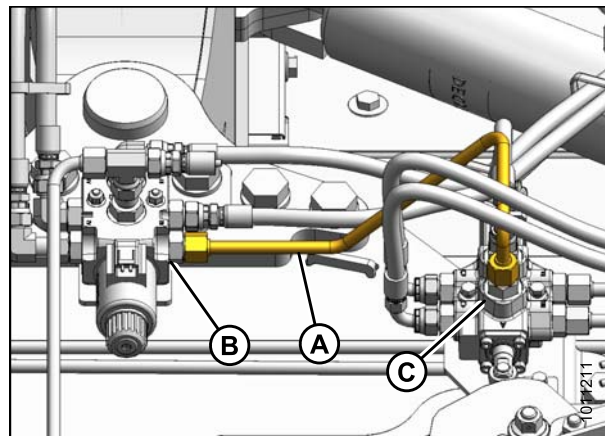


Figure 5.84: Selector Valve Plumbing

7. Install steel lines (A) and (B) onto transport swing control valve (C).
8. Attach plastic block (D) to ends of lines.

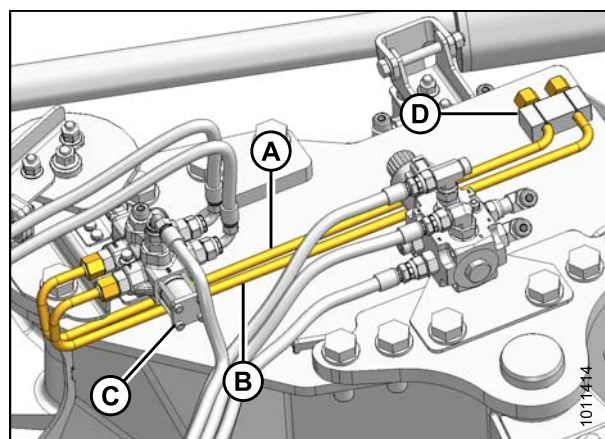


Figure 5.85: Selector Valve Plumbing

9. Loosely assemble steel line (A) with tee (B), and install between completion assembly (C) and steel line installed in previous step.
10. Install steel line (D) onto selector valve (E) and completion assembly (C).

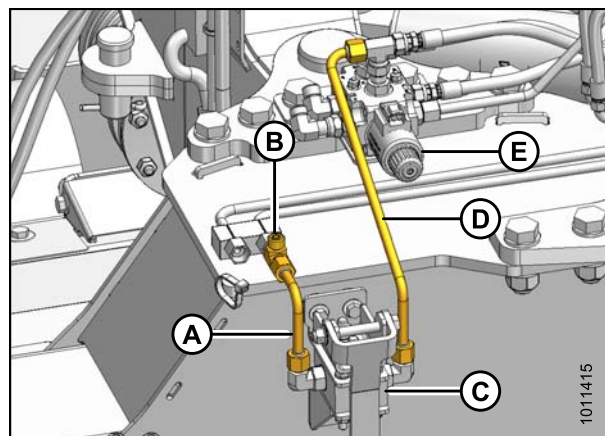


Figure 5.86: Completion Valve Plumbing

UNLOADING AND ASSEMBLING THE MOWER CONDITIONER

11. Install hoses (A) and (B) between the transport swing cylinder and their respective steel lines (C) and (D) as shown.

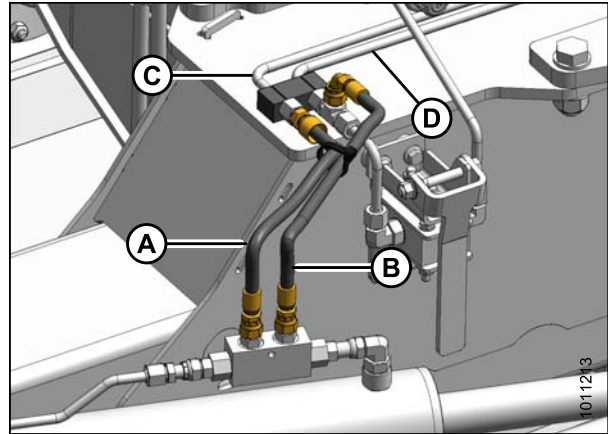


Figure 5.87: Cylinder Plumbing

12. Connect hose (red collar) (A) to fitting (C), and hose (blue collar) (B) to fitting (D) on selector valve (E).

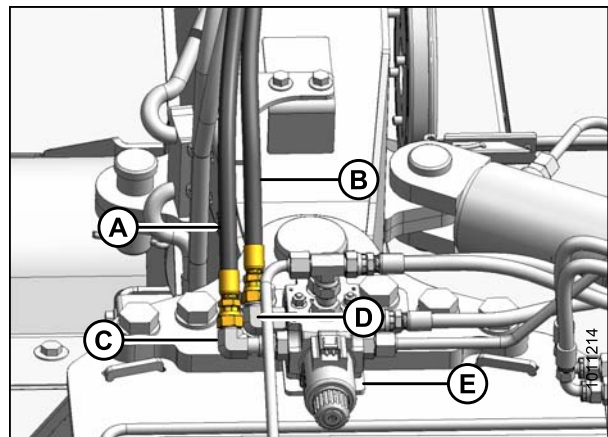


Figure 5.88: Selector Valve Supply

13. Install cable ties (A) as shown.

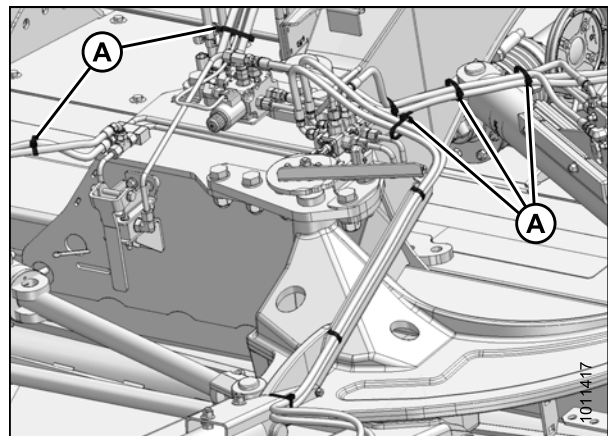


Figure 5.89: Cable Ties

UNLOADING AND ASSEMBLING THE MOWER CONDITIONER

Installing Secondary Lift Hose

NOTE:

The secondary lift hose is required to lift the field wheels fully into storage position when the mower conditioner is in transport mode.

14. Retrieve the following secondary lift hoses from shipping bag according to your header size:

- **13-Foot Headers:** Use hose MD #224160
- **16-Foot Headers:** Use hose MD #224162

15. Undo adjustable strap (A) around hoses at aft end of hitch.

16. Feed long hose (B) into access hole (C) at rear of hitch through hitch to opening at front.

NOTE:

Same fittings are used at both ends.

17. Position long hose (A) so that the exposed length at front of hitch matches existing hose (B). Route hose through guide (C).

18. At front of hitch, loosen nut (D) on hose clamp (E) until hose (A) can be positioned in clamp.

19. Tighten nut (D).

20. At rear of hitch, secure hoses with adjustable strap (A).

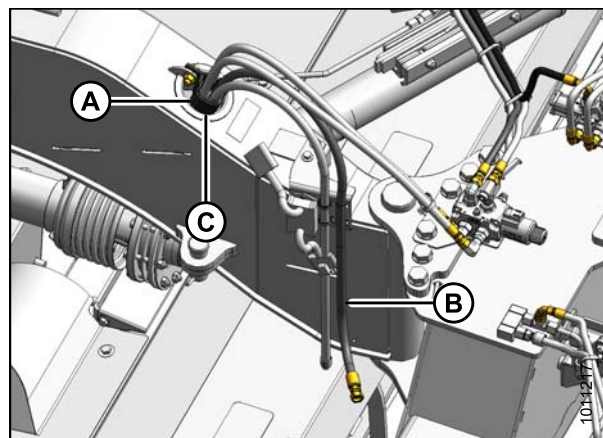


Figure 5.90: Lift Hoses

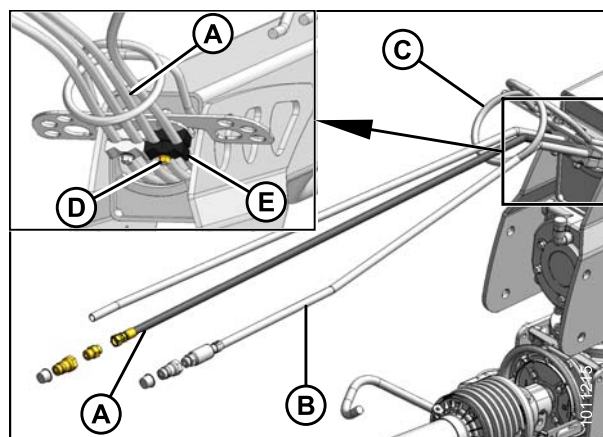


Figure 5.91: Lift Hoses

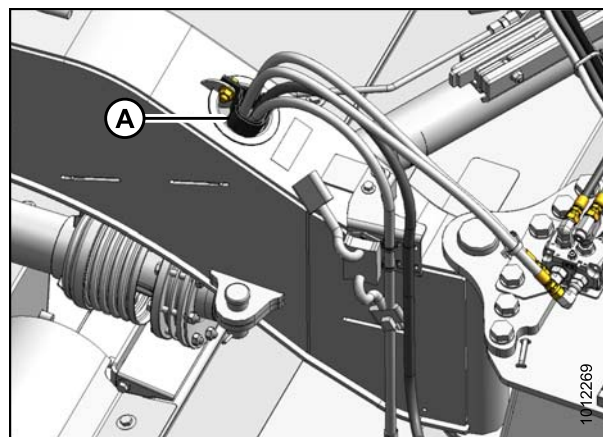
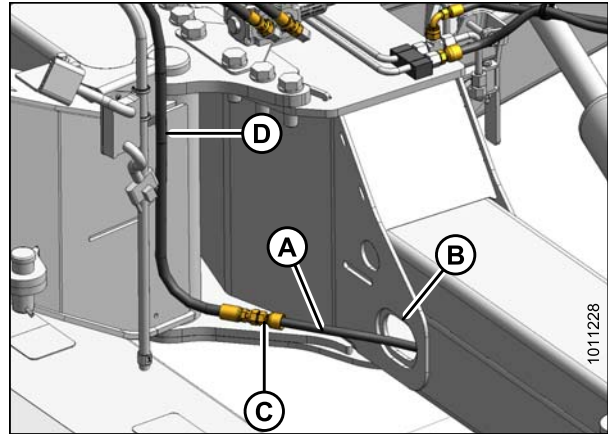


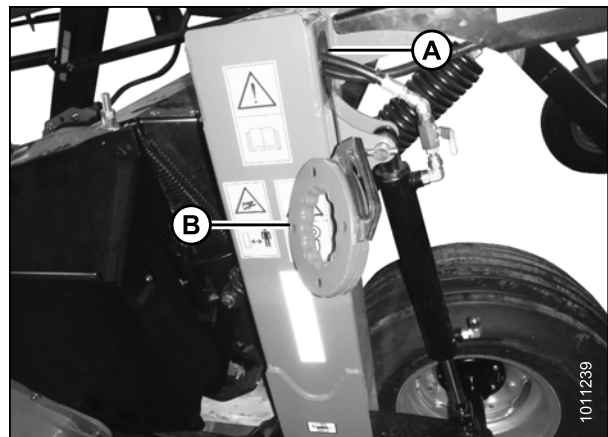
Figure 5.92: Lift Hose

UNLOADING AND ASSEMBLING THE MOWER CONDITIONER

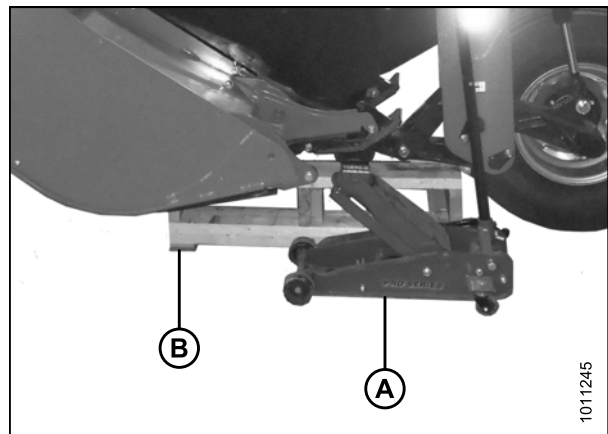
21. Feed shortest hose (A) through opening (B) in carrier frame as shown with male end (C) at hitch pivot.
22. Connect hoses (A) and (D) at hitch pivot.



23. Retrieve other end of hose at opening (A) above lift left cylinder. Use a draw tape (B) to route hose through carrier frame opening (A).



24. Open both lift cylinder lock-out valves.
25. Raise header with jack (A).
26. Close both lift cylinder lock-out valves.
27. Remove pallet (B) from under header.



UNLOADING AND ASSEMBLING THE MOWER CONDITIONER

28. Retrieve ORFS-6 x ORB-8 elbow from hardware bag.
29. Remove plug at base of lift cylinder and install elbow (A) as shown.
30. Connect hose (B) to elbow and tighten.
31. Tighten remaining connections.
32. Secure hose to cylinder with cable tie.

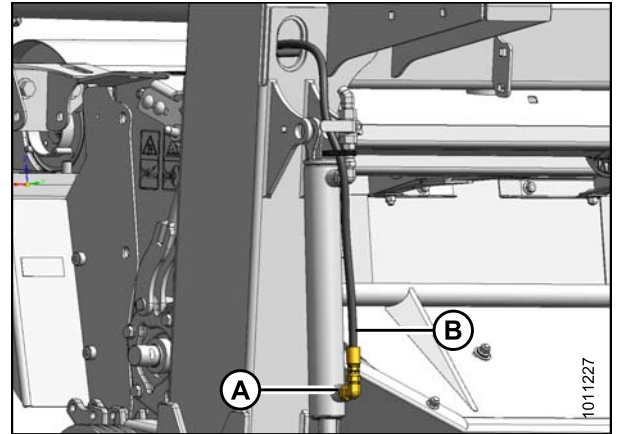


Figure 5.96: Lift Cylinder

33. Retrieve ORFS-6 x ORB-8 connector (A), ORB-8 coupler (B) and plastic cap (C) from hardware bag.
34. At forward end of hitch, install connector (A), coupling (B) and plastic cap (C) onto secondary lift hose (D). Do **NOT** attach hoses to tractor at this time.
35. Lower jack and move it away from header.

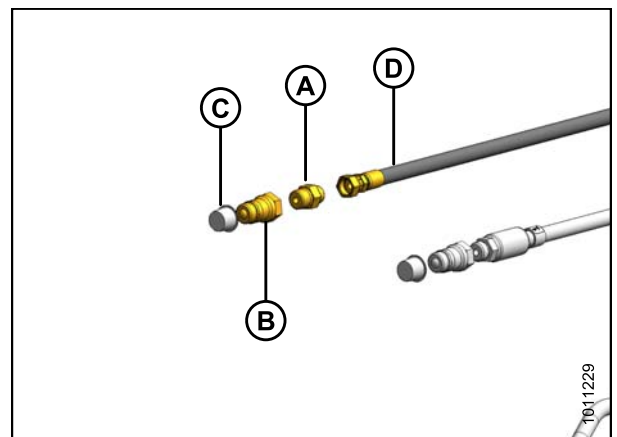


Figure 5.97: Lift Hose Fittings

Installing Electrical

Installing Light Assemblies

1. Disconnect the wiring harnesses at each light assembly. Two connectors per assembly.
2. Remove right end light (A) and left end light (B) assemblies from carrier. Retain hardware for right end light only.

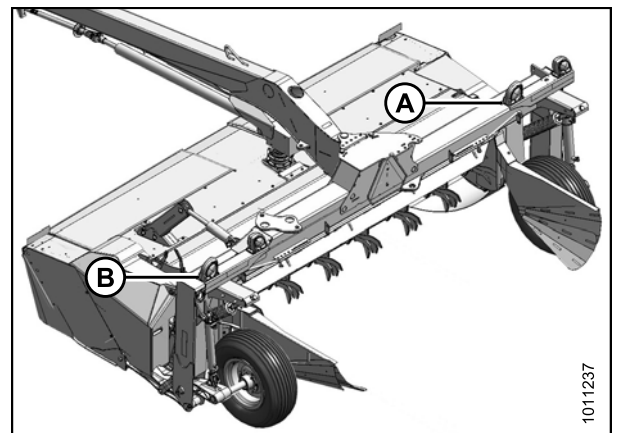


Figure 5.98: Transport Lighting

UNLOADING AND ASSEMBLING THE MOWER CONDITIONER

3. Install the right end light assembly (A) on left float spring mount with bolts (B) removed from previous step. The red (C) light should be towards rear of machine when in transport mode.
4. Remove red lamp (C) from bracket and install into pre-drilled holes next to amber lamp with existing hardware.

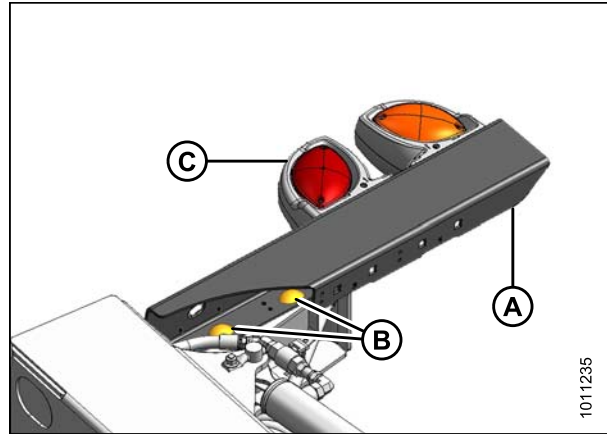


Figure 5.99: Left Side of Carrier

5. Remove lamps (A) from left light assembly bracket (B). Discard bracket and hardware.

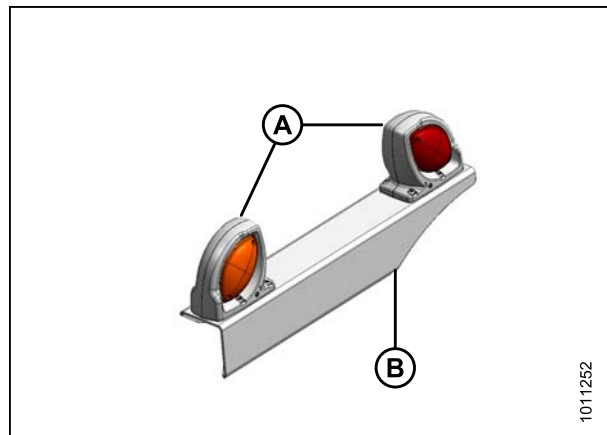


Figure 5.100: Left Side Light Assembly

6. Retrieve new light bracket (C) from shipment.
7. Install amber lamp (A) and red lamp (B) onto new bracket (C) as shown with hardware provided.

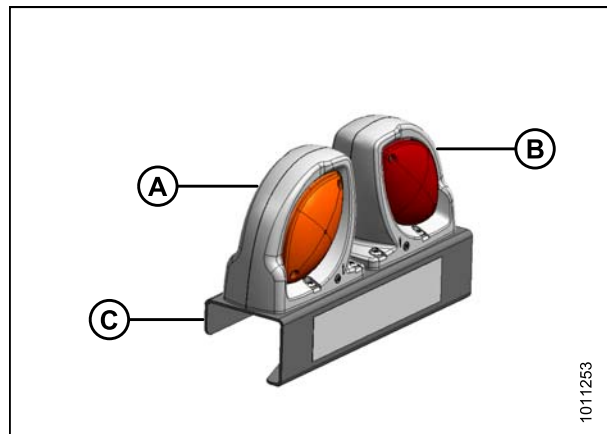


Figure 5.101: Light Assembly

UNLOADING AND ASSEMBLING THE MOWER CONDITIONER

8. Install the light assembly (A) onto header left end with two M10 x 20 carriage bolts (B) and lock nuts from shipping bag. Ensure amber lamp is toward front of header and reflector faces outboard.

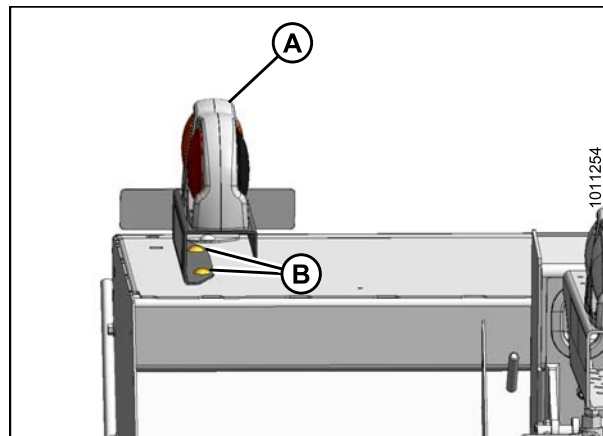


Figure 5.102: Header Left Side Lighting

9. Carefully pull existing harness from opening (B) at front of carrier. Do not disconnect harness at main connector P1.
10. Use a draw tape (A) or equivalent to route connectors P2 and P3 into opening (B) at front of carrier to opening (C) adjacent to center-link.

NOTE:

If a conditioner swap is required before delivering machine to customer, do **NOT** install wiring harness onto header. Leave it inside carrier frame and proceed to step [18.](#), [page 64.](#) Otherwise, proceed to the following step.

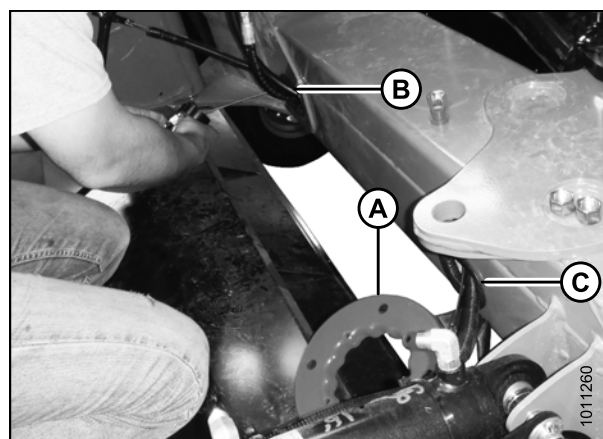


Figure 5.103: Harness Routing

11. Pull harness (A) with connectors P2 and P3 from opening (B).

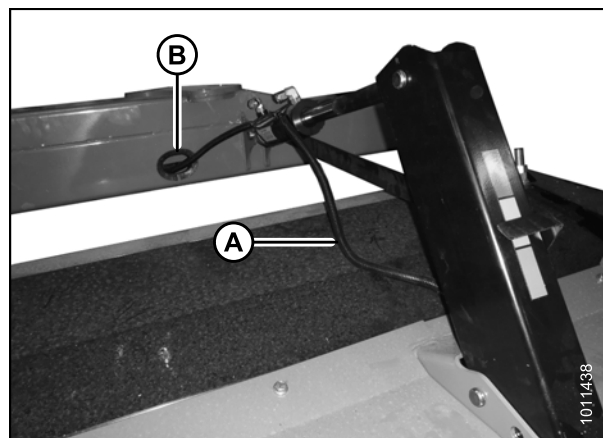


Figure 5.104: Light Harness

UNLOADING AND ASSEMBLING THE MOWER CONDITIONER

12. Route harness (A) to light (B) on header as shown.
13. Retrieve P-clips, plastic clamps and cable ties from shipping bag.
14. Remove bolts (C) on header at locations shown.
15. Secure harness (A) with P-clips and existing bolts (C), and plastic clamp (D) into existing hole.

NOTE:

Harness for 16-foot header is secured with two plastic clamps (D).

16. Secure harness (A) to light bracket with two cable ties (E).
17. Push excess harness into carrier frame.
18. Use a draw tape (A) or equivalent to route connectors P4 and P5 from opening at front of carrier to opening (B) at back.

