MacDon

R85
Rotary Disc 13-Foot Self-Propelled Windrower Header

Unloading and Assembly Instructions

169939 Revision A

Original Instruction

The harvesting specialists.

R85 Rotary Disc 13-Foot Self-Propelled Windrower Header

Published: November, 2014

Introduction

This instructional manual describes the unloading, setup, and predelivery requirements for MacDon Model R85 Rotary Disc 13-Foot Self-Propelled Windrower Headers.

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

The following list provides an account of major changes from the previous version of this document.

Summary of Change	Location
Updated the manual's part number and revision level	Throughout
Corrected the bolt dimensions in the Installing Forming Shield section	*6.8 Installing Forming Shield, page 37*
Reorganized the Attaching Header to Windrower section to improve clarity	*6.9 Attaching Header to Windrower, page 40*
Updated the illustrations in the Attaching Hydraulics and Electrical section	*6.10 Attaching Hydraulics and Electrical, page 55*
Updated the image in the Lubrication Points: Oil Levels illustration	*6.12.2 Lubrication Points, page 76*
Corrected the Conditioner Roll Gap and Roll Timing illustrations	*7.4 Checking Conditioner Rolls, page 86*
Added the Preparing the Bevel Gear Box section	*7.6 Preparing the Bevel Gearbox, page 89*
Added the Preparing the Conditioner Gear Box section	*7.7 Preparing the Conditioner Gearbox, page 90*
Updated the manual storage location	*7.8 Checking Manuals, page 91*
Added preparing conditioner and bevel gearbox to the predelivery checklist	*Predelivery Checklist, page 93*

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:
  - A hard hat
  - Protective footwear with slip resistant soles
  - Protective glasses or goggles
  - Heavy gloves
  - Wet weather gear
  - A respirator or filter mask
- Be aware that exposure to loud noise can cause impairment or loss of hearing. Wear suitable hearing protection devices such as ear muffs or ear plugs to help protect against objectionable or loud noises.

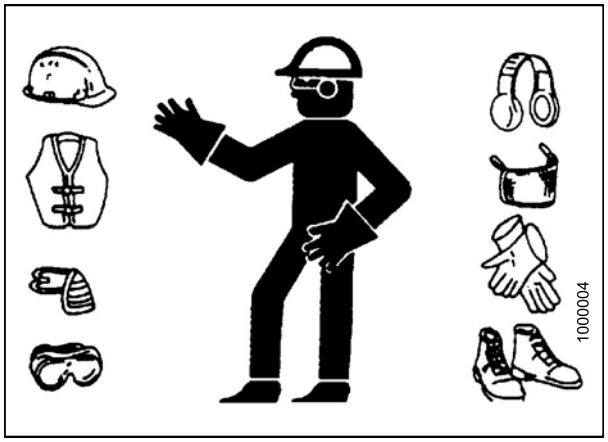

Figure 1.1: Safety Equipment

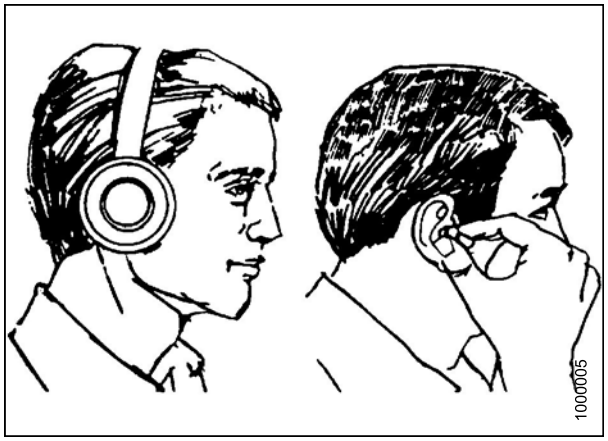

Figure 1.2: Safety Equipment

- 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 to get finished. Take the time to consider the safest way. Never ignore warning signs of fatigue.

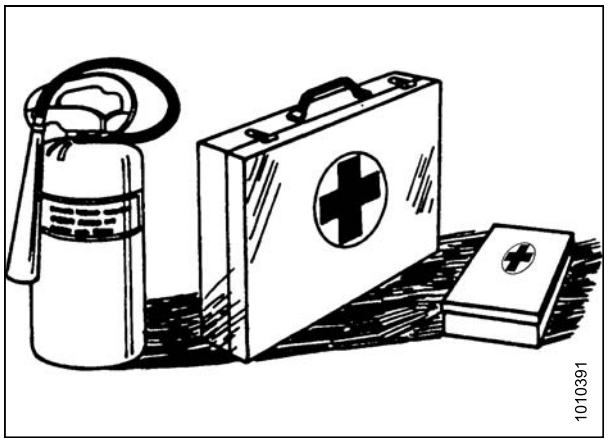

Figure 1.3: Safety Equipment

- 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.
- Stop the engine and remove the key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