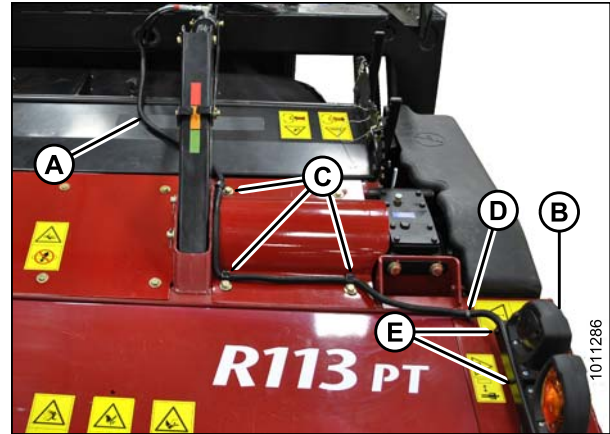


Figure 5.105: Harness Routing

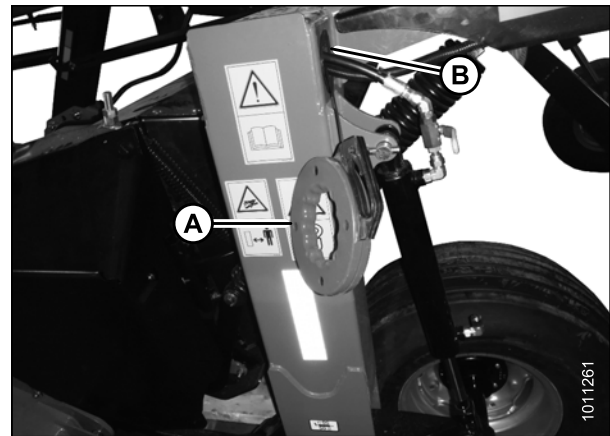


Figure 5.106: Harness Routing

19. Route harness (A) from opening into light bracket (B) and plug into light connectors.
20. Secure harness (A) to light bracket with two cable ties (C).
21. Push excess harness into carrier frame.

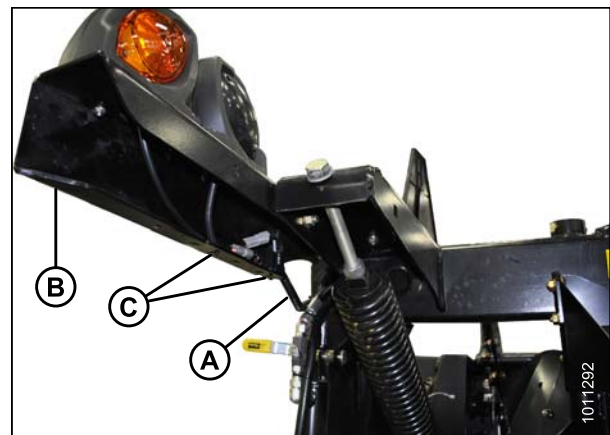


Figure 5.107: Transport Light

UNLOADING AND ASSEMBLING THE MOWER CONDITIONER

Installing Remote Control

22. Retrieve remote control box (A) with wiring harness from shipment.
23. Place control box (A) on hitch temporarily.
24. Attach remote wiring harness (B) to connector (C) at front of hitch.
25. Place box in tractor cab after mower conditioner is attached to tractor.

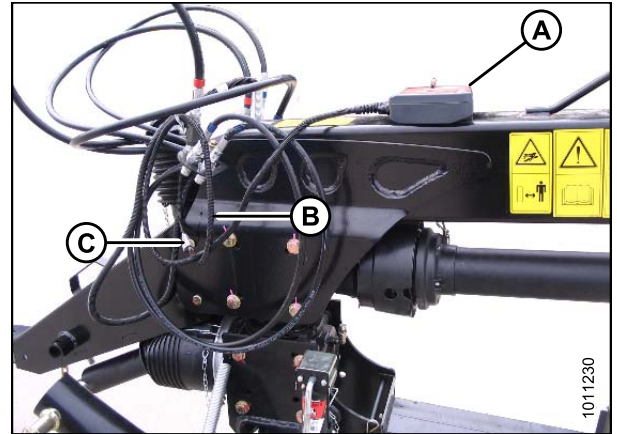


Figure 5.108: Remote Control

Installing SMV Sign

26. Retrieve SMV sign that was previously removed.
27. Remove existing bracket (A) from SMV sign and discard.

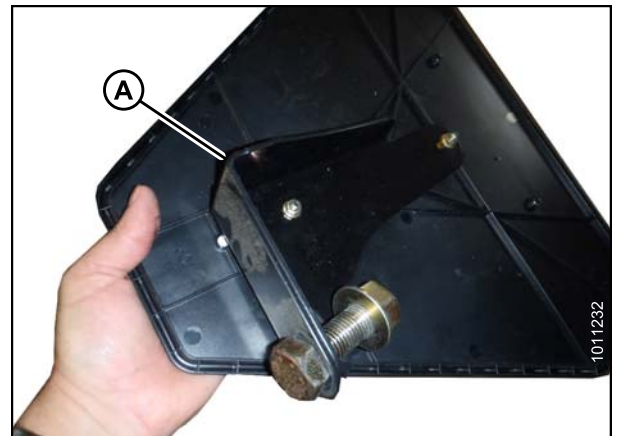


Figure 5.109: SMV Sign

28. Retrieve new bracket (A), two M12 x 30 bolts and M12 nuts from shipment bag.
29. Attach bracket (A) to left end float spring member with M12 bolts (B) and nuts.
30. Attach sign (C) to bracket and secure with three M6 lock nuts (D) provided in shipment bag.

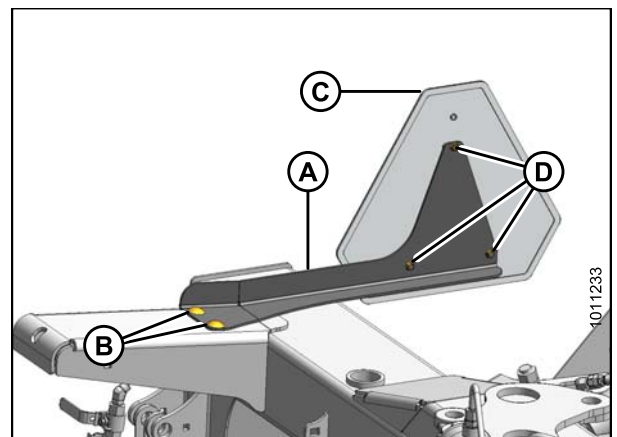


Figure 5.110: SMV Sign

5.12.2 Installing Hydraulic Center-Link

The hydraulic center-link kit is supplied in a separate shipment. Refer to instructions supplied with the kit for installation procedure.

5.12.3 Installing Tall Crop Divider

IMPORTANT:

If header will be transported on public roads in the endwise transport mode, do not install the tall crop dividers. Install the dividers after the machine is delivered to the customer.

1. Retrieve kit from shipment and install the Tall Crop Dividers (B) (one each side) in accordance with the instructions supplied with the kit. Installation hardware is included.

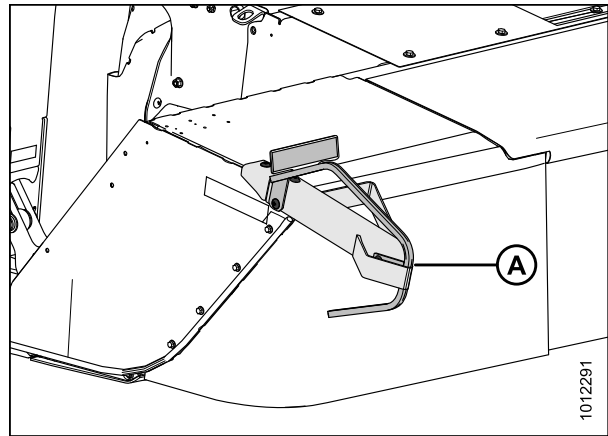


Figure 5.111: Tall Crop Divider

5.13 Setting Up The Tractor

5.13.1 Adjusting the Drawbar

CAUTION

Shut off tractor, engage parking brake, and remove key before working around hitch.

1. Adjust tractor drawbar to meet the specifications listed in Table 5.1 ASAE Standard A482 Specifications, page 67.
2. Secure the tractor drawbar so the hitch pin hole is directly below the driveline.

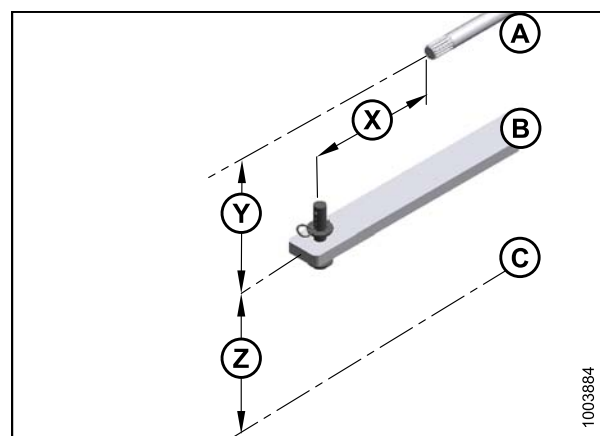


Figure 5.112: Tractor Drawbar Adjustments

A - PTO B - Tractor Drawbar C - Ground
X - Dimension X Y - Dimension Y Z - Dimension Z

Table 5.1 ASAE Standard A482 Specifications

Dimension	1000 rpm Power Take-Off	
	1-3/8 in. Diameter	1-3/4 in. Diameter
X	16 in. (406 mm)	20 in. (508 mm)
Y	7-7/8–13-3/4 in. (200–350 mm) 8 in. (203 mm) recommended	
Z	13–17 in. (330–432 mm) 16 in. (406 mm) recommended	

5.13.2 Installing Drawbar Hitch Adapter

CAUTION

Shut off tractor, engage parking brake, and remove key before working around hitch.

1. Remove hairpin (A) and pin (B).
2. If necessary, loosen four jam nuts (C), and then loosen four nuts (D) so that hitch adapter (E) will slide onto tractor drawbar (F).
3. Align hole in adapter (E) with hole in drawbar (F) and install pin (B). Secure with hairpin (A).
4. Gradually tighten the four nuts (D) to 400 ft·lbf (540 N·m).

NOTE:

Ensure hardened washers, and Class 10 nuts supplied with adapter are used.

5. Tighten four jam nuts (C).

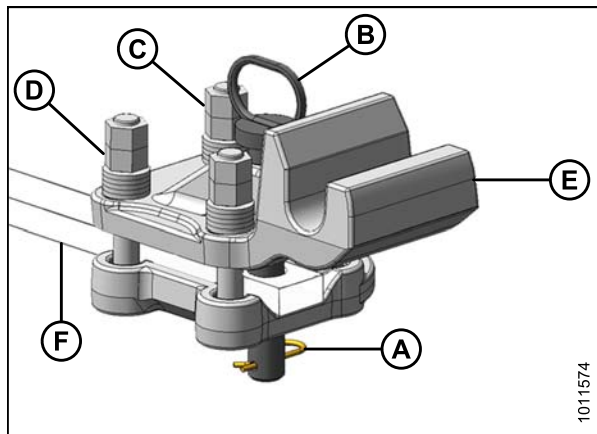


Figure 5.113: Drawbar Hitch Adapter

5.14 Attaching Mower Conditioner to the Tractor

5.14.1 Attaching with Drawbar Hitch

CAUTION

Shut off tractor, engage parking brake, and remove key before working around hitch.

1. Remove lynch pin (A) from clevis pin (B), and remove clevis pin from mower conditioner hitch.

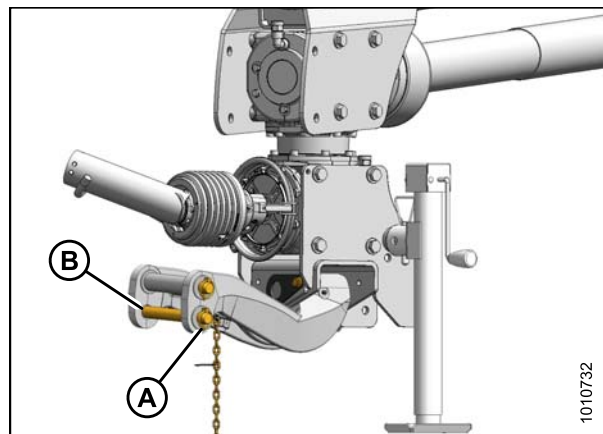


Figure 5.114: Mower Conditioner Hitch

2. Move tractor to position drawbar hitch adapter (A) under pin (B) in mower conditioner hitch. Adjust height as necessary with jack (C).
3. Shut down tractor and remove key from ignition.

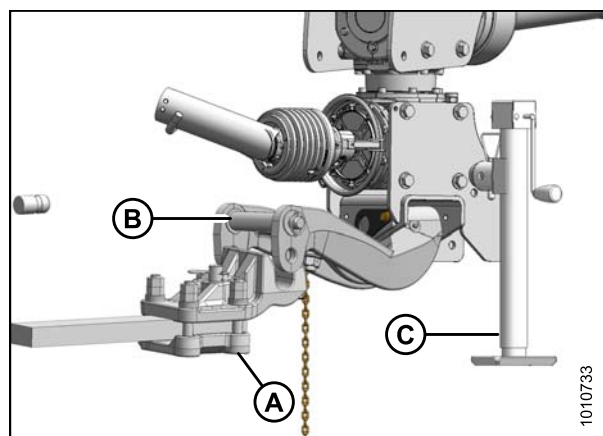


Figure 5.115: Mower Conditioner Hitch

4. Lower hitch with jack (A) so that pin (B) engages drawbar hitch adapter (C).
5. Install clevis pin (D) and secure with lynch pin (E).

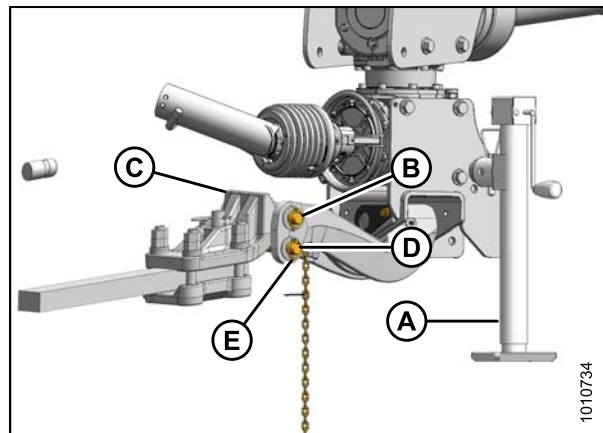


Figure 5.116: Mower Conditioner Hitch

UNLOADING AND ASSEMBLING THE MOWER CONDITIONER

6. Position driveline (A) onto tractor power take-off (PTO).
7. Pull back collar (B) on driveline (A), and push driveline until it locks. Release collar.
8. Route safety chain (C) from mower conditioner through chain support (D) on drawbar hitch adapter and around tractor drawbar support. Lock hook on chain.

NOTE:

If the tractor has a three-point hitch, lift the links as far as possible to prevent damage to the hitch.

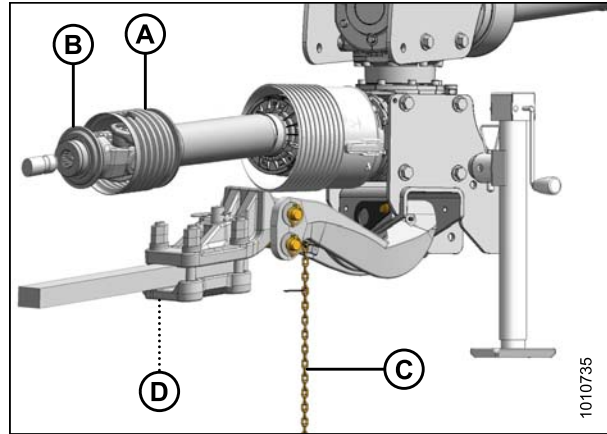


Figure 5.117: PTO Driveline

9. Raise jack (A), and remove pin (B).

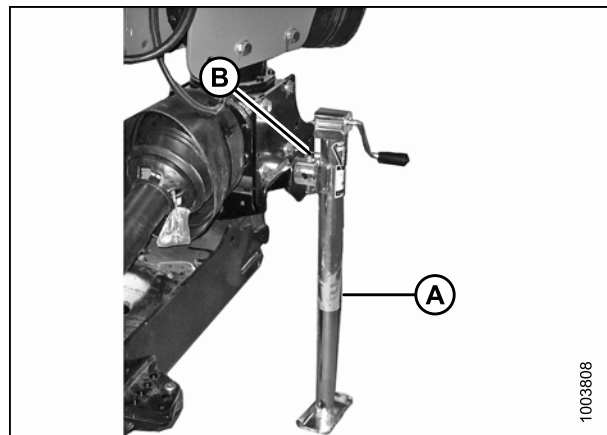


Figure 5.118: Hitch Jack

10. Move jack (A) to storage position on top of hitch, and secure with pin (B).
11. Proceed to [5.14.3 Connecting Hydraulics, page 73](#).

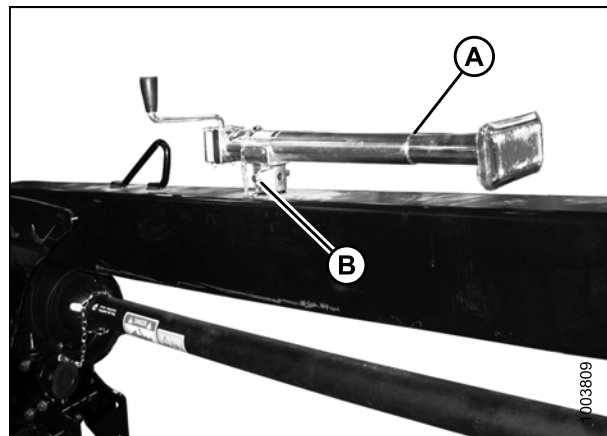


Figure 5.119: Jack Storage

5.14.2 Attaching with Two-Point Hitch

Follow these steps to attach the Category II, IIIN, and III two-point hitches:

CAUTION

Shut off tractor, engage parking brake, and remove key before working around hitch.

1. Position tractor and align tractor hitch arms (A) with hitch adapter (B). Shut off tractor and remove key.
2. Remove lynch pins (C) and washers from hitch adapter.

NOTE:

If tractor is equipped with a Category III hitch, use a bushing (MD #224322) on each hitch pin (D).

3. Secure arms (A) onto adapter pins (D) with lynch pins (C).
4. Install anti-sway bars (not shown) on tractor hitch to stabilize lateral movement of hitch arms (A). Refer to your tractor operator's manual.
5. Check distance (C) between tractor power take-off (PTO) shaft (A) and mower conditioner hitch gearbox shaft (B) (without the front half of the driveline attached).
6. Ensure that measurement does NOT exceed the dimensions listed in Table 5.2 *Distance between Hitch Gearbox and Tractor PTO*, page 71.

Table 5.2 Distance between Hitch Gearbox and Tractor PTO

Driveline Shaft Size	Distance (C)
1-3/8 in. (34 mm)	27 in. (750 mm)
1-3/4 in. (43 mm)	31 in. (800 mm)

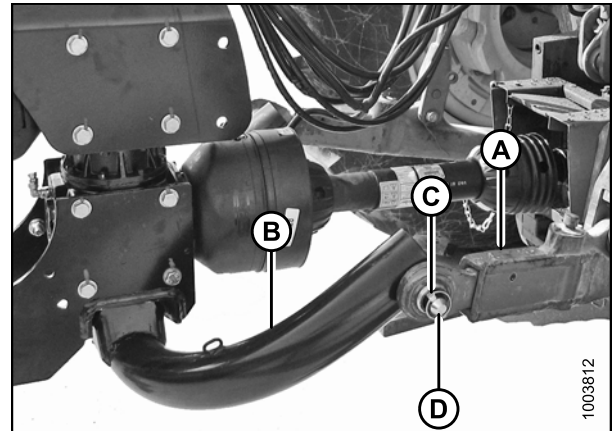


Figure 5.120: Two-Point Hitch Configuration

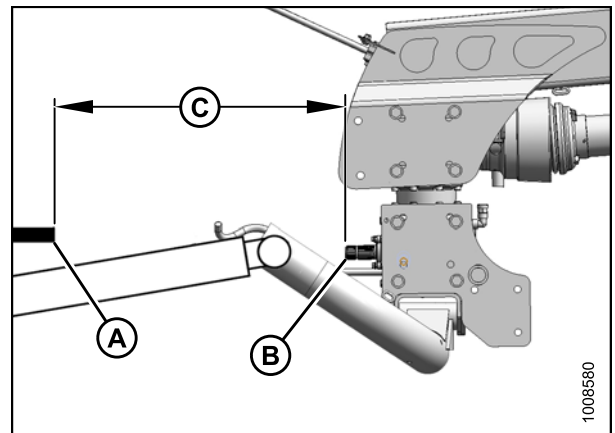


Figure 5.121: Allowable Driveline Length

UNLOADING AND ASSEMBLING THE MOWER CONDITIONER

7. Position driveline (A) onto tractor PTO shaft making sure that driveline is approximately level.
8. Pull back collar on driveline (A) and push driveline until it locks. Release collar.

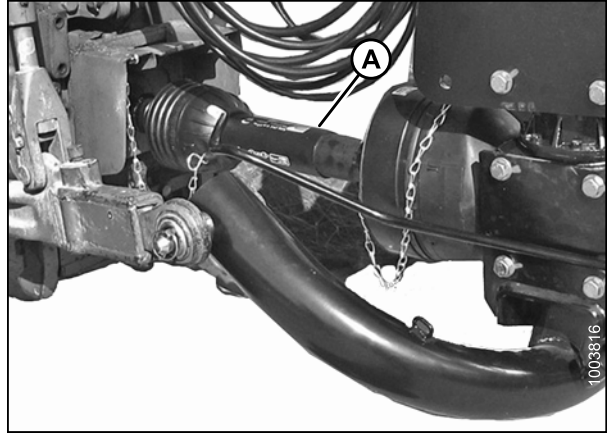


Figure 5.122: Mower Conditioner Driveline Attached to Tractor PTO

9. Start tractor and raise hitch so that stand (A) is off the ground. Shut down tractor and remove key from ignition.
10. Remove inner hairpin (B) and pull lock (C) to release stand.

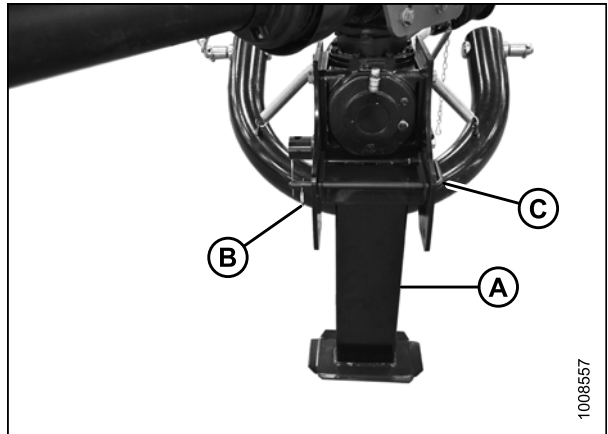


Figure 5.123: Hitch Stand

11. Raise stand (A), rotate lock (B) clockwise to vertical position, and re-engage lock (B) to hold the stand in the storage location.

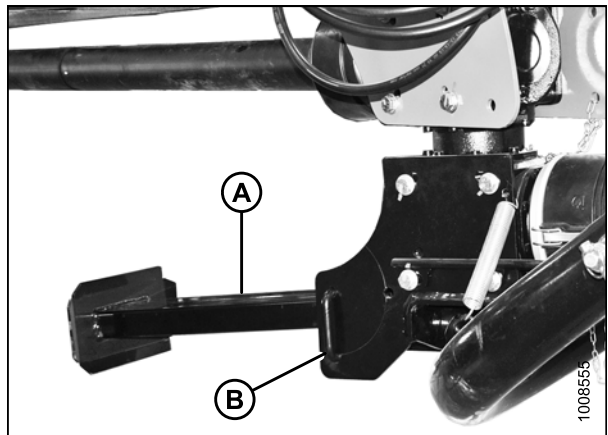


Figure 5.124: Hitch Stand

UNLOADING AND ASSEMBLING THE MOWER CONDITIONER

12. Secure lock with lynch pin (A).

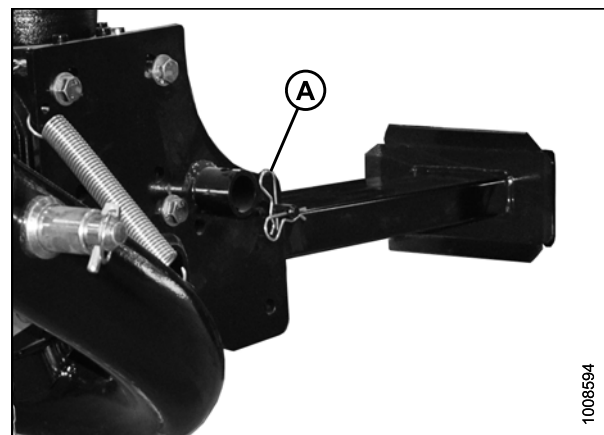


Figure 5.125: Hitch Stand

5.14.3 Connecting Hydraulics

WARNING

Do NOT use remote hydraulic system pressures over 3000 psi (20,684 kPa). Check your tractor operator's manual for remote system pressure.

NOTE:

Refer to colored bands on hoses to identify lift, steering/transport, and tilt hose sets.

Table 5.3 Hydraulic System Hoses

System	Hose	Tractor Hydraulics
Lift	A (1 hose standard, 2 hoses with ETO installed)	Control 1
Steering and Transport	B (2 hoses)	Control 2
Mower Conditioner Tilt	C (2 hoses)	Control 3



Figure 5.126: Hydraulic Connections

1. Connect one **LIFT** cylinder hose (A) (two hoses required if endwise transport system installed) to the tractor hydraulic receptacles. Refer to Table [5.4 Lift System](#), [page 73](#).

Table 5.4 Lift System

Control Lever Position	Cylinder Movement	Mower Conditioner Movement
Forward	Retract	Lower
Backward	Extend	Raise

UNLOADING AND ASSEMBLING THE MOWER CONDITIONER

2. Connect two **STEERING** cylinder hoses (B) to the tractor hydraulic receptacles. Refer to Table 5.5 *Steering and Transport System*, page 74

Table 5.5 Steering and Transport System

Control Lever Position	Cylinder Movement	Mower Conditioner Direction
Forward	Extend	Right
Backward	Retract	Left

3. Connect two mower conditioner **TILT** cylinder hoses (C) to the tractor hydraulic receptacles. Refer to Table 5.6 *Mower Conditioner Tilt System*, page 74. (Not required with mechanical center-link.)

Table 5.6 Mower Conditioner Tilt System

Control Lever Position	Cylinder Movement	Mower Conditioner Movement
Forward	Retract	Lower
Backward	Extend	Raise

5.14.4 Connecting Electrical Wiring Harness

1. Ensure that Pin #4 (A) in the tractor receptacle is **NOT** continuously energized (refer to your tractor operator's manual, and if required, remove the appropriate fuse.

IMPORTANT:

Older model tractors may have Pin #4 (A) energized as an accessory circuit; however, pin position (B) is used to supply power to the mower conditioner's brake lights.

2. Connect the mower conditioner wiring harness connector (C) to the tractor receptacle.

NOTE:

The connector is designed to fit tractors equipped with a round seven-pin receptacle (SAE J560).

3. If installed, retrieve endwise transport option control switch box (A) from temporary location on mower conditioner hitch, and place in tractor cab. Route harness through hose support.
4. Make the necessary connection from the control switch box to tractor power source.

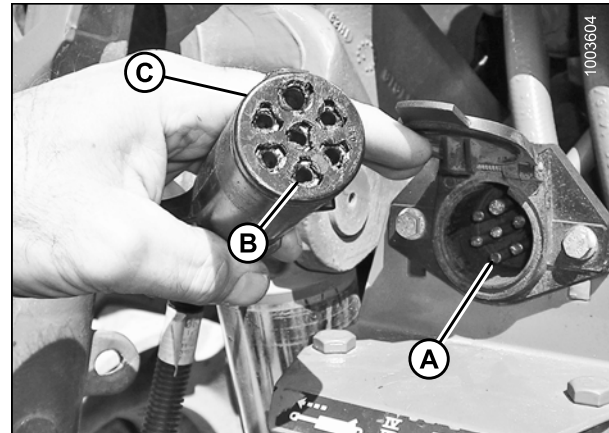


Figure 5.127: Electrical Wiring Harness and Receptacle

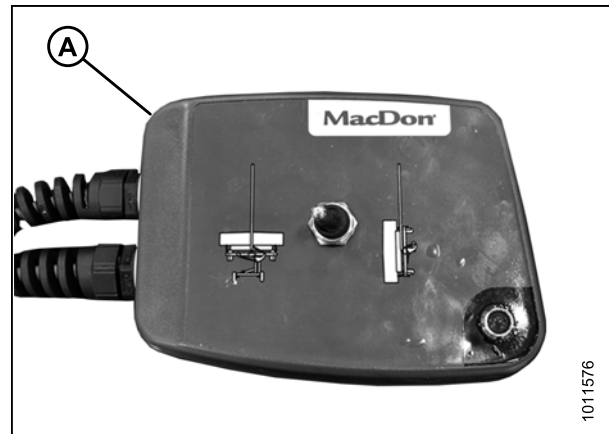


Figure 5.128: Control Switch

5.15 Removing Mower Conditioner from Shipping Pallet

DANGER

Be sure all bystanders are clear of the machine before raising or lowering mower conditioner.

1. Activate the tractor cylinder control lever (A) to lower the mower conditioner wheels and raise it off the shipping pallet as follows:
 - a. To raise mower conditioner, move cylinder control lever (A) backwards to position (C).
 - b. To lower mower conditioner, move cylinder control lever (A) forwards to position (B).
2. Use a chain or forklift to remove shipping pallet (A) from underneath the mower conditioner.

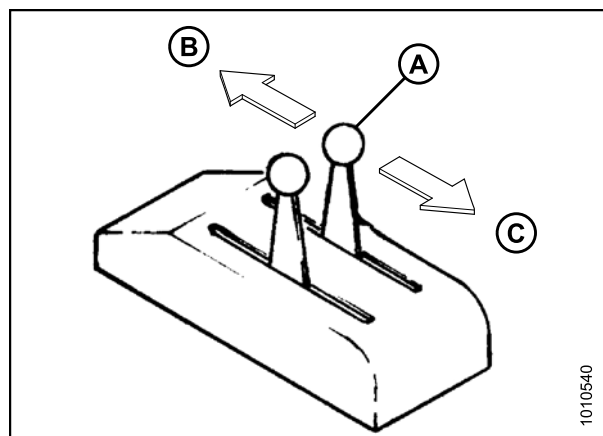


Figure 5.129: Tractor Cylinder Control Lever

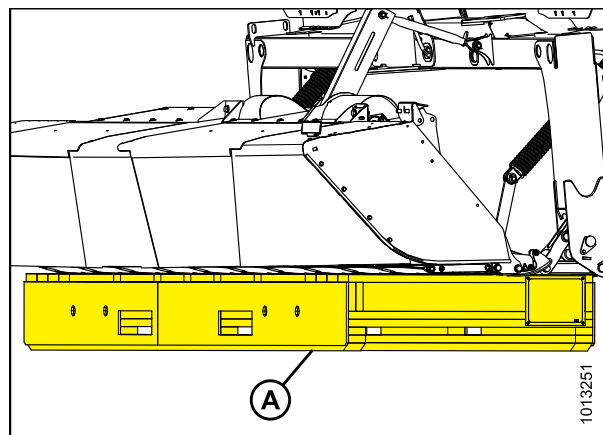


Figure 5.130: Mower Conditioner on Shipping Pallet

6 Changing the Conditioner

NOTE:

This section applies only to machines that require a conditioner change prior to delivery to the customer. If the change is not required, proceed to [7 Lubricating the Mower Conditioner, page 91](#).

The R113 and R116 Pull-Type Mower Conditioners are factory equipped with either a finger conditioner or one of two types of roll conditioners. Conditioners can be changed before or after delivery, and this instruction describes the procedure (disregard this step if the mower conditioner will be delivered to the customer as is). These instructions apply to both types of conditioners, but exceptions are identified where applicable.

6.1 Separating Header from Carrier

Before removing or installing the conditioner, the header and carrier must be separated and the mower conditioner must be attached to a tractor.

1. Start tractor and center mower conditioner behind tractor.
2. Raise header fully, set header center link to mid-position, and shut down the tractor. Remove key from ignition.

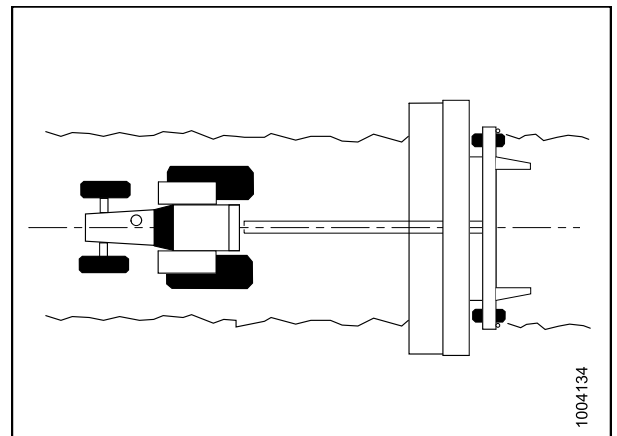


Figure 6.1: Hitch Aligned to Tractor

NOTE:

The float adjuster bolt is easier to turn when the header is in the raised position.

3. Close header lift cylinder lock-out valves (A).
4. Loosen jam nut (B) on adjuster bolt.
5. Turn out adjuster bolt (C) on each float spring until 17-3/4 in. (400 mm) of thread is exposed.

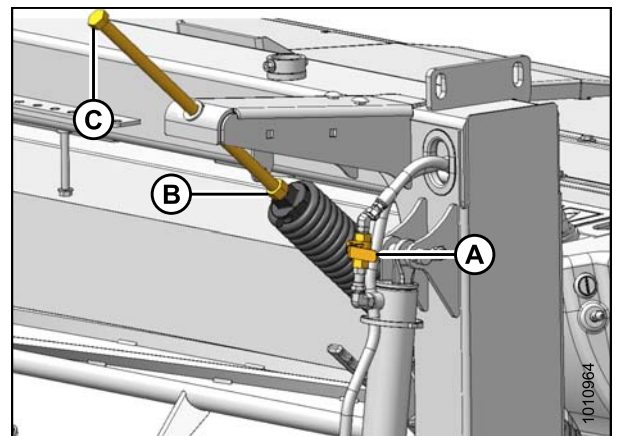


Figure 6.2: Float Adjuster

CHANGING THE CONDITIONER

6. Open lift cylinder lock-out valves (A) (handle is vertical).
7. Start tractor and fully lower header.
8. Shut down tractor and remove key from ignition.
9. Check that float adjuster bolts (B) are loose. Back off adjuster bolts as required.
10. Remove float adjuster bolt (B) from spring on **LEFT** side only. Keep spring from dropping when bolt is removed.

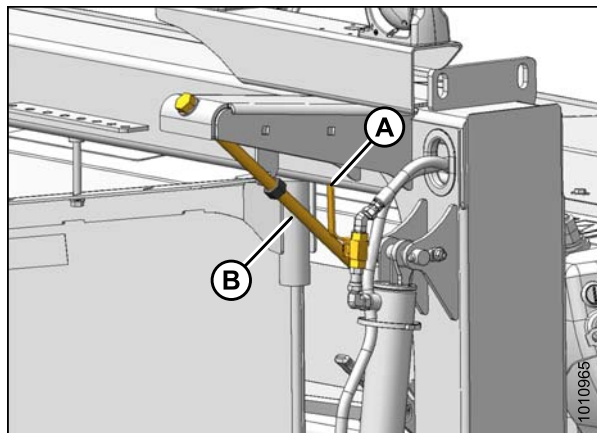


Figure 6.3: Float Adjuster

11. Remove left and right driveshields (A). Refer to [7.1 Opening Driveshields, page 91](#).

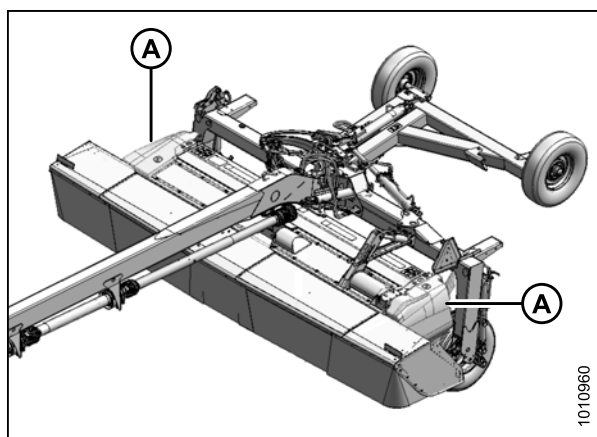


Figure 6.4: Driveshields

12. Remove conditioner drive belt as follows:
 - a. Back off jam nut and tensioner nut (B) on belt idler until belts (A) are loose and can be removed.
 - b. Remove the four belts.

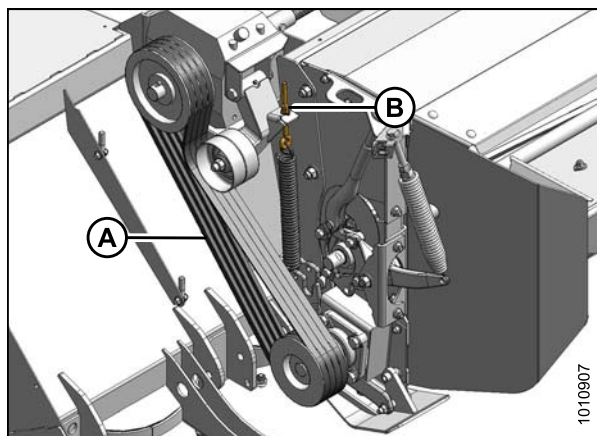


Figure 6.5: Conditioner Drive

CHANGING THE CONDITIONER

13. Remove the M20 nut (A), washers, and hex head bolt (B) securing carrier leg (C) and float spring arm (D) to header at right end of header.
14. Move float spring arm (D) clear of conditioner.

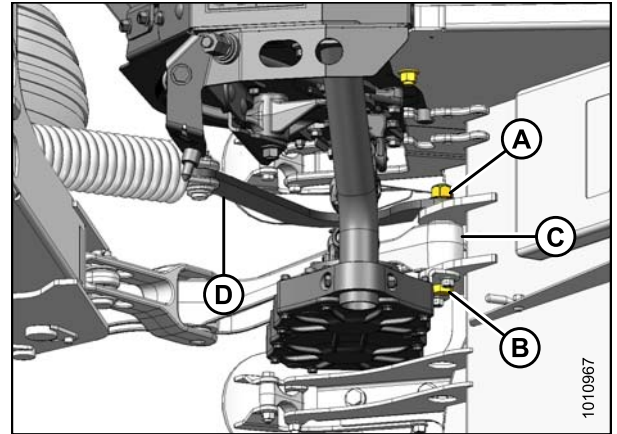


Figure 6.6: Right Side of Carrier

15. Remove the M20 nut (A), washers, and hex head bolt (B) securing carrier leg (C) to header at left end of header.

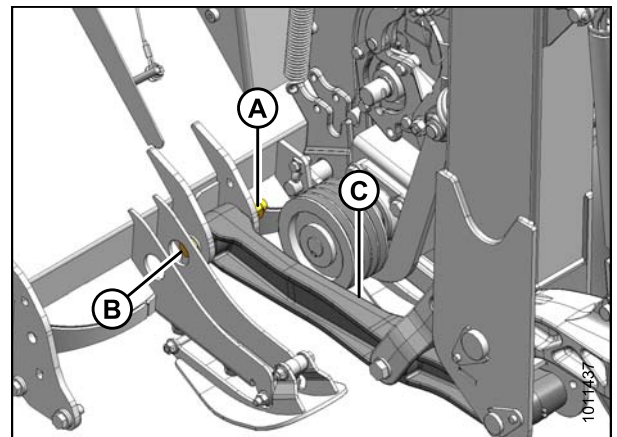


Figure 6.7: Left Side of Conditioner

16. Remove forward pin (A) connecting center-link (B) to anchor (C) and separate center-link from anchor. Reinstall pin in anchor to store.
17. Remove forward pin (D) and four washers (E) attaching indicator links (F) to anchor (B). Reinstall pin and washers in anchor to store.
18. Secure center-link and indicator links to carrier frame with a strap or wire to prevent them from contacting the header during separation.

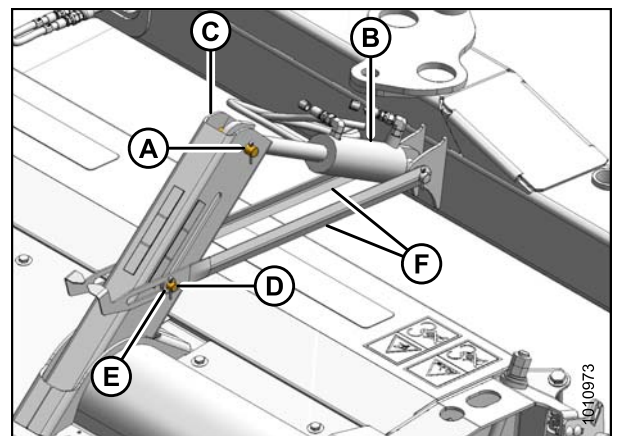


Figure 6.8: Center-Link and Indicator Links

CHANGING THE CONDITIONER

19. Start tractor, slowly back carrier (A) off header (B), and maneuver carrier away from header.

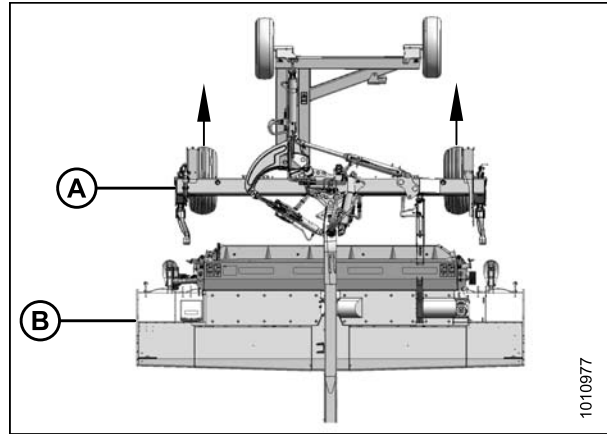


Figure 6.9: Carrier Removed from Header

6.2 Removing the Conditioner

CAUTION

Ensure spreader bar is secured to the forks so that it cannot slide off the forks or towards the mast while detaching the conditioner from the header.

1. Attach a spreader bar (A) to a forklift or equivalent, and attach chains to lugs (B) on conditioner. Use a chain rated for overhead lifting with a minimum working load of 2500 lb (1135 kg).

DANGER

To prevent the conditioner from falling backward, ensure lifting chains are secure and tight. Failure to do so may result in death or serious injury.

2. Move forward baffle adjustment handle (A) to fully lowered position as shown.
3. Move rear baffle adjustment handle (B) to fully raised position as shown.

NOTE:

Access to upper bolts (C) is easiest from the rear of the conditioner.

4. Lift conditioner slightly forward to take load off bolts (A) and to hold the conditioner after the bolts are removed. Retain hardware for reinstallation.

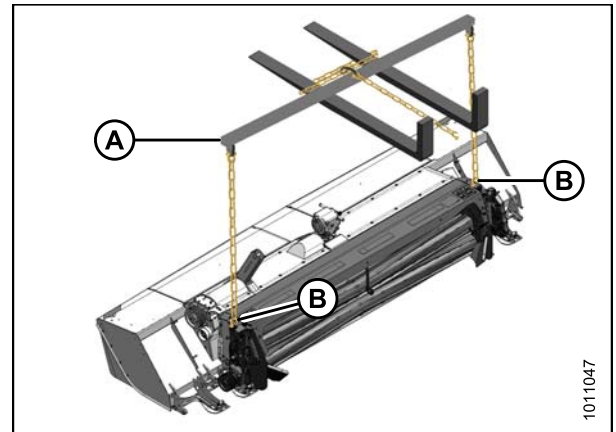


Figure 6.10: Spreader Bar

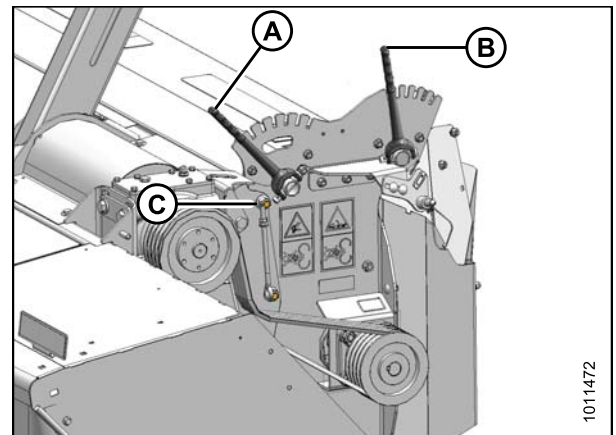


Figure 6.11: Left Side of Conditioner

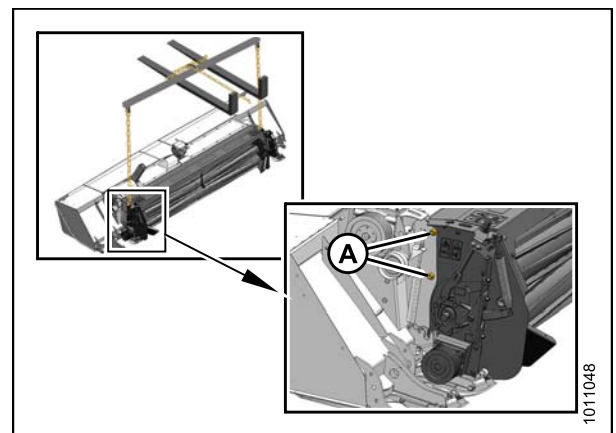


Figure 6.12: Left Side of Conditioner – Right Side Similar

CHANGING THE CONDITIONER

5. Remove two M16 hex head bolts (A) from each side of conditioner that secure it to header

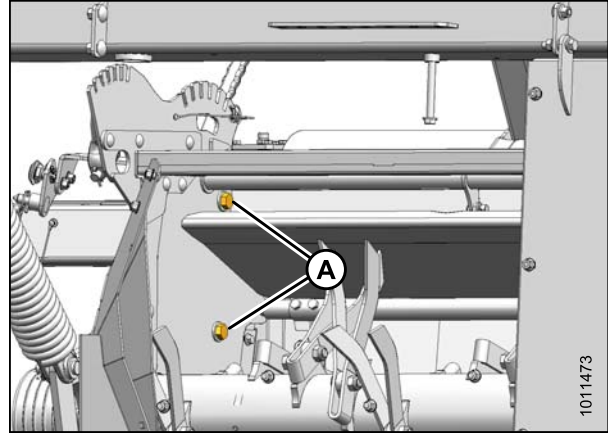


Figure 6.13: Left Side of Conditioner – Right Side Similar

CAUTION

Stand clear when detaching the conditioner.