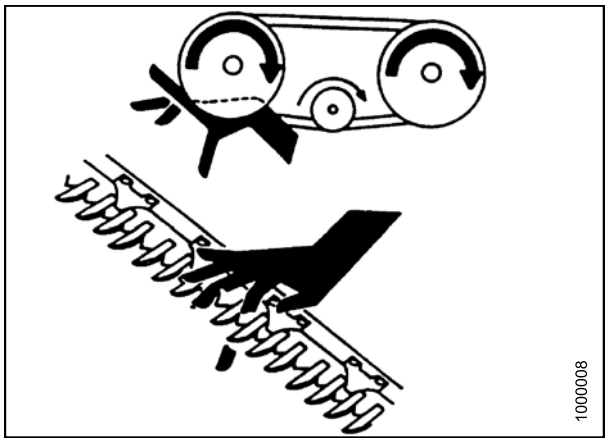

Figure 1.5: Safety Around Equipment

- 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, are 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 your Dealer Parts Department.

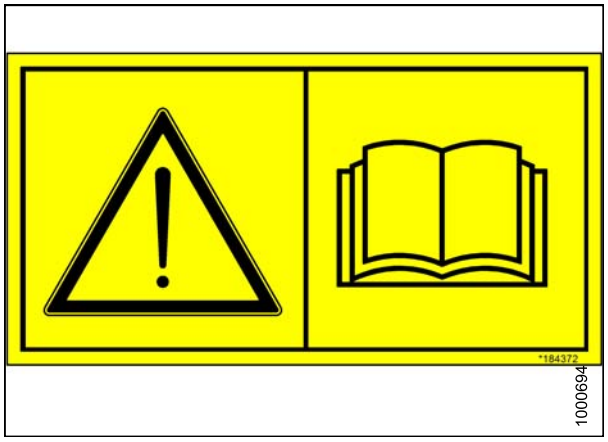

Figure 1.7: Operator's Manual Decal

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

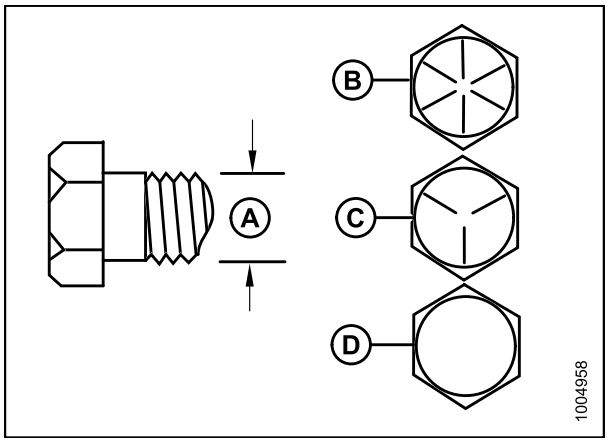

Figure 2.1: Bolt Grades

A - Nominal Size
B - SAE-8
C - SAE-5
D - SAE-2

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

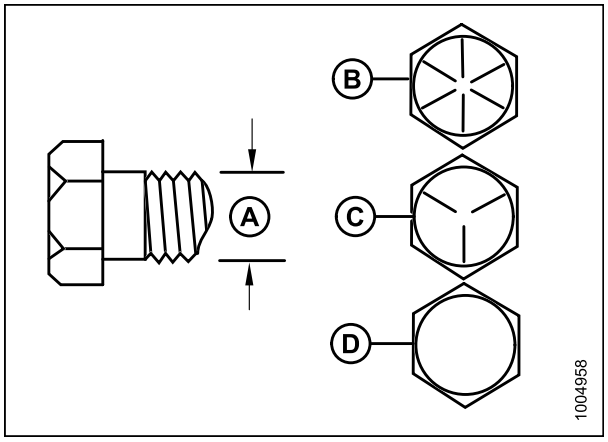

Figure 2.2: Bolt Grades

A - Nominal Size **B - SAE-8**
C - SAE-5 **D - SAE-2**

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

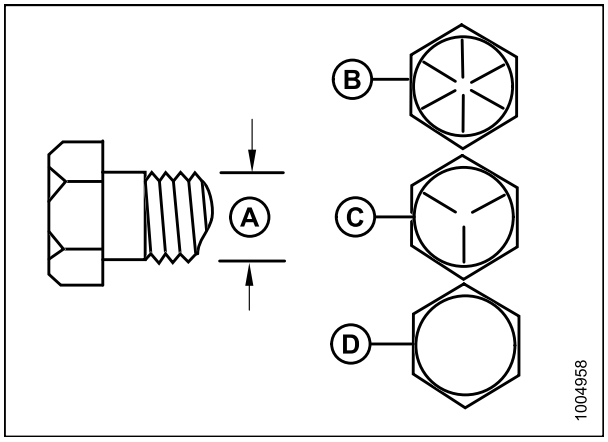

Figure 2.3: Bolt Grades