6. Lift conditioner (A) off header (B), and move it away from work area.

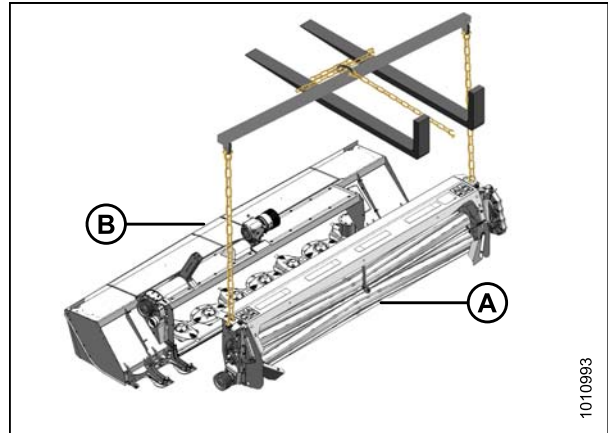


Figure 6.14: Conditioner Lift

6.3 Installing the Conditioner

CAUTION

Ensure spreader bar is secured to the forks so that it cannot slide off the forks or towards the mast while detaching the conditioner from the header.

1. Attach a spreader bar (A) to a forklift or equivalent and attach chains to lugs (B) on conditioner. Use a chain rated for overhead lifting with a minimum working load of 2500 lb (1135 kg).
2. Lift conditioner (A) and position it into header opening.
3. Carefully align pin (A) at each end of conditioner with lug (B) on header, and lower conditioner so that pins (A) engage lugs (B) on header.

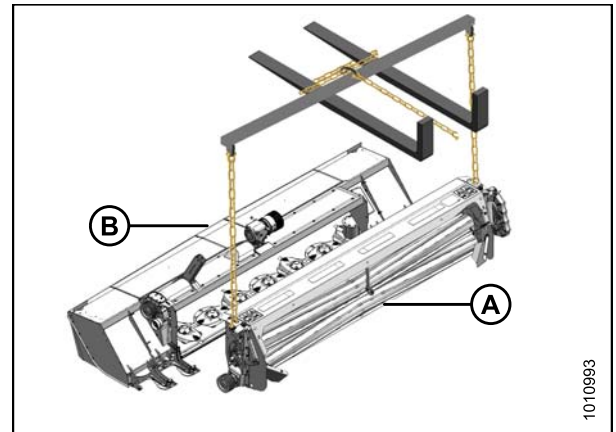


Figure 6.15: Conditioner Lift

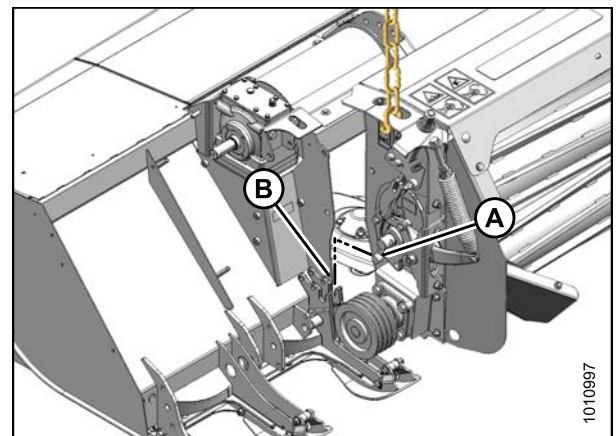


Figure 6.16: Conditioner Pins

4. Align mounting holes and install four M16 x 40 hex head bolts (A) with heads facing inboard (two per side). Secure with M16 center lock flanged nuts and torque to 126 lbf·ft (170 N·m).
5. Remove lifting chains from conditioner and move lifting device clear of work area.
6. If necessary, install conditioner drive components. Refer to [6.3.1 Installing Conditioner Drive, page 84](#).

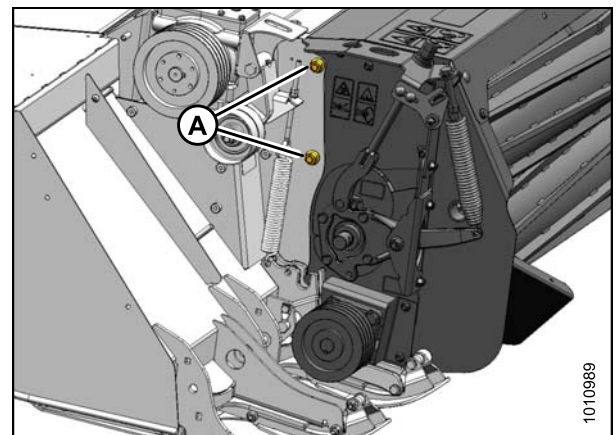


Figure 6.17: Left Side of Conditioner – Right Side Similar

6.3.1 Installing Conditioner Drive

This procedure describes the installation of the conditioner drive components on a machine that was originally supplied with no conditioner.

1. Retrieve bag of following parts from conditioner shipment:
 - Shaft Key
 - Pulley
 - Bushing with Three M10 Bolts
 - Tensioner Assembly
 - M16 Hex Head Bolt
 - M16 Nut
 - Two M10 Nuts
 - Eye Bolt
 - Hardened Washer
 - Spring
2. Remove two screws (A) from cover (B) and remove cover from gearbox shaft. Retain parts for future use.

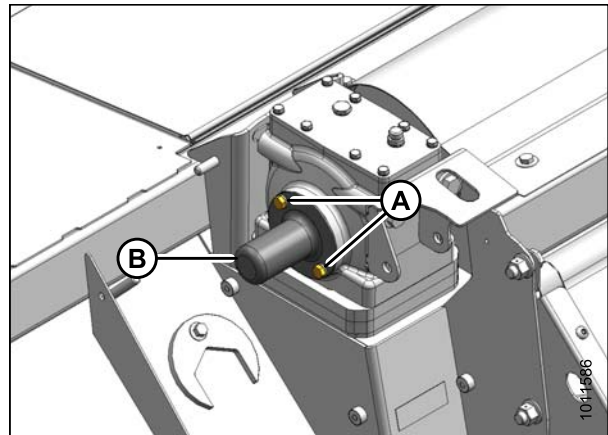


Figure 6.18: Shaft Cover

CHANGING THE CONDITIONER

3. Assemble pulley (A) and bushing (B) onto gearbox shaft with key (C).
4. Install three M10 hex head bolts (D) through bushing (B) into pulley (A).
5. Tighten bolts (D) while maintaining 7/16 in. (11 mm) dimension (E) between pulley (A) and gearbox (F). Torque bolts to 25–29 lbf·ft (34–39 N·m).

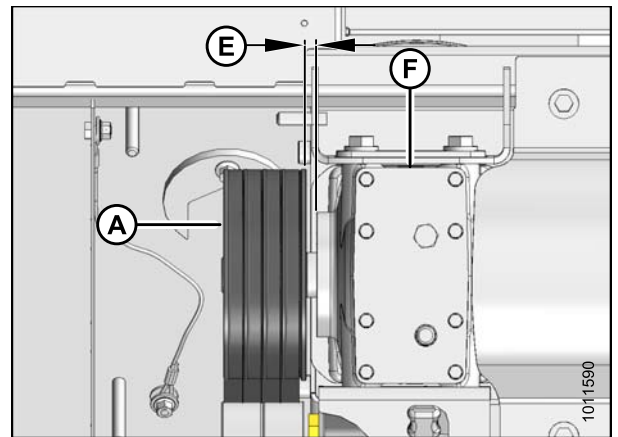
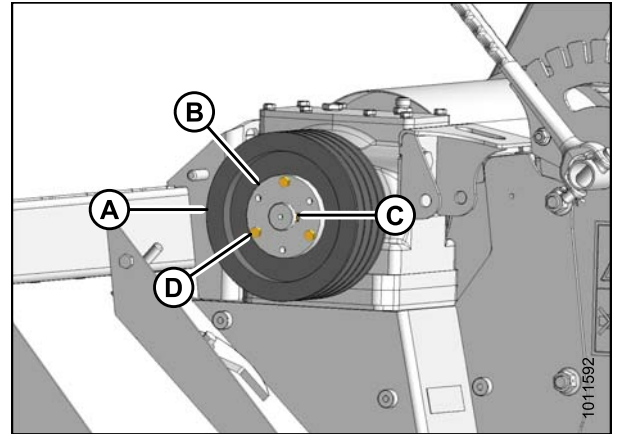


Figure 6.19: Drive Pulley

6. Position tensioner assembly (A) as shown and secure with M16 x 120 bolt (B) and nut (C). Torque nut to 35–40 lbf·ft (47–54 N·m).
7. Install spring (D) onto frame [rear hole (E) for finger conditioner, forward hole (F) for roll conditioner].
8. Install eyebolt (G) onto tensioner (A) and spring (D). Secure eyebolt with hardened washer (H) and two M10 nuts (I).

NOTE:

Conditioner drive belt will be installed after the carrier and header are re-attached.

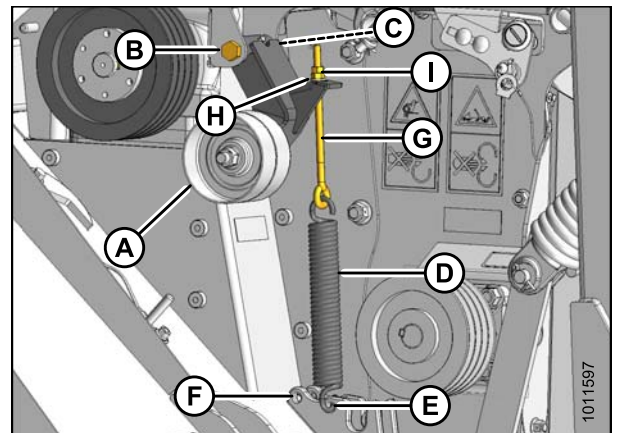


Figure 6.20: Tensioner

6.4 Removing Shield: No Conditioner

CAUTION

Ensure spreader bar is secured to the forks so that it cannot slide off the forks or towards the mast while detaching the shield from the header.

1. Attach a spreader bar (A) to a forklift or equivalent, and attach chains to openings (B) on shield. Use a chain rated for overhead lifting with a minimum working load of 2500 lb (1135 kg).

DANGER

To prevent the shield from falling backward, ensure lifting chains are secure and tight. Failure to do so may result in death or serious injury.

2. Remove two M16 hex head bolts (A) from each side of shield that secure it to header. Lift shield slightly forward to take load off bolts and to hold the shield after the bolts are removed. Retain hardware for reinstallation.

CAUTION

Stand clear when detaching the shield.

3. Lift shield (A) off header (B), and move it away from work area.

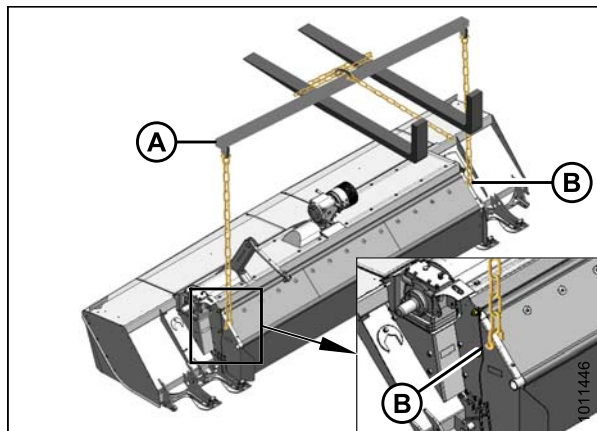


Figure 6.21: Spreader Bar

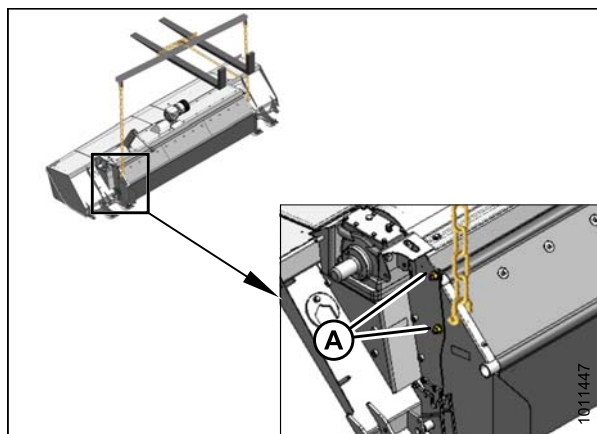


Figure 6.22: Left Side of Shield Shown – Right Side Similar

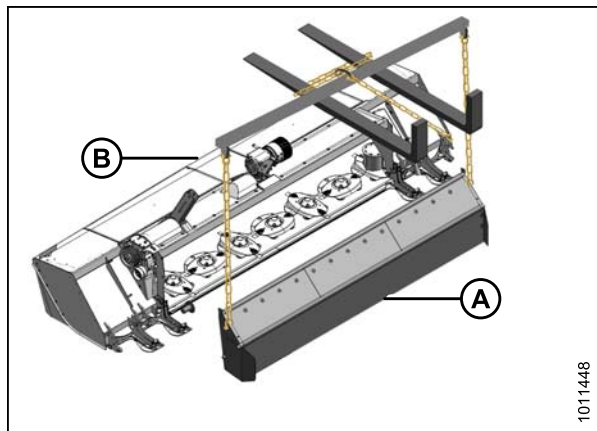


Figure 6.23: Shield

6.5 Installing Shield: No Conditioner

CAUTION

Ensure spreader bar is secured to the forks so that it cannot slide off the forks or towards the mast while installing the shield.

1. Attach a spreader bar (A) to a forklift or equivalent and attach chains to openings (B) on shield. Use a chain rated for overhead lifting with a minimum working load of 2500 lb (1135 kg).
2. Lift shield (C) and position it into header opening.
3. Carefully align pin (A) at each end of shield with lug (B) on header, and lower shield so that pins (A) engage lugs (B) on header.

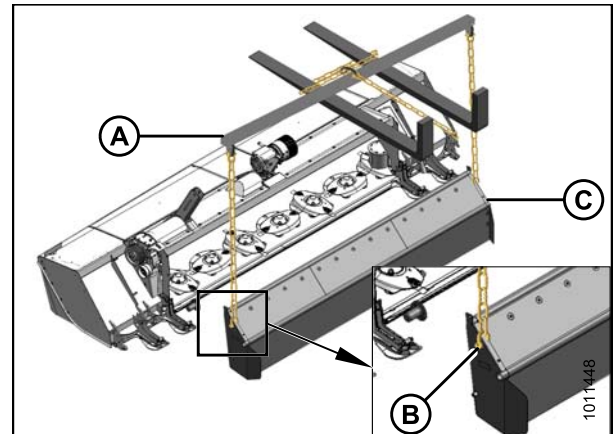


Figure 6.24: Spreader Bar

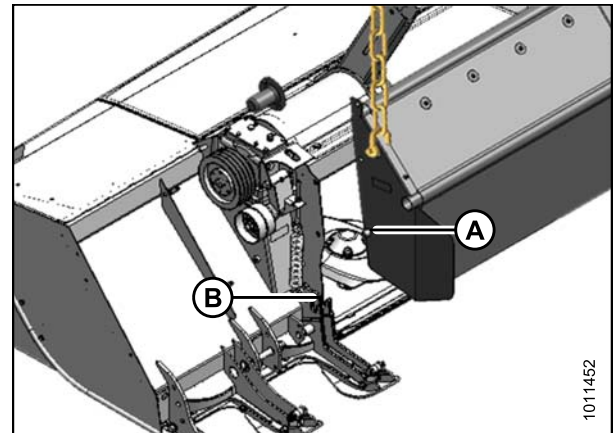


Figure 6.25: Conditioner Pins

4. Align mounting holes and install four M16 x 40 hex head bolts (A) (two per side)(heads inside shield). Secure with M16 center lock flanged nuts and torque to 126 lbf·ft (170 N·m).
5. Remove lifting chains from shield and move lifting device clear of work area.
6. Remove shipping wire from curtains (B) and pull down.
7. Remove pulley and bushing from gearbox (C) and replace with shaft cover (D). Attach cover (D) with two M10 x 25 hex head bolts (E) and washers.

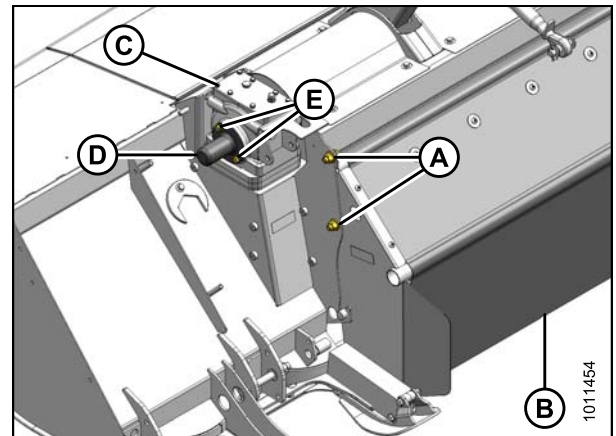


Figure 6.26: Left Side Shown – Right Side Similar

6.6 Assembling Header and Carrier

The carrier must be attached to a tractor for the header and carrier to be assembled.

1. Start tractor and maneuver carrier (A) directly behind the mower conditioner (B) so carrier legs line up with the header attachment points.
2. Drive slowly forward to engage the carrier legs (C) into the header attachment brackets.

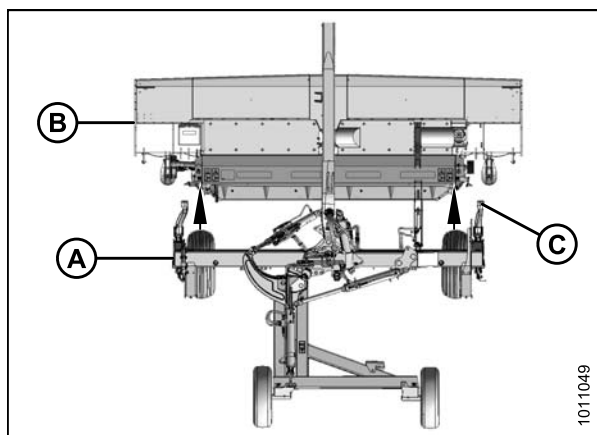


Figure 6.27: Carrier Aligned with Mower Conditioner

3. Align left side carrier leg (A) with header brackets, and install M20 x 40 bolt (B) with hardened washer (C).
4. Install three hardened washers (D) and flanged lock nut (E) on bolt (B).
5. Torque bolt (B) to 250 lbf·ft (339 N·m).

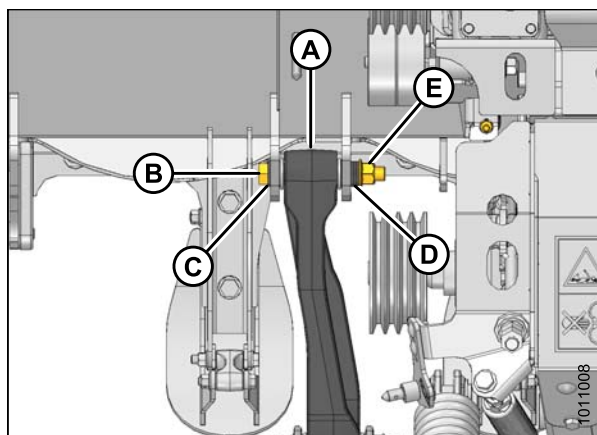


Figure 6.28: Left Leg

6. Align right side carrier leg (A) with header brackets, and install M20 x 40 bolt (B) with hardened washer (C).
7. Install hardened washer (D), spacer (E), float tension arm (F), and flanged lock nut (G) on bolt (B).
8. Torque bolt (B) to 250 lbf·ft (339 N·m).

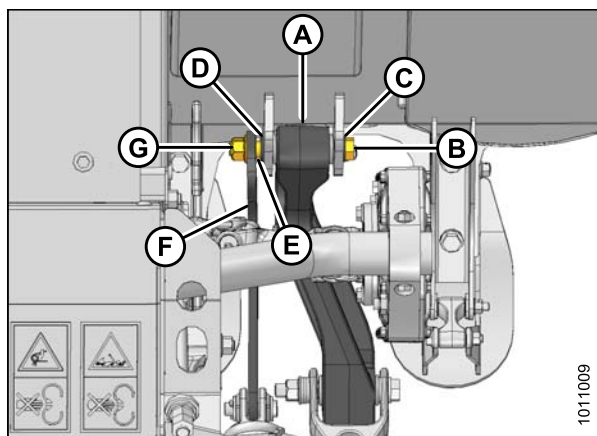


Figure 6.29: Right Leg

CHANGING THE CONDITIONER

9. Undo strapping or wire supporting driveline to hitch (D), and connect driveline (E) to header drive gearbox. Refer to [5.6 Attaching Aft Driveline, page 36](#).
10. Remove hex head bolts (A) and spacers (B) from gearbox.
11. Undo strapping or wire supporting steering arm to hitch, and position steering arm weldment (C) on gearbox.
12. Secure steering arm to gearbox with spacers (B) and hex head bolts (A). Apply red Loctite® to front holes and torque bolts to 150 lbf-ft (203 N·m).

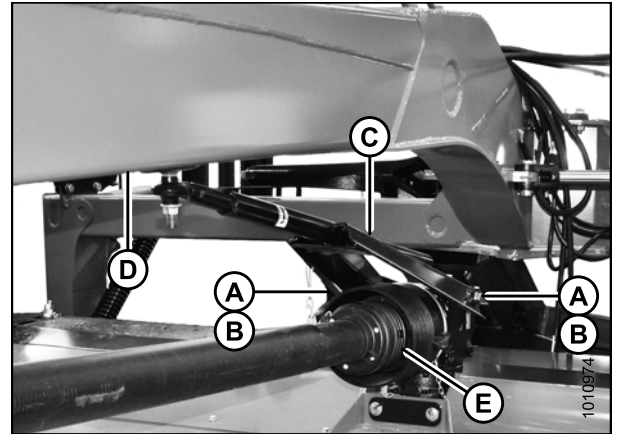


Figure 6.30: Aft Driveline and Steering Arm

13. Undo strapping or wire securing center-link (B) and indicator links (F) to carrier frame.
14. Remove pins and hardware from anchor (C).
15. Attach center-link (B) to anchor (C) with clevis pin (A) and secure with cotter pin.
16. Attach indicator links (F) to anchor with clevis pin (D) and washers (E). Install washers (E) on both sides of each indicator link (F).

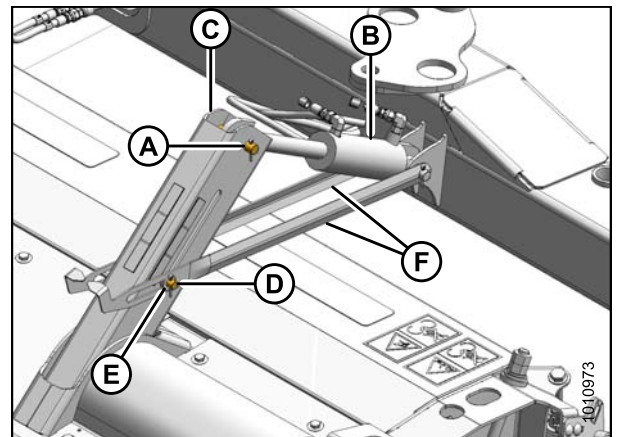


Figure 6.31: Center-Link and Indicator Links

NOTE:

Ensure proper pulley configuration installation—large pulley installed onto gearbox for roll conditioner, and small pulley installed onto gearbox for finger conditioner.

17. Install conditioner drive belts (A) onto pulleys.
18. Check that tensioner spring is installed at correct location:
 - Hole (D) for roll conditioner
 - Hole (E) for finger conditioner
19. Tighten idler tensioner nut (C) until spring length (B) measures 14-3/8 in. (365 mm).
20. Tighten jam nut.

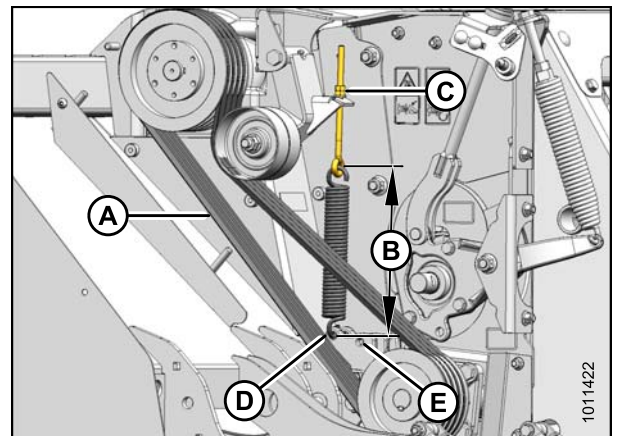


Figure 6.32: Conditioner Drive

CHANGING THE CONDITIONER

21. Check that lift cylinder lock-out valves (A) are open.
22. Start tractor and fully raise header.
23. Shut down tractor and remove key from ignition.

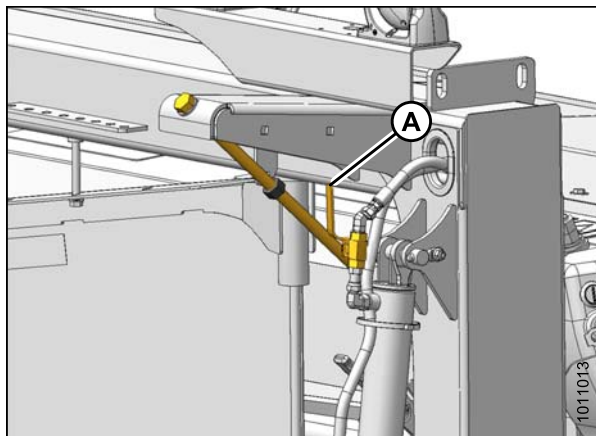


Figure 6.33: Lift Cylinder Lock-Out Valve

24. Close both lift cylinder lock-out valves (A).
25. At left side of carrier, install tensioner bolt (B) into spring.
26. Turn in both float spring tensioner bolts (B) to achieve the following exposed thread (C) measurements:
 - 5-11/16–6-1/8 in. (145–155 mm) for 13-foot.
 - 3-3/4–4-1/8 in. (95–105 mm) for 16-foot.
27. Replace the driveshields. Refer to [7.2 Closing Driveshields](#), page 93.

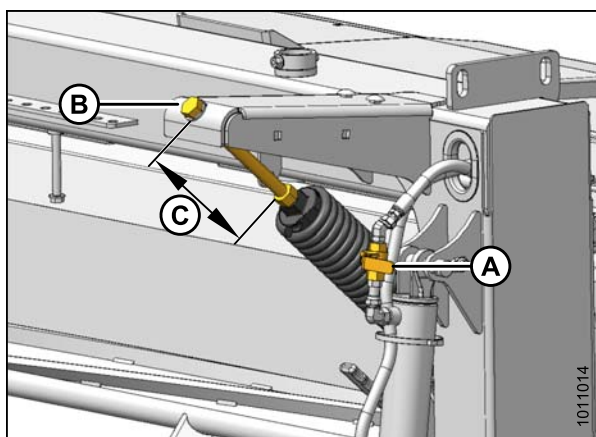


Figure 6.34: Right Side Shown – Left Side Similar

28. If endwise transport system is installed, reconnect electrical harness (A) to the lights (B) and secure harness to shielding using existing clips (C) and (D).
29. Secure harness to light bracket with plastic tie wraps (E).

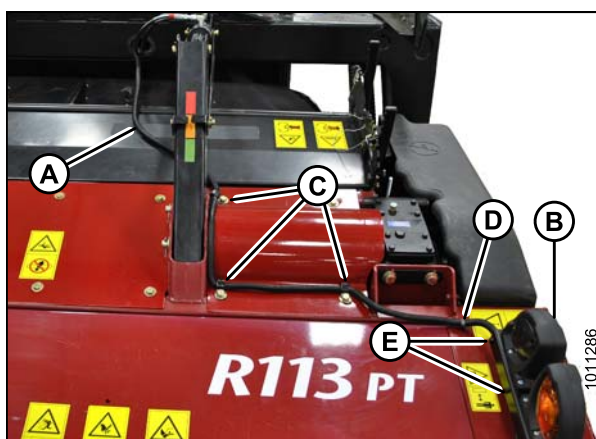


Figure 6.35: Electrical Harness

7 Lubricating the Mower Conditioner

WARNING

To avoid bodily injury or death from unexpected start-up or fall of raised machine, stop engine, remove key and engage lift cylinder stops before going under machine for any reason.

The mower conditioner has been lubricated at the factory. However, it is recommended to lubricate the mower conditioner prior to delivery to offset the effects of weather during outside storage and transport, and to familiarize the Dealer with the machine.

7.1 Opening Driveshields

CAUTION

Do NOT operate the machine without the driveshields in place and secured.

NOTE:

Images shown are for left side driveshield—right side driveshield is similar.

1. Remove lynch pin (A) and tool (B) from pin (C).

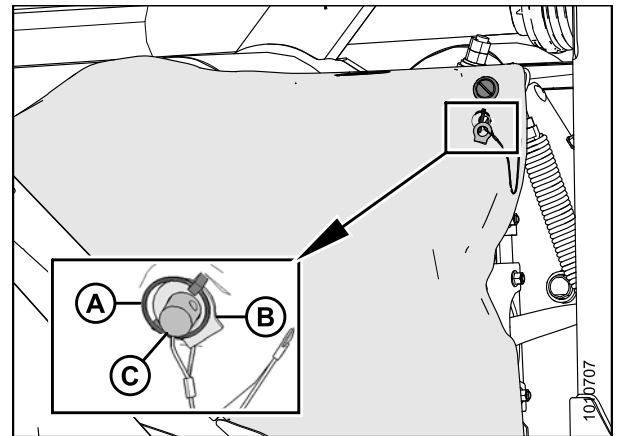


Figure 7.1: Driveshield

2. Insert flat end of tool (A) into latch (B) and turn it counterclockwise to unlock.

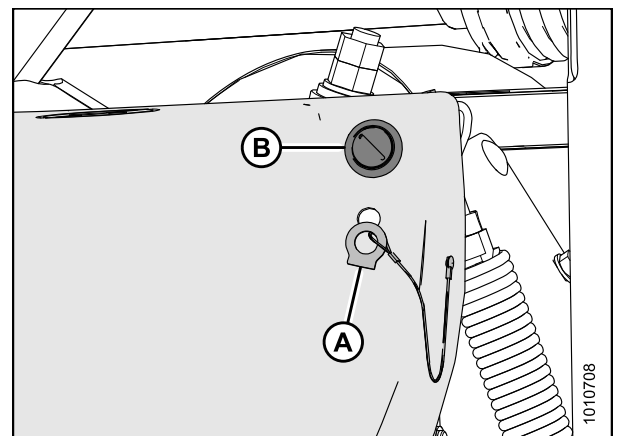


Figure 7.2: Driveshield Latch

LUBRICATING THE MOWER CONDITIONER

3. Pull top of driveshield (A) away from mower conditioner to open.

NOTE:

For improved access, lift driveshield off the pins at the base of the shield, and lay the shield on the mower conditioner.

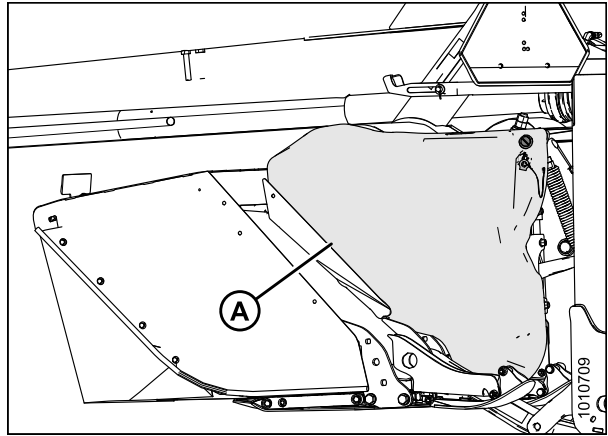


Figure 7.3: Driveshield

7.2 Closing Driveshields

CAUTION

Do NOT operate the machine without the driveshields in place and secured.

NOTE:

Images shown are for left side driveshield - right side driveshield is similar.

1. Position driveshield onto pins at base of driveshield (if necessary).
2. Push driveshield (A) to engage latch (B).
3. Check that driveshield is properly secured.

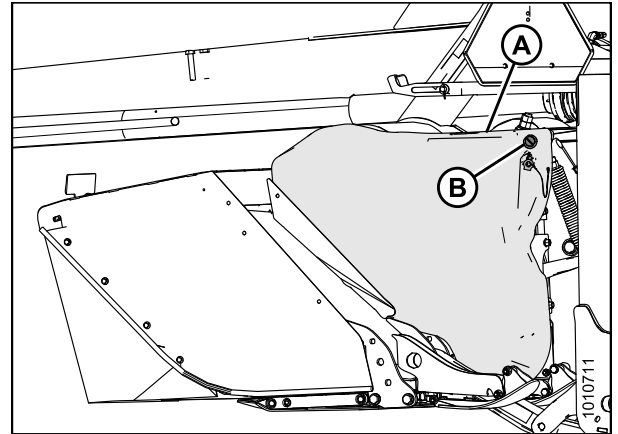


Figure 7.4: Driveshield and Latch

4. Replace tool (B) and lynch pin (A) on pin (C).

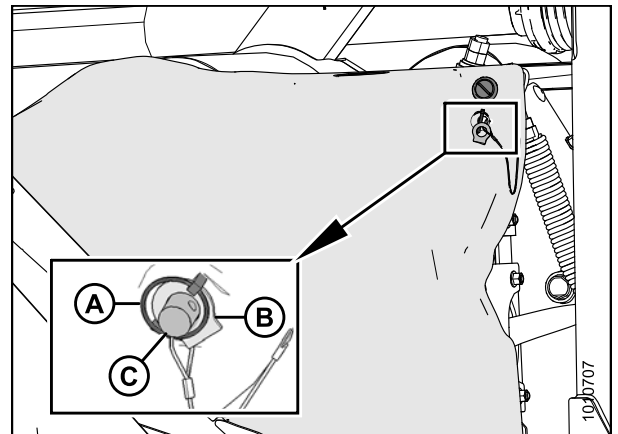


Figure 7.5: Tool to Unlock Driveshield

7.3 Lubrication Procedure

Unless otherwise specified, use High Temperature Extreme Pressure (EP2) Performance with 1% Max Molybdenum Disulphide (NLGI Grade 2) Lithium Base grease.

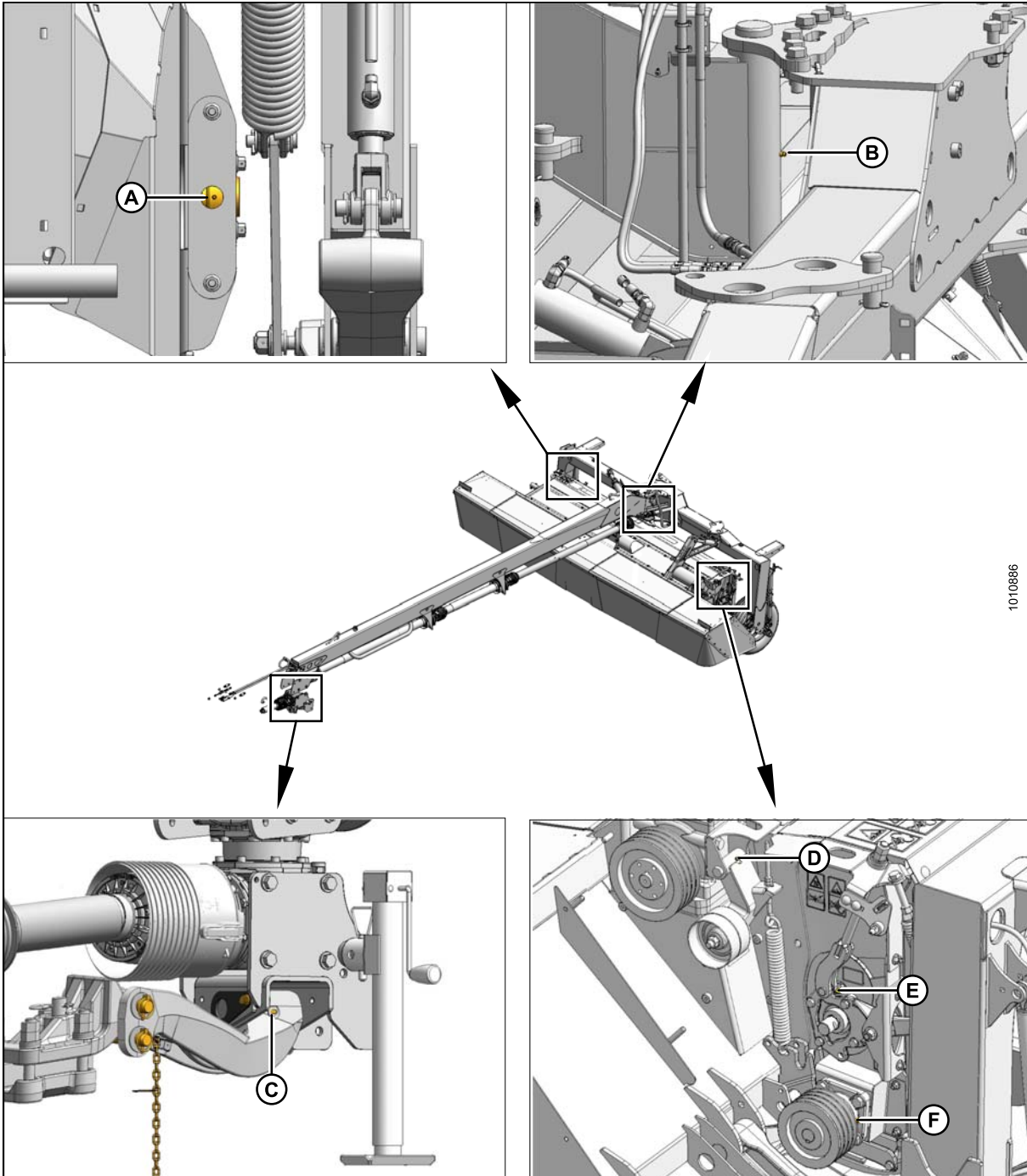


Figure 7.6: Lubrication

A - Bearing, Finger Conditioner
D - Idler Pivot

B - Hitch Pivot
E - Bearing, Roller Conditioner

C - Hitch Swivel
F - Bearing, Roller Conditioner

LUBRICATING THE MOWER CONDITIONER

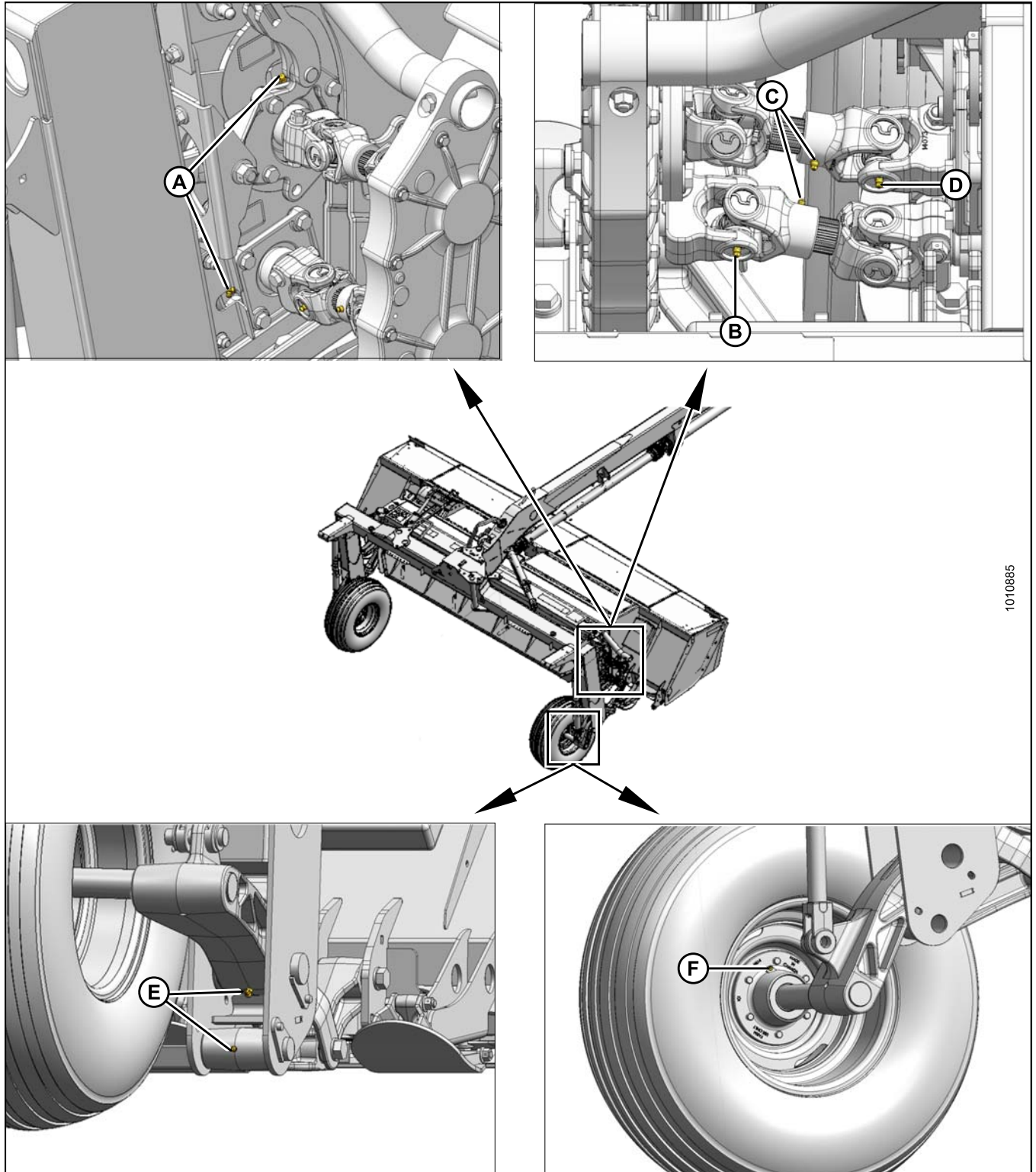


Figure 7.7: Lubrication

A - Bearings, Roller Conditioner
D - U-Joint, Upper Driveline (2 Places)

B - U-Joint, Lower Driveline (2 Places)
E - Lift Linkage (Both Sides)

C - Slip Joints, Conditioner Drivelines⁶
F - Bearing, Field Wheel (2 Places)

- Use High Temperature Extreme Pressure (EP2) Performance with 10% Max Molybdenum Disulphide (NLGI Grade 2) Lithium Base

LUBRICATING THE MOWER CONDITIONER

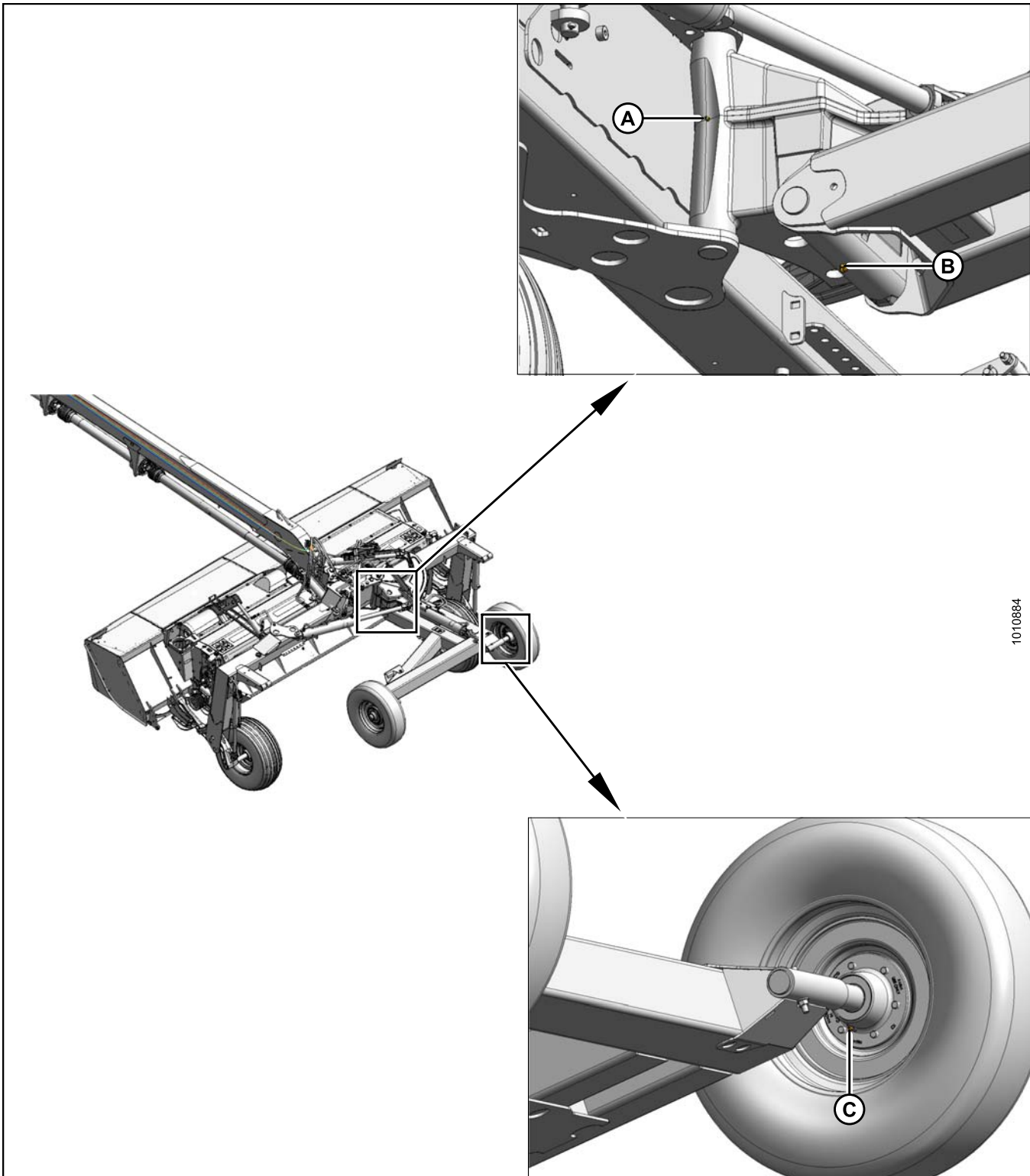


Figure 7.8: Lubrication

A - Vertical Pivot, Endwise Transport

B - Horizontal Pivot, Endwise Transport

C - Bearing, Transport Wheel (2 Places)

LUBRICATING THE MOWER CONDITIONER

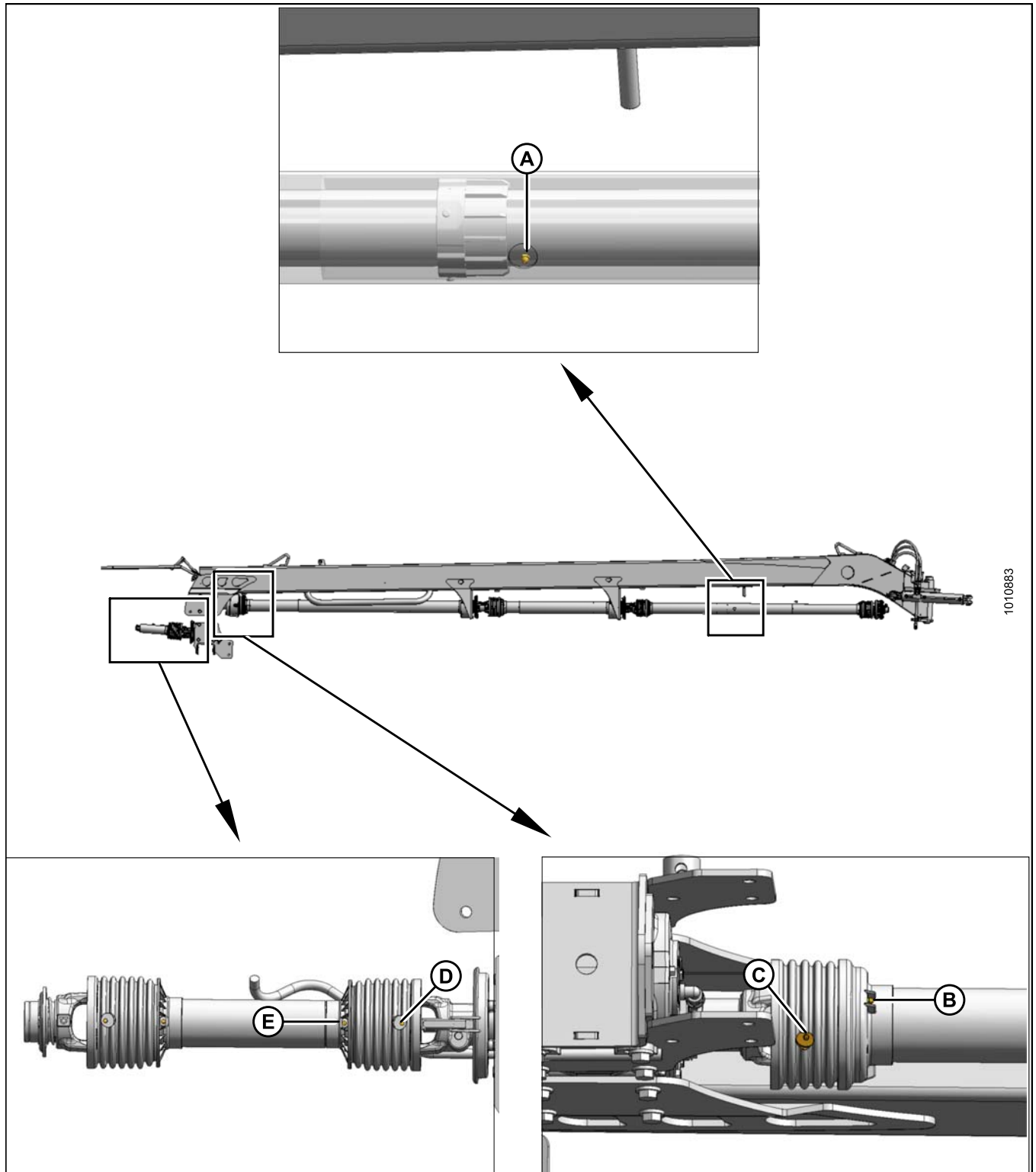


Figure 7.9: Lubrication

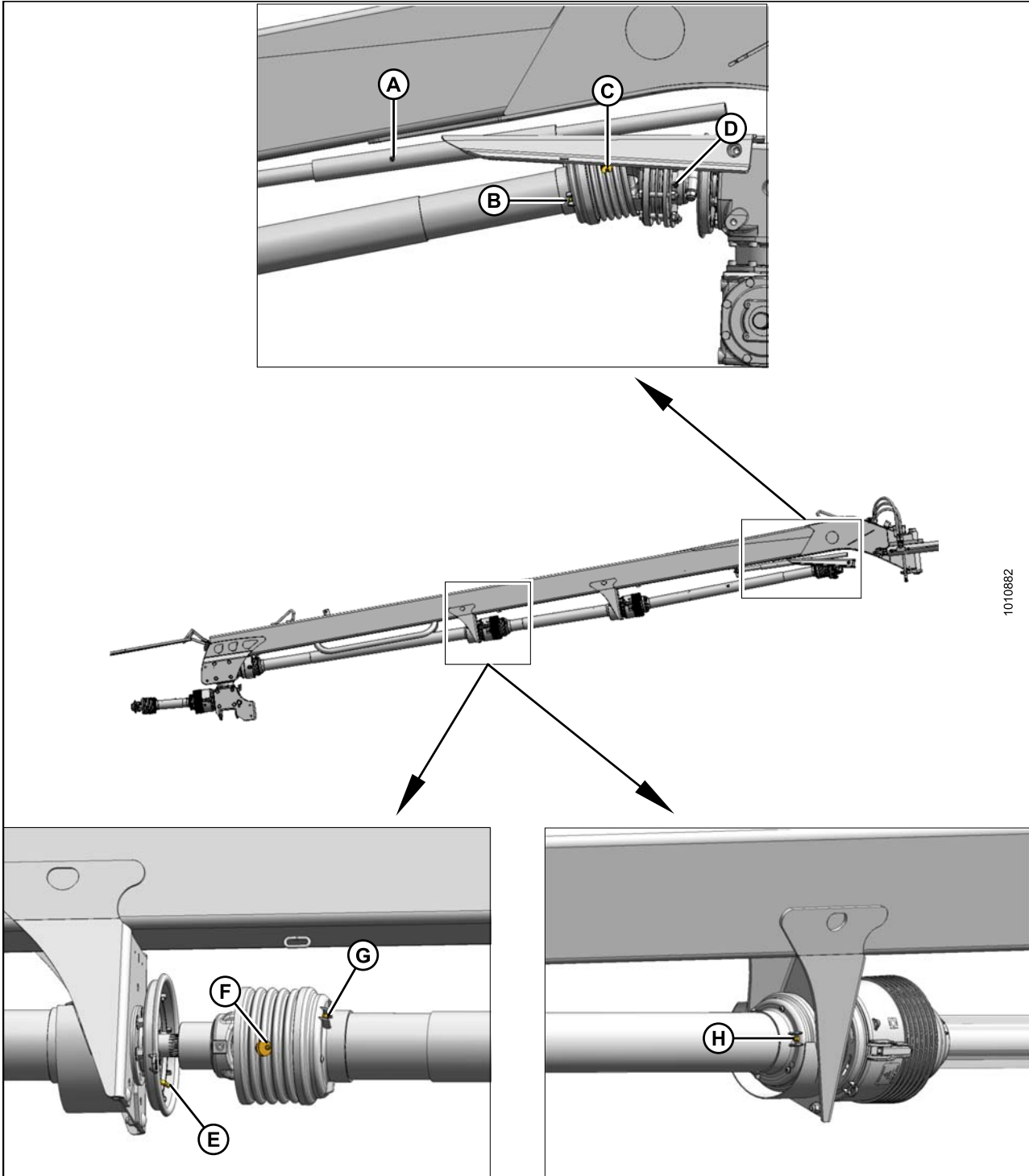
A - Slip Joint, Drivelines (13' 2 Places)(16' 3 Places)⁷
D - U-Joint, Primary Driveline (2 Places)

B - Guard, Driveline
E - Guard, Primary Driveline (2 Places)

C - U-Joint, Main Driveline

7. Use High Temperature Extreme Pressure (EP2) Performance with 1% Max Molybdenum Disulphide (NLGI Grade 2) Lithium Base

LUBRICATING THE MOWER CONDITIONER



1010882

Figure 7.10: Lubrication

A - Slip Joint, Steering Link

D - Clutch

G - Guard, Driveline (13' 1 Place)(16' 2 Places)

B - Guard, Clutch Driveline

E - Bearing, Driveline (13' 1 Place)(16' 2 Places)

H - Guard, (13' 1 Place)(16' 2 Places)

C - U-Joint, Clutch Driveline

F - U-Joint, Driveline (13' 1 Places)(16' 2 Places)

8 Performing Predelivery Checks

WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop tractor engine, and remove key before making adjustments to machine.

IMPORTANT:

To avoid machine damage, check that no shipping dunnage has fallen into cutterbar.

1. Perform the final checks and adjustments as listed on the Predelivery Checklist (yellow sheet attached to back of this instruction) to ensure the machine is field-ready. Refer to the pages for detailed instructions as indicated on the Predelivery Checklist.
2. The completed Checklist should be retained either by the Operator or the Dealer.

NOTE:

The majority of checks and adjustments are performed during the setup procedures. The following additional inspections should be performed after the setup is complete.

8.1 Checking Wheel Bolts

DANGER

To avoid bodily injury or death from unexpected startup of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

IMPORTANT:

Check and tighten field wheel bolts and transport system wheel bolts (if installed) after the first hour of operation and every 100 hours thereafter.

1. Torque wheel bolts to 120 ft·lbf (160 N·m) using the tightening sequence shown.

NOTE:

Whenever a wheel is installed, check torque after one hour of operation.

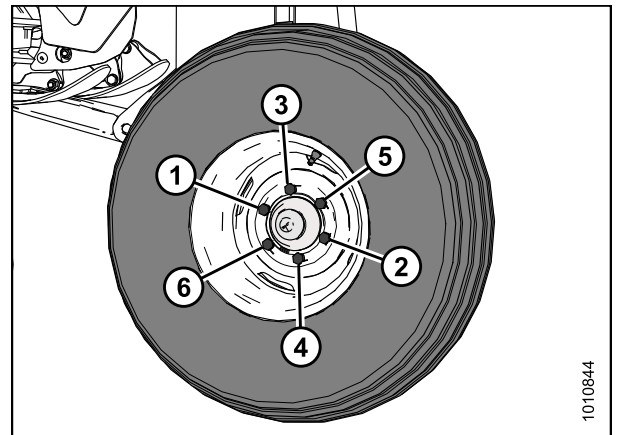


Figure 8.1: Tightening Sequence

8.2 Checking Drive Belt

1. Open the left driveshield.

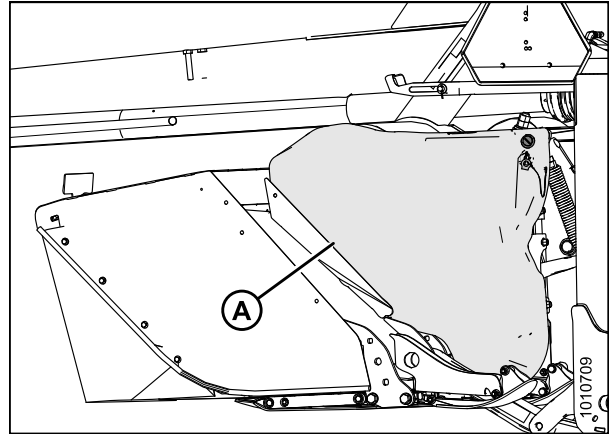


Figure 8.2: Left Driveshield

2. Check that the belt (A) is properly located on the pulleys and tensioned. Overall spring length (B) should be 14–3/8 in. (365 mm).
3. Check that the adjuster nuts (C) are tight.
4. Check that spring is hooked at the correct location:
 - Hole (D) for roll conditioner
 - Hole (E) for finger conditioner
5. Close driveshield.

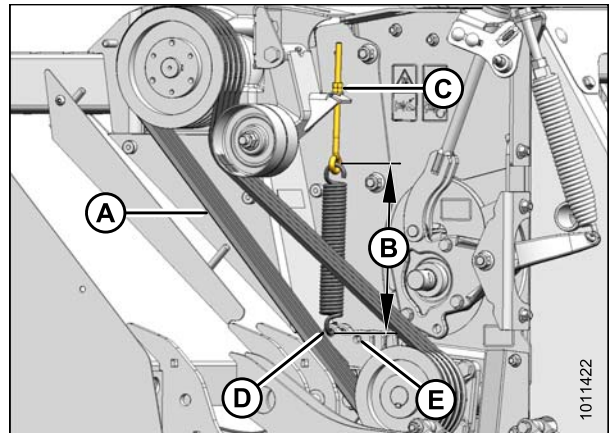


Figure 8.3: Conditioner Belt

8.3 Checking Header Float

1. Measure the length (A) of exposed thread on the float spring tension bolts (B). It should be:
 - 5-11/16–6-1/8 in. (145–155 mm) for 13-foot.
 - 3-3/4–4-1/8 in. (95–105 mm) for 16-foot.
2. If necessary adjust length as follows:
 - a. Loosen lock nut (C) on bolt and turn adjuster bolt (B) as required to achieve measurement.
 - b. Tighten lock nut (C).

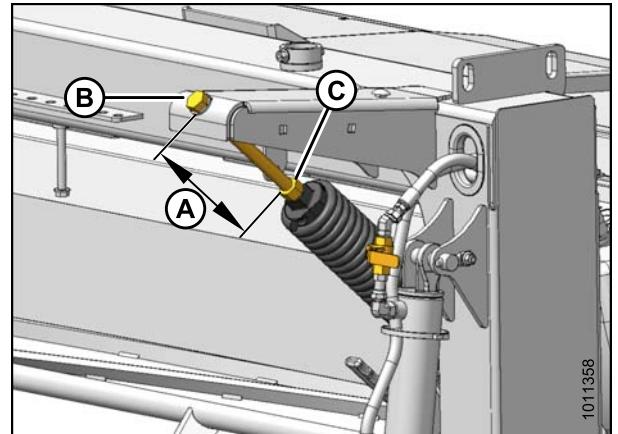


Figure 8.4: Float Adjustment

8.4 Checking Header Angle

1. For headers equipped with hydraulic center-link, the mid-point for header angle is indicated with the indicator bars in the center (orange) of the indicator decal.
2. For headers equipped with mechanical center-link (A), the mid-point for header angle is the middle of the adjustment range on the link.

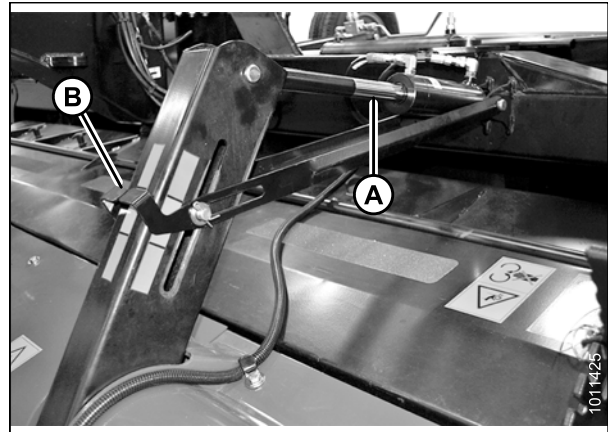


Figure 8.5: Hydraulic Center-Link

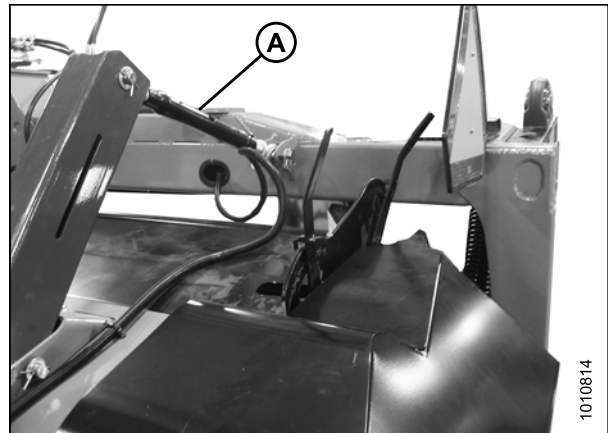


Figure 8.6: Mechanical Center-Link

8.5 Checking Skid Shoes

1. All skid shoes (A) should be at the same position, either up (shown) or down.

NOTE:

The 13-foot. mower conditioner is equipped with one skid shoe at either end, and the 16-foot. machine has two at either end.

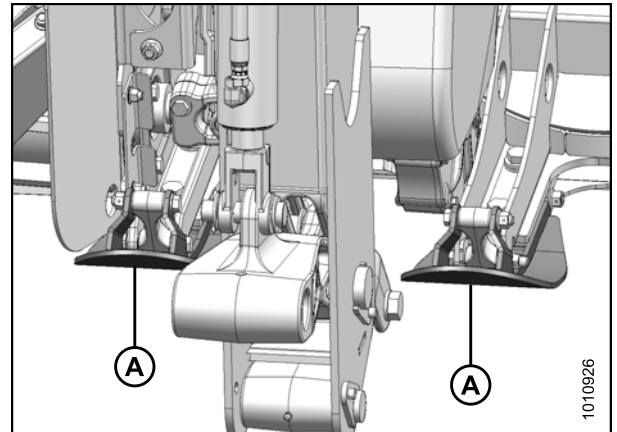


Figure 8.7: Skid Shoes

8.6 Checking Roll Timing

DANGER

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key from ignition before leaving operator's seat for any reason.

1. Lower mower conditioner fully, stop engine, and remove key from ignition.
2. Open the right side driveshield, refer to [7.1 Opening Driveshields, page 91](#).

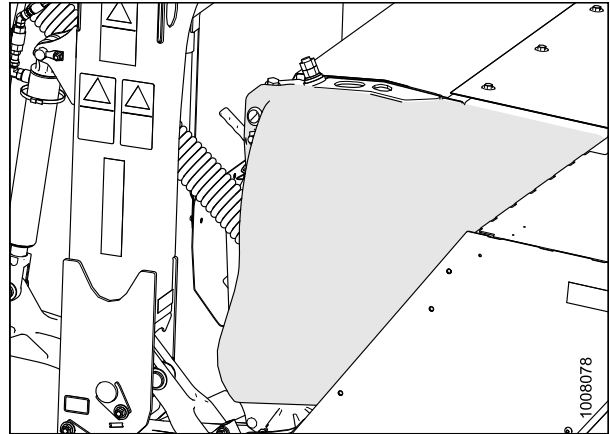


Figure 8.8: Right Side Driveshield

3. Examine the four bolts (A) in slots of yoke plate (B) on upper roll universal shaft. The timing is set during assembly at the factory. Bolts should be approximately centered in slots and should be tight.

NOTE:

Only three bolts shown in the illustration.

NOTE:

Roll timing should not require adjustment. If further adjustment is required, refer to the R113/R116 Pull-Type Rotary Disc Mower Conditioner Operator's Manual.

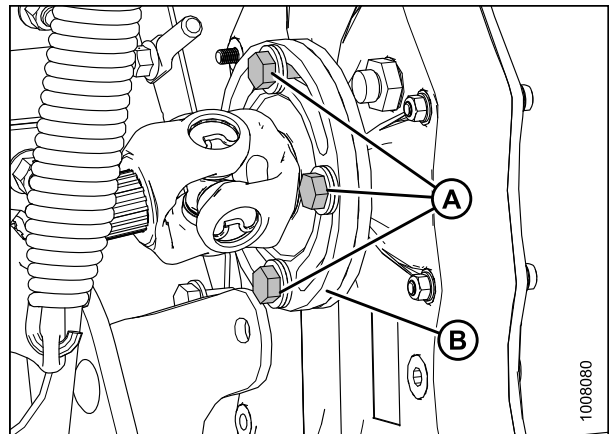


Figure 8.9: Bolts in Slots of Yoke Plate

8.7 Checking Conditioner Drive Gearbox Lubricant

The conditioner drive gearbox is located inside the drive compartment at the right side of the mower conditioner.

IMPORTANT:

Check the conditioner drive gearbox lubricant level when the lubricant is warm. If the lubricant is cold, idle the machine for approximately 10 minutes prior to checking.

DANGER

To avoid bodily injury or death from unexpected startup of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

1. Lower mower conditioner fully, turn off engine, and remove key.
2. Remove the right driveshield (A). Refer to [7.1 Opening Driveshields, page 91](#).

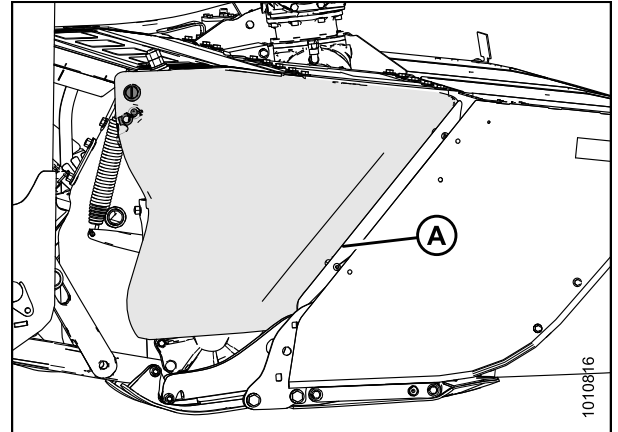


Figure 8.10: Right Driveshield

3. Clean around lubricant level plug (A) on inboard side of the conditioner drive gearbox.
4. Remove lubricant level plug (A).
5. Check that lubricant level is even with the bore hole.
6. Add SAE 85W-140 gear oil until the lubricant level is even with the bore hole (if necessary).
7. Replace lubricant level plug (A) and tighten.
8. Close right driveshield. Refer to [7.2 Closing Driveshields, page 93](#).

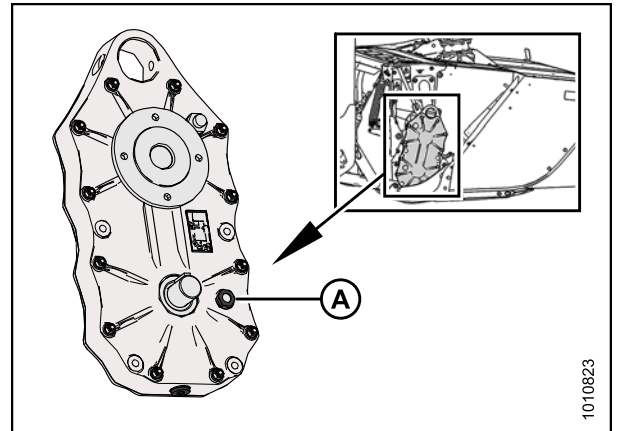


Figure 8.11: Oil Level Plug

8.8 Checking Mower Conditioner Drive Gearbox Lubricant

The mower conditioner drive gearbox is located inside the drive compartment at the left side of the mower conditioner.

DANGER

To avoid bodily injury or death from unexpected startup of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

1. Lower mower conditioner fully, turn off engine, and remove key.
2. Remove the left driveshield (A). Refer to [7.1 Opening Driveshields, page 91](#).

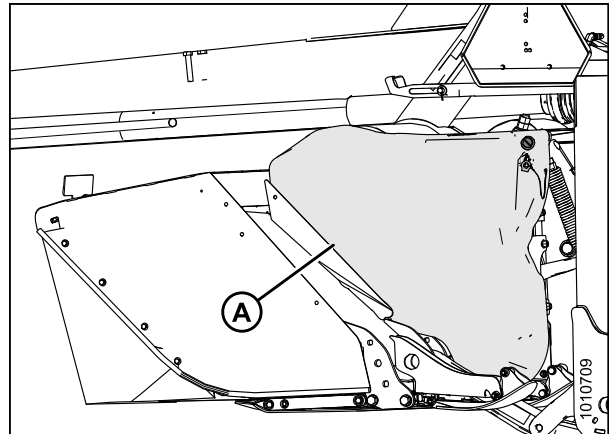


Figure 8.12: Left Driveshield

3. Clean area around dipstick (A).
4. Remove dipstick (A) using a 22 mm socket.
5. Check lubricant level on dipstick and ensure level is between the upper and lower mark.
6. Add SAE 85W-140 gear oil until the lubricant level on the dipstick is between the upper and lower mark (if necessary).
7. Reinstall dipstick (A) and tighten.
8. Close left driveshield. Refer to [7.2 Closing Driveshields, page 93](#).

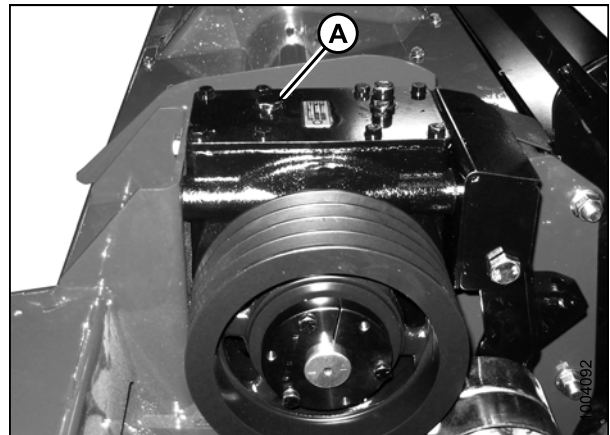


Figure 8.13: Left Side of Mower Conditioner

8.9 Checking Forward and Rear Swivel Gearbox Lubricant

There are two swivel gearboxes located on the mower conditioner. The swivel gearbox consists of an upper and lower gearbox. Check plugs are located at the same position on each gearbox and need to be removed in order to check the lubricant level.

IMPORTANT:

Check the swivel gearbox lubricant level when the lubricant is warm. If the lubricant is cold, idle the machine for approximately 10 minutes prior to checking.



DANGER

To avoid bodily injury or death from unexpected startup of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

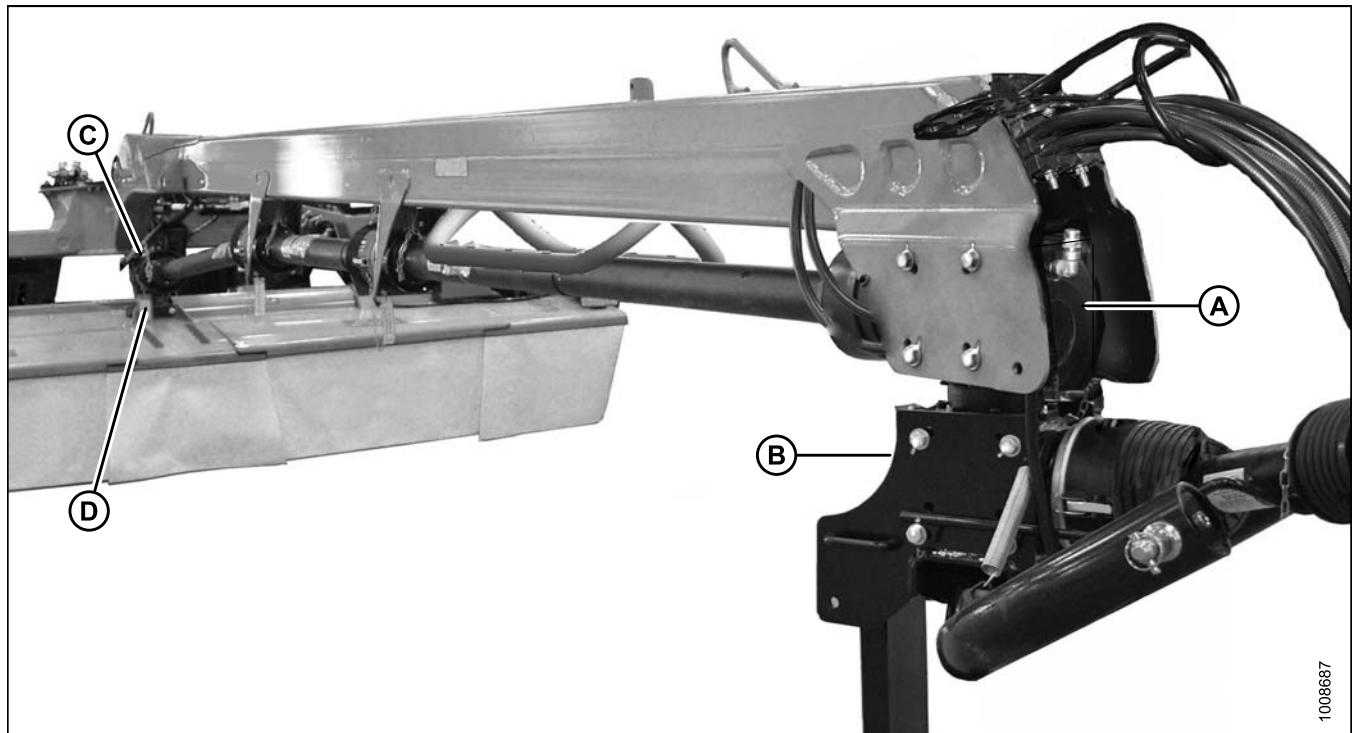


Figure 8.14: Forward and Rear Swivel Gearboxes

A - Upper Forward Gearbox

B - Lower Forward Gearbox

C - Upper Rear Gearbox

D - Lower Rear Gearbox

PERFORMING PREDELIVERY CHECKS

NOTE:

This procedure is the same for both forward and rear swivel gearboxes and must be performed on both upper and lower gearboxes.

1. Clean area around check plug (A).
2. Remove check plug using a 15 mm socket.
3. Check lubricant level and ensure lubricant is visible or slightly draining from the port.
4. Add SAE 85W-140 gear oil to gearboxes through breather/filler plug (B) (if necessary).
5. Reinstall check plug (A) and breather/filler plug (B) and tighten.

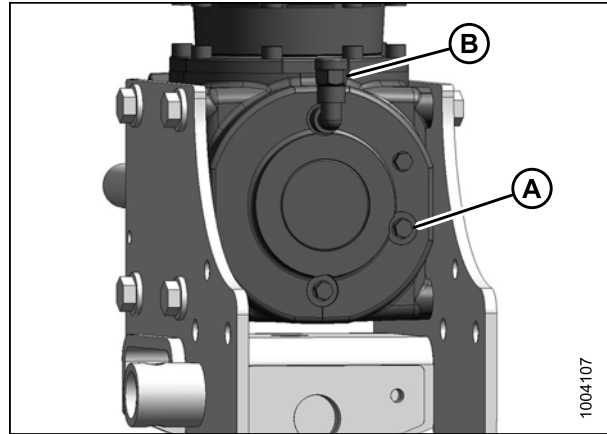


Figure 8.15: Swivel Gearbox

8.10 Checking Cutterbar Lubricant

DANGER

To avoid bodily injury or death from unexpected startup of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

1. Park the mower conditioner on level ground.
2. Position header so the cutterbar is approximately level.
3. Shut down the mower conditioner and remove key.
4. Open the cutterbar doors.



Figure 8.16: Cutterbar Doors

Checking Cutterbar Lubricant

CAUTION

Exercise caution when working around the blades. Blades are sharp and can cause serious injury. Wear gloves when handling blades.

5. Use a level to ensure the cutterbar is level in both directions. Raise or lower mower conditioner accordingly.
6. Remove oil level inspection plug (A) and O-ring (B) from cutterbar.
7. Check that lubricant level is even with the bore hole.
8. Replace oil level inspection plug (A) and O-ring (B).

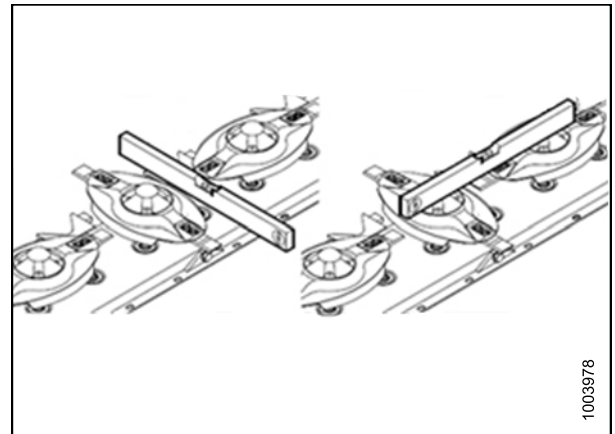


Figure 8.17: Spirit Level on Cutterbar

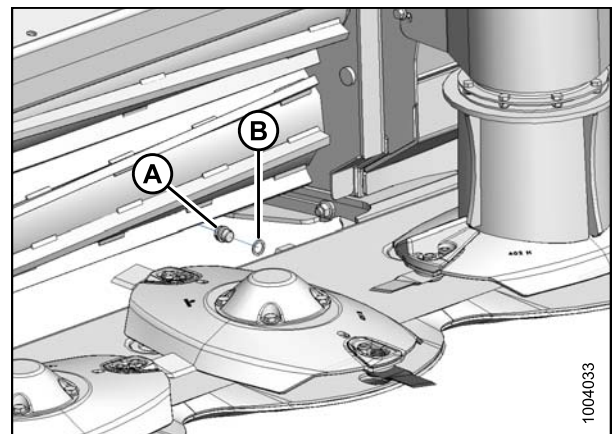


Figure 8.18: Inspection Plug and O-ring

PERFORMING PREDELIVERY CHECKS

Adding Cutterbar Lubricant

9. Start engine and raise mower conditioner.
10. Place a block under the side of the mower conditioner with the M18 cutterbar breather (A) so it is higher than the opposite side.
11. Lower mower conditioner onto block, shut down mower conditioner, and remove key.
12. Clean area around M18 cutterbar breather (A) and remove breather.

IMPORTANT:

Do NOT remove M10 hex head bolts (B) securing cutterbar end plate (C) to cutterbar or lubricant leaks could result.

13. Add SAE 90 lubricant until the lubricant level is even with the bore hole (if necessary).

IMPORTANT:

Do NOT overfill the cutterbar. Overfilling can cause overheating and damage to, or failure of, cutterbar components.

14. Install M18 cutterbar breather (A).
15. Start engine and raise mower conditioner.
16. Stop engine, remove key, and engage mower conditioner lift cylinder lock-outs.
17. Remove blocks.
18. Recheck lubricant level. Refer to Step 5, page 109 to Step 8, page 109.

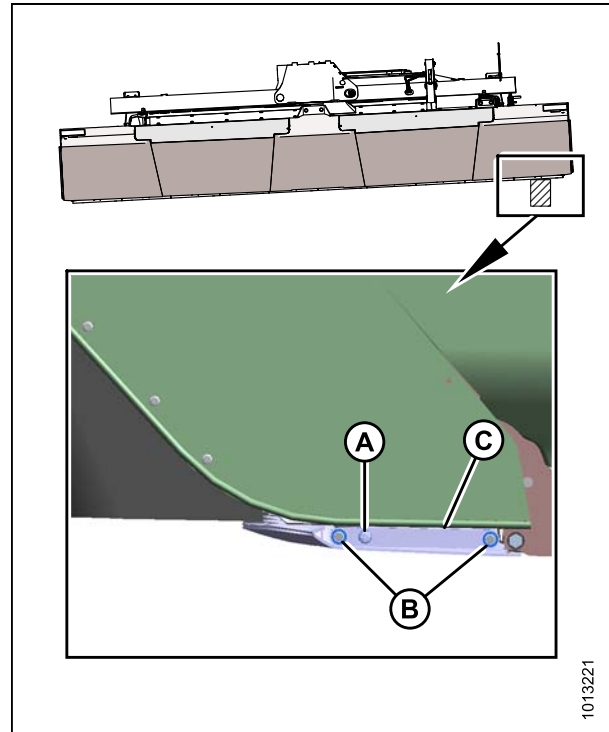


Figure 8.19: Left Side Shown – Right Side Similar

8.11 Checking Roll Gap and Roll Tension

The roll gap is indicated by the amount of thread protruding beyond the jam nut on the gap adjuster bolt. Roll tension is indicated by the exposed thread on the roll tension adjuster bolt. Not applicable to Finger Conditioners

1. Measure the amount of thread protruding beyond the jam nut (A) on the roll gap adjuster bolt at each end of the conditioner. The measurement (B) should be as follows:

- Poly Roll Conditioner: 1-5/8 in. (41 mm)
- Steel Roll Conditioner: 1/4 in. (6 mm)

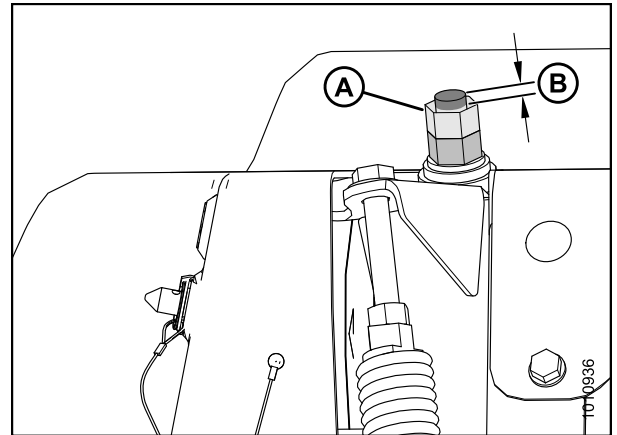


Figure 8.20: Roll Gap Adjuster

2. Measure the amount of exposed thread on the roll tension adjuster bolt (A) at each end of the conditioner. Measurement (B) should be 1/2–9/16 in. (12–15 mm) for both poly and steel roll conditioners.

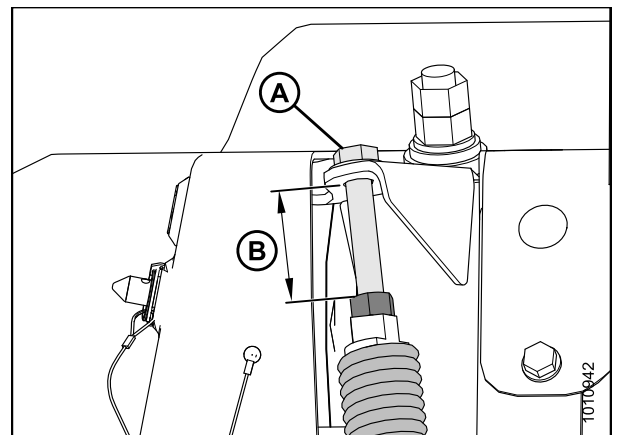


Figure 8.21: Roll Tension Adjuster

8.12 Checking Conditioner Baffle Settings

1. On finger conditioners, move baffle adjustment handles (A) and (B) to the middle positions (C) and (D) respectively on adjustment plates.

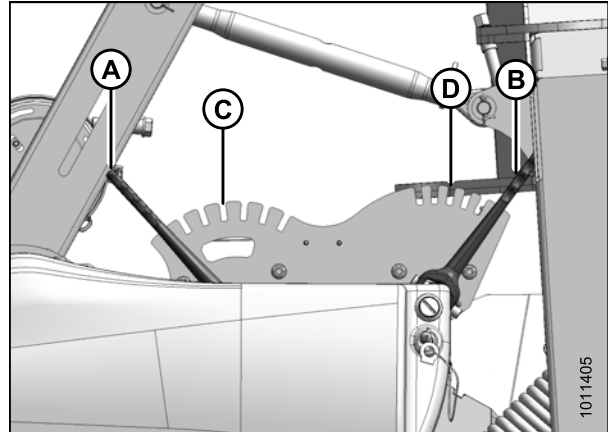


Figure 8.22: Baffle Adjusters

2. On roll conditioners, move baffle adjustment handle (A) to the middle position (B) on adjustment plate.

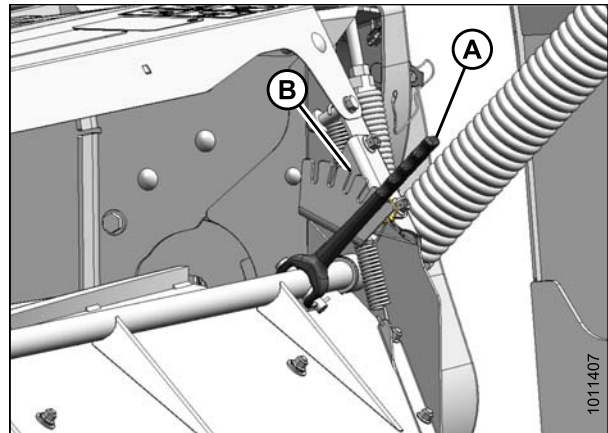


Figure 8.23: Baffle Adjuster

8.13 Checking Lights

1. Check that lights (A) and (B) are properly located on the mower conditioner to suit the set up configuration.
2. Check light mountings for security and damage.
3. Check operation of hazard lights (A) and brake lights (B) during machine run-up.

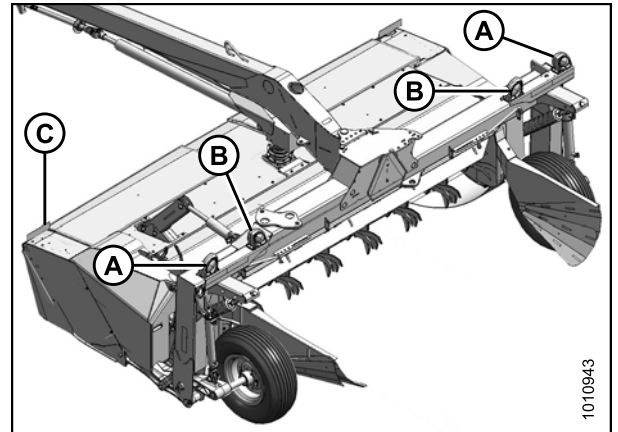


Figure 8.24: Standard Configuration

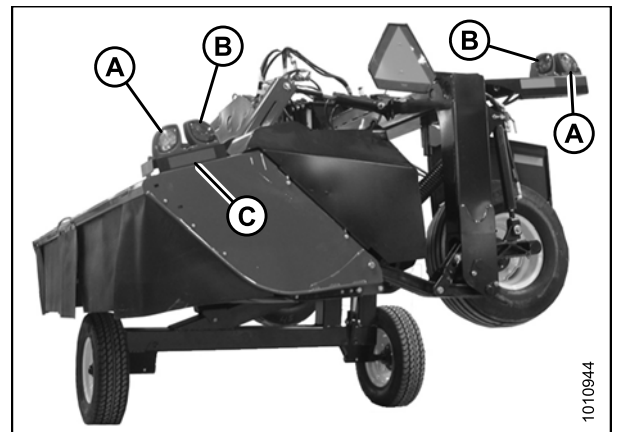


Figure 8.25: Endwise Transport Configuration

A - Amber Hazard Lights
C - Reflectors

B - Red Tail/Brake Lights

8.14 Checking Manuals

The following manuals should be stored in the manual storage case (A) at the right end of the mower conditioner. Open the right drive shield to access the case.

- R113/R116 Pull-Type Rotary Disc Mower Conditioner Operator's Manual – MD #169820
- R113/R116 Pull-Type Rotary Disc Mower Conditioner Parts Catalog – MD #169822

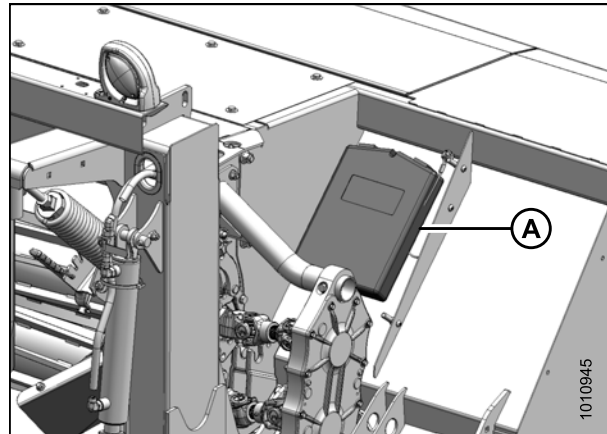


Figure 8.26: Manual Case

8.15 Running Up the Mower Conditioner

DANGER

- Keep everyone several hundred feet away from your operation. Ensure bystanders are never in line with the front or rear of the machine. Stones or other foreign objects can be ejected from either end with force.
- Extreme care must be exercised to avoid injury from thrown objects. Do **NOT**, under any circumstances, operate the mower conditioner when other people are in the vicinity. Stones and other objects can be thrown great distances by the rotating cutting blades.
- The cutterbar curtains are very important to reduce the potential for thrown objects. Always keep these curtains down when operating the mower conditioner. Replace the curtains if they should become worn or damaged.

CAUTION

- Never start or move the machine until you are sure all bystanders have cleared the area.
- Clear the area of other persons, pets etc. Keep children away from machinery. Walk around the machine to be sure no one is under, on or close to it.
- Before investigating an unusual sound or attempting to correct a problem, shut off engine, engage parking brake, and remove key.

NOTE:

Higher engine rpm may be required to engage the header. Do **NOT** exceed 1800 rpm.

1. Start tractor.
2. Set header to working position and adjust center-link to mid-position.
3. Run the machine slowly for 5 minutes, watching, and listening **FROM THE OPERATOR'S SEAT** for binding or interfering parts.
4. Run the machine at operating speed for 15 minutes. Listen for any unusual sounds or abnormal vibration.
5. Perform the run-up check as listed on the Predelivery Checklist (yellow sheet attached to this instruction) to ensure the machine is field-ready.
6. Retain the Checklist and if desired, retain this instruction for future reference.

8.16 Checking Endwise Transport System

This check is required only if the Endwise Transport System is installed.

The cam on the transport deploy/swing mechanism assembly is factory-set to 116° (A), and the valve clearance is set to 2-1/2 in. (63 mm) (B). It may be necessary to adjust the cam angle and valve position if the endwise transport system does not properly deploy.

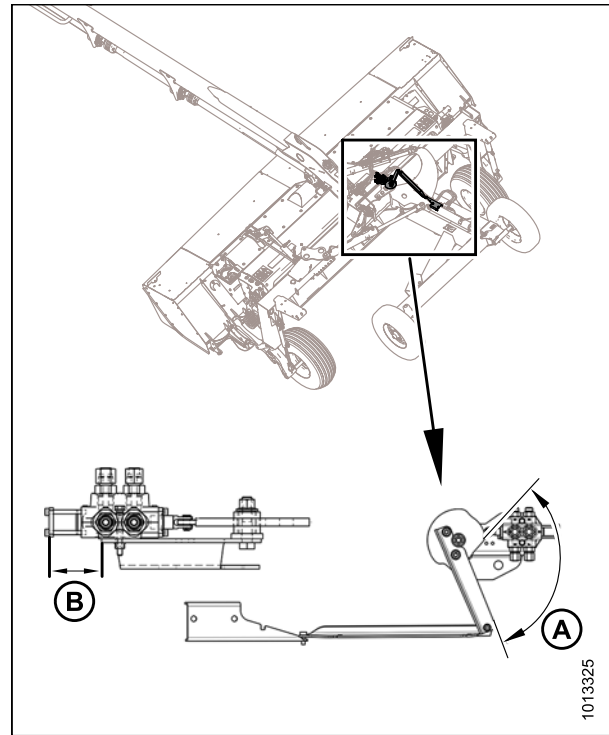


Figure 8.27: Transport Deploy/Swing Mechanism Assembly

1. Loosen two M10 jam nuts (A), two M10 hex flange nuts (B), and rotate top bar (C) to achieve the proper angle. Reposition cam as follows:
 - Rotate **counterclockwise** if the tires deploy too close to the header.
 - Rotate **clockwise** if the tires go underneath the header.
2. Tighten two M10 hex flange nuts (B) and two M10 jam nuts (A).

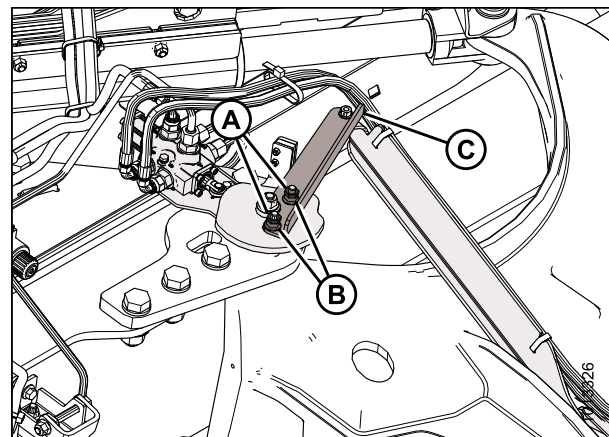


Figure 8.28: Transport Deploy/Swing Mechanism Assembly

PERFORMING PREDELIVERY CHECKS

3. Adjust the valve position (if necessary) to achieve a clearance of 2-1/2 in. (63 mm) (refer to Figure 8.27: [Transport Deploy/Swing Mechanism Assembly](#), page 116).
4. Loosen two M6 hex head bolts (A), slide valve (B) laterally to achieve proper clearance, and tighten bolts.

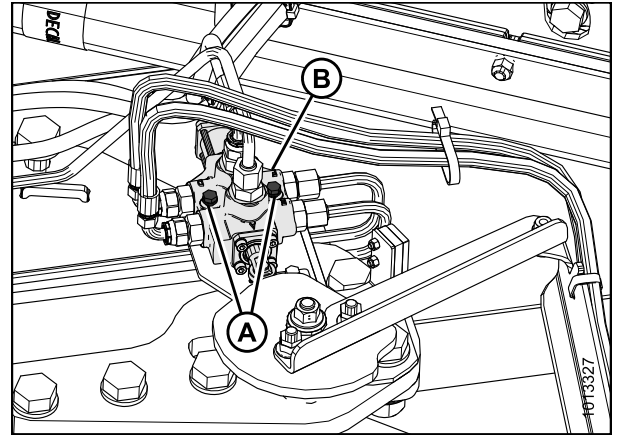


Figure 8.29: Transport Deploy/Swing Mechanism Assembly

8.16.1 Converting from Field to Transport Mode

WARNING

Ensure cutterbar doors are properly closed before converting the machine from field to transport mode to prevent equipment damage.

1. Start tractor if not running. Do **NOT** operate the mower conditioner.
2. Raise the mower conditioner fully.
3. Operate the steering control lever to rotate the mower conditioner **CLOCKWISE** until cam bearing nut (A) is aligned with the green section (B) of the transport alignment gauge decal.

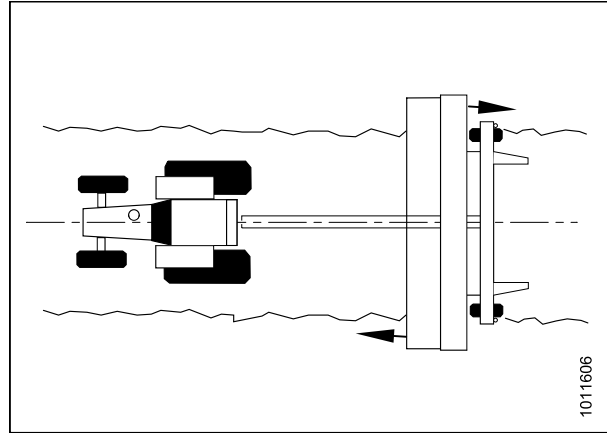


Figure 8.30: Initiating Conversion

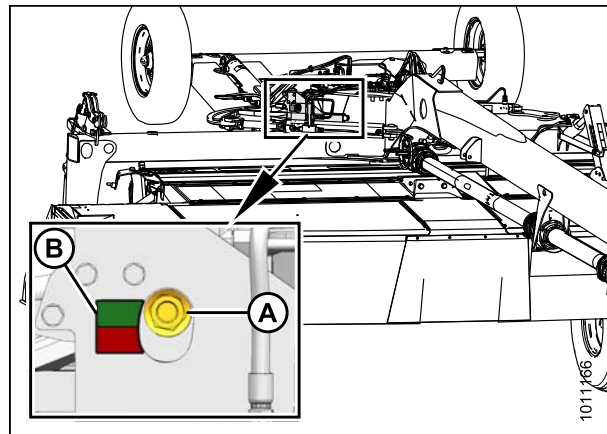


Figure 8.31: Initiating Conversion

4. Move transport switch from field mode (A) to transport mode (B) and ensure that light (C) is **NOT** illuminated. The steering circuit is now de-activated and the transport circuit is active.

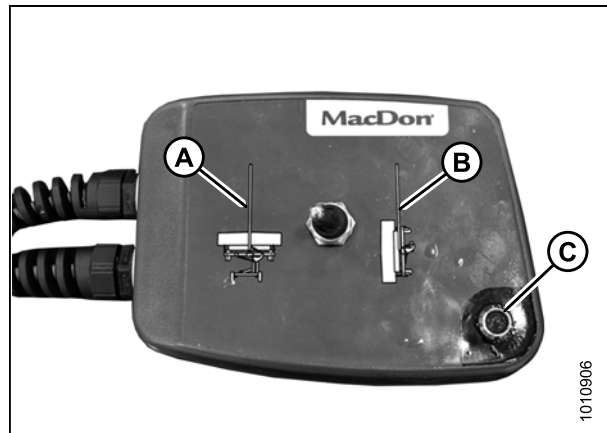


Figure 8.32: Transport Switch

PERFORMING PREDELIVERY CHECKS

5. Operate steering control lever to lower transport wheels (A) and hold lever until mower conditioner (B) is lifted off the ground.
6. Continue to hold the steering control lever so that the mower conditioner (A) rotates **COUNTERCLOCKWISE** and under the hitch (C).
7. Release steering control lever when mower conditioner (B) stops rotating.
8. Operate the lift control lever to lower the mower conditioner (B) onto the transport assembly (A), to raise the field wheels (D), and to engage transport latch (E) onto hitch (C).

NOTE:

If necessary, adjust position of latch assembly so that it engages hitch. Torque bolts to 340 lbf·ft (460 N·m) after tightening.

9. Operate the steering control lever to ensure the carrier frame (A) and hitch (B) are locked together.
10. Activate the hazard lights (C) on the mower conditioner. Check that all lights are working.
11. Ensure that the slow moving vehicle sign (D) is visible from behind the mower conditioner.

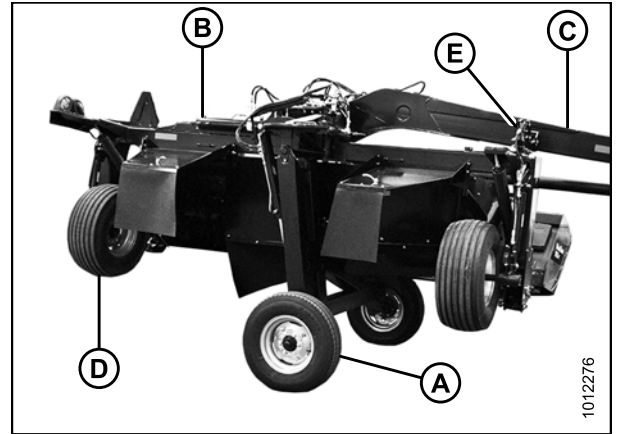


Figure 8.33: Transport Mode

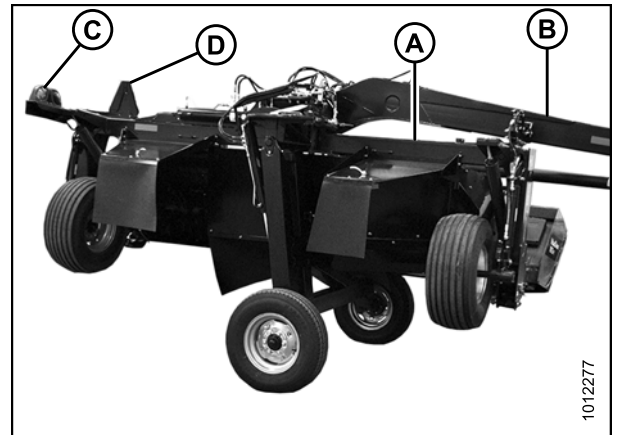


Figure 8.34: Transport Mode

8.16.2 Converting from Transport to Field Mode

DANGER

Do not convert the machine into, or from, transport mode until you are certain that all persons, animals, and objects are clear of the unit's rotational range.

1. Check that remote control switch is in transport position (A). Light (B) on box should be off.

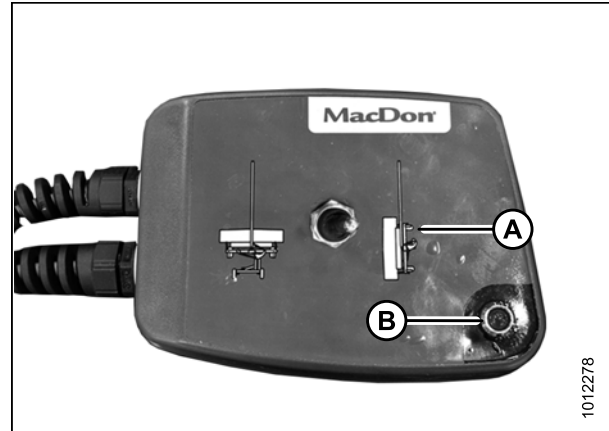


Figure 8.35: Transport Control Box

2. Operate the lift control lever (as if raising the mower conditioner) to fully extend the lift cylinders (A) and raise the cutterbar off the transport assembly support (B). The carrier frame latch (C) will automatically open.

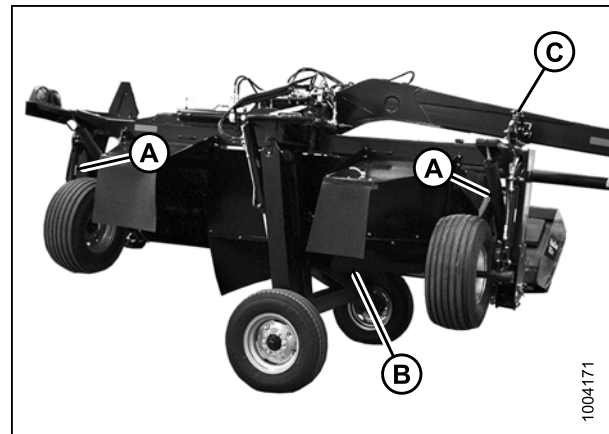


Figure 8.36: Transport Mode

3. Operate the steering control lever to rotate the mower conditioner (A) clockwise (as if steering to the right). The mower conditioner will stop when it reaches operating position.
4. Continue operating the steering control lever to raise the transport assembly (B) and lower the mower conditioner (A) onto the field wheels.

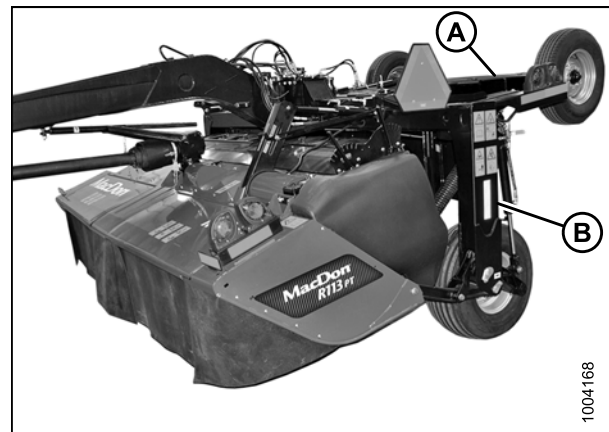


Figure 8.37: Field Mode

PERFORMING PREDELIVERY CHECKS

5. Move transport switch from transport mode (B) to field mode (A) and ensure that light (C) is illuminated.

NOTE:

Transport sequencing is now complete and the steering circuit is active.

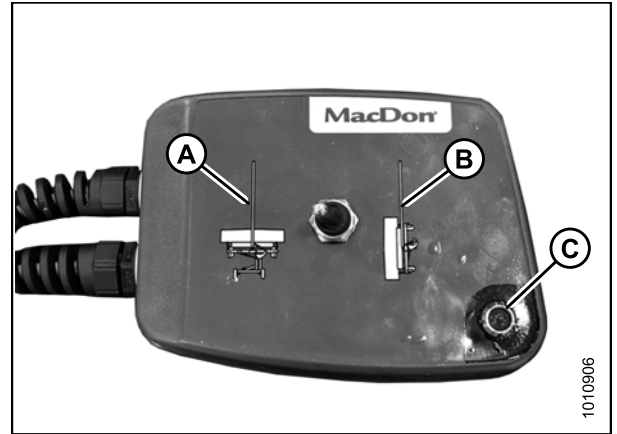


Figure 8.38: Transport Switch

9 Transporting with a Truck

Follow these instructions if the machine will be transported from the dealer to the end user with a truck.

CAUTION

Do NOT tow with a vehicle weighing less than 7500 lb. (3400 kg). Ensure that the capacity of the towing vehicle is sufficient to maintain control.

If towing endwise with the optional endwise transport system, refer to [8.16.2 Converting from Transport to Field Mode, page 120](#) to prepare the mower conditioner for transport; otherwise, refer to [10 Preparing Mower Conditioner for Transport, page 125](#).

1. Store hydraulic hoses (A) on the hitch.
2. Place driveline (C) in hook (D).
3. Remove the forward half (B) of driveline and store in truck for transport.

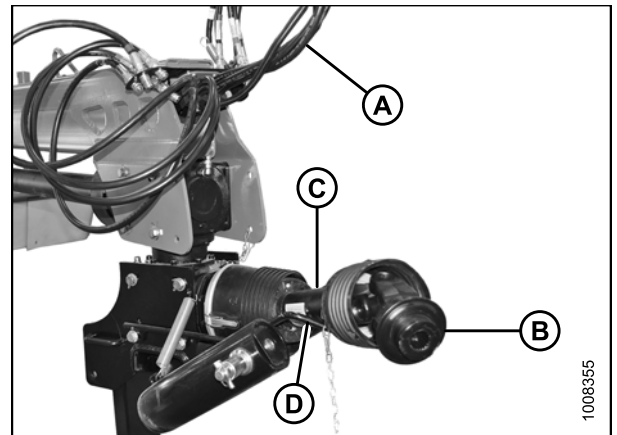


Figure 9.1: Mower Conditioner Hitch

4. Remove pins (A) from transport hitch (B).

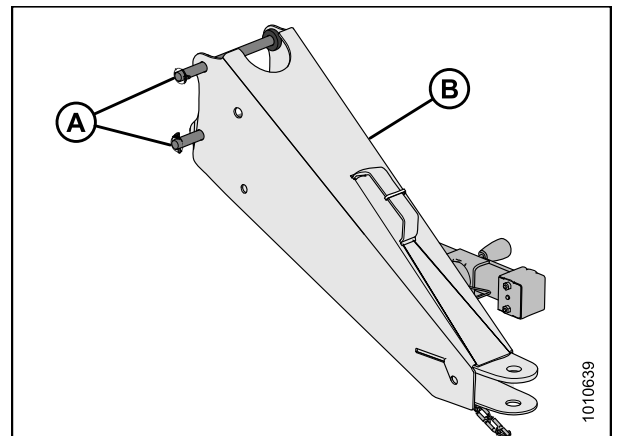


Figure 9.2: Transport Hitch

TRANSPORTING WITH A TRUCK

5. Position transport hitch (A) on mower conditioner hitch, install pins (B), and secure with lynch pins.
6. Lift the mower conditioner hitch with jack, and attach mower conditioner to truck.
 - a. **Two-Point Hitch** (not shown): Rotate stand to storage position.
 - b. **Drawbar Hitch**: Remove jack (C) from working position, store on hitch, and secure with pin.

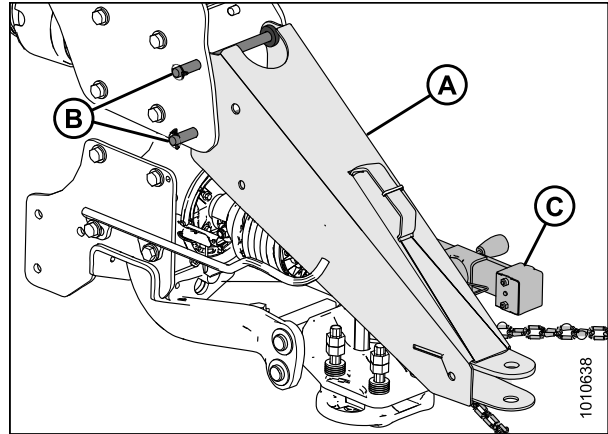


Figure 9.3: Transport Hitch Installed

7. Wrap safety chain around hitch and attach to truck frame (A).
8. Connect electrical harness (B).
9. Check local laws for width regulations and lighting or marking requirements before transporting on roads.
10. Do not exceed 20 mph (32 km/h).

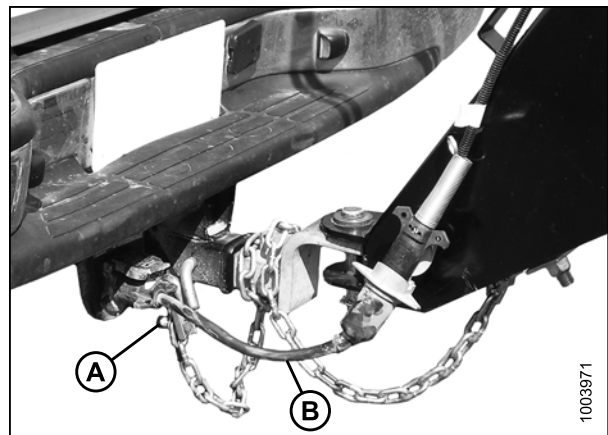


Figure 9.4: Safety Chain and Electrical Harness

10 Preparing Mower Conditioner for Transport

Follow these instructions if the mower conditioner will be transported without deploying the endwise transport system.

1. Charge the steering circuit as follows:
 - a. Connect the two steering cylinder hoses (A) to the tractor's hydraulic circuit (refer to [5.14.3 Connecting Hydraulics, page 73](#) for more detailed instructions).
 - b. Steer the mower conditioner completely to the left, then steer the mower conditioner completely to the right. Repeat three or four times.
2. Steer the mower conditioner so that it is centered behind the towing vehicle.
3. Close the steering lock-out valve by turning the handle to the vertical position.
4. Raise the mower conditioner fully, and close the cylinder lock-out valve (A) on each lift cylinder by turning the handle to the horizontal position.

WARNING

Do NOT tow unless the steering cylinder is fully charged. If steering cylinder is not fully charged, loss of control, injury, or death could result.

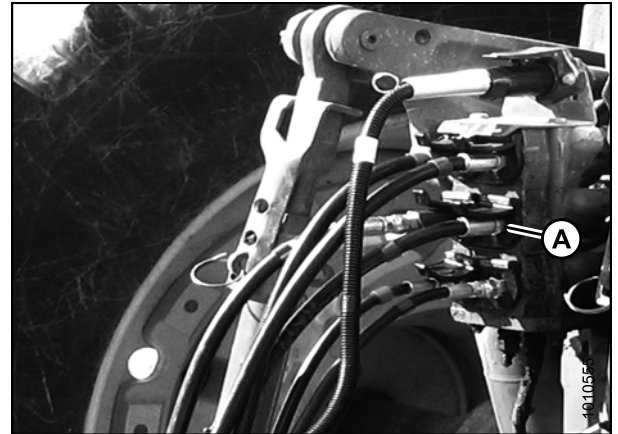


Figure 10.1: Hydraulic Connection

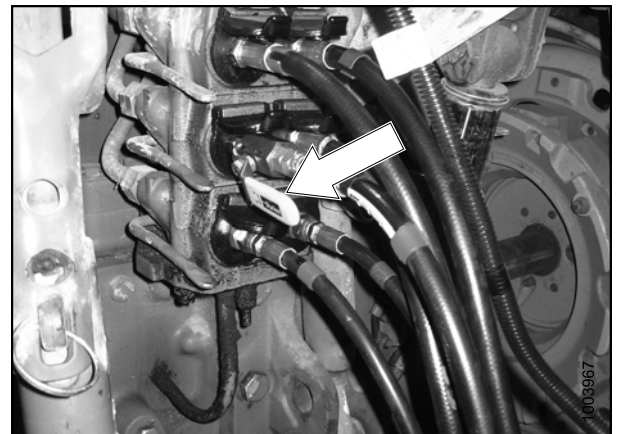


Figure 10.2: Steering Lock-Out Valve in Open Position



Figure 10.3: Cylinder Lock-Out Valve

PREPARING MOWER CONDITIONER FOR TRANSPORT

5. Move jack (A) to storage position on side of hitch, and secure with pin (B).
6. Ensure tires are properly inflated.
7. Keep Slow Moving Vehicle (SMV) sign, reflectors, and lights clean and visible at rear of mower conditioner.

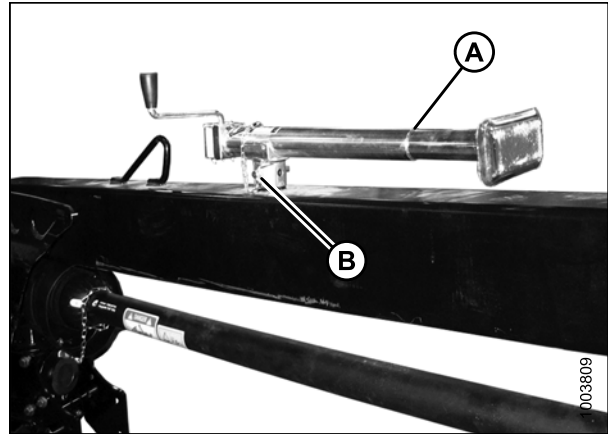


Figure 10.4: Jack in Storage Position

Predelivery Checklist

Perform these checks and adjustments prior to delivery to your Customer. If adjustments are required, refer to the appropriate page number in this manual. The completed Checklist should be retained by either the Operator or the Dealer.

WARNING

Do NOT operate the machine with the driveshields open. High speed rotating components may throw debris and could result in death or serious injury.

CAUTION

Carefully follow the instructions given. Be alert for safety-related messages that bring your attention to hazards and unsafe practices.


Mower Conditioner Serial Number:

APT Serial Number:

Table 1 R113/R116 Pull-Type Rotary Disc Mower Conditioner Predelivery Checklist

✓	Item	Reference
	Check for shipping damage or missing parts. Be sure all shipping dunnage is removed.	—
	Check for loose hardware. Tighten to required torque if applicable.	2 Recommended Torques, page 5
	Check main drive belt tension.	8.2 Checking Drive Belt, page 100
	Check header angle to middle of adjustment range.	8.4 Checking Header Angle, page 102
	Check header float.	8.3 Checking Header Float, page 101
	Check tire pressure: Field tires – 30 psi (207 kPa), optional transport tires – 80 psi (552 kPa)	—
	Check wheel bolts are torqued to 120 ft-lbf (160 N·m).	8.1 Checking Wheel Bolts, page 99
	Check side forming shields evenly set to desired position.	5.2 Setting Up Forming Shields, page 23
	Check rear baffle is about mid-position (roll conditioner).	8.12 Checking Conditioner Baffle Settings, page 112
	Check forward baffle lever is set to approximate mid-position (finger conditioner).	
	Check rear baffle lever is set to approximate mid-position (finger conditioner).	
	Check conditioner roll gap (roll conditioner).	8.11 Checking Roll Gap and Roll Tension, page 111
	Check conditioner roll tension (roll conditioner).	
	Check conditioner roll timing hardware is securely tightened (roll conditioner).	8.6 Checking Roll Timing, page 104
	Check that tall crop dividers are not installed for road transport.	5.12.3 Installing Tall Crop Divider, page 66

PREDELIVERY CHECKLIST

✓	Item	Reference
	Check that cutterbar doors are unbolted from centre channel frame, shipping wire is removed from cutterbar curtains, and cutterbar curtains are hanging properly.	5.11 Unpacking Curtains, page 46
	Check hydraulic hose and wiring harness routing.	—
	Grease all bearings and drivelines.	7.3 Lubrication Procedure, page 94
	Check conditioner drive gearbox lubricant.	8.7 Checking Conditioner Drive Gearbox Lubricant, page 105
	Check mower conditioner drive gearbox lubricant.	8.8 Checking Mower Conditioner Drive Gearbox Lubricant, page 106
	Check forward and rear swivel gearbox lubricant.	8.9 Checking Forward and Rear Swivel Gearbox Lubricant, page 107
	Check cutterbar lubricant.	8.10 Checking Cutterbar Lubricant, page 109
	<p>Check cutterbar area carefully for loose parts and hardware on the cutterbar.</p> <p> WARNING</p> <p>Objects can be ejected with considerable force when the machine is started and may result in serious injury or machine damage.</p>	—
RUN-UP PROCEDURE		8.15 Running Up the Mower Conditioner, page 115
	Check hydraulic hose and wiring harness routing to ensure adequate clearance when raising or lowering header.	—
	Check that tail lights and hazard lights are functional.	8.13 Checking Lights, page 113
POST RUN-UP CHECK – STOP ENGINE		
	Check belt drive for proper idler alignment and overheating bearings.	8.2 Checking Drive Belt, page 100
	Check for hydraulic leaks.	—
	Check that header manuals are in storage compartment.	8.14 Checking Manuals, page 114

Date Checked:

Checked by:

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