A - Nominal Size **B - SAE-8**
C - SAE-5 **D - SAE-2**

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

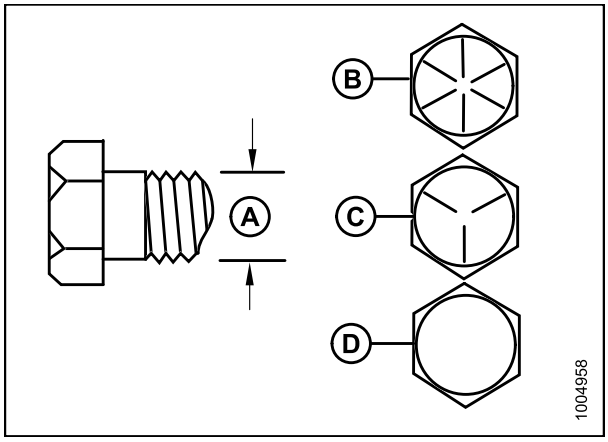

Figure 2.4: Bolt Grades

A - Nominal Size **B - SAE-8**
C - SAE-5 **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

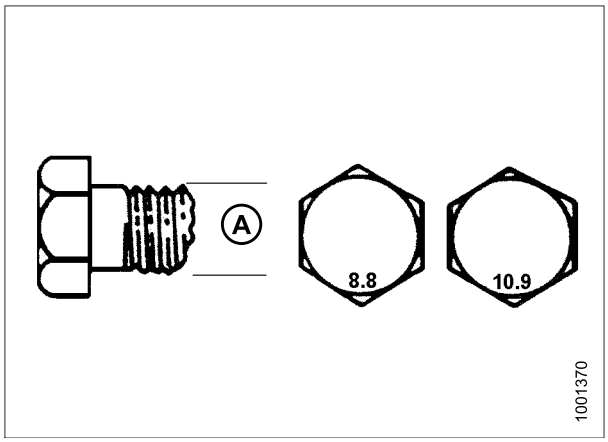

Figure 2.5: Bolt Grades

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

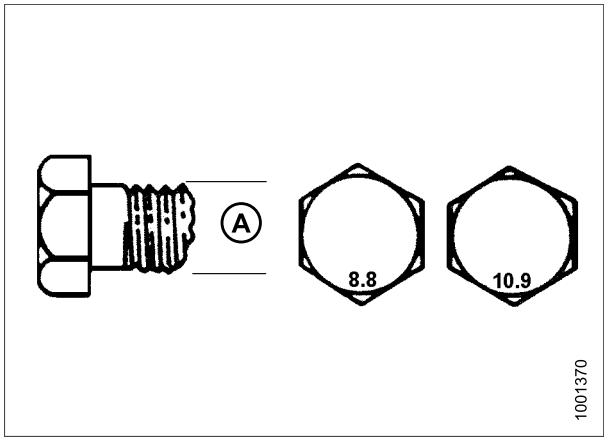

Figure 2.6: Bolt Grades

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

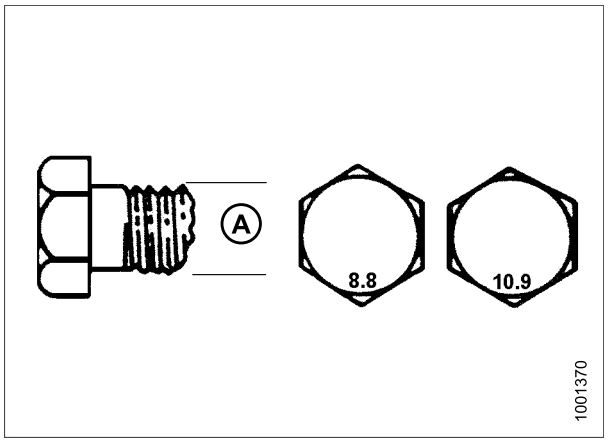

Figure 2.7: Bolt Grades

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

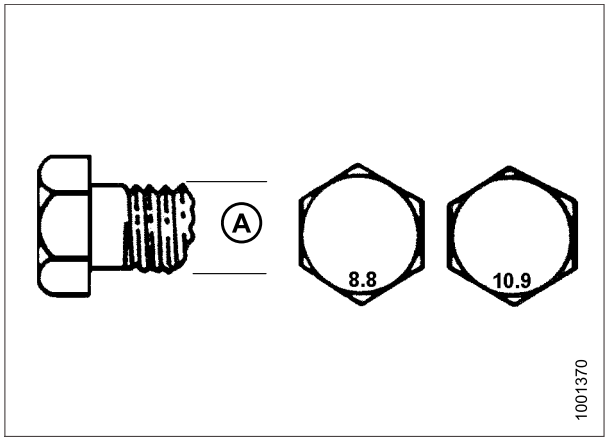

Figure 2.8: Bolt Grades

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	–	–	–	–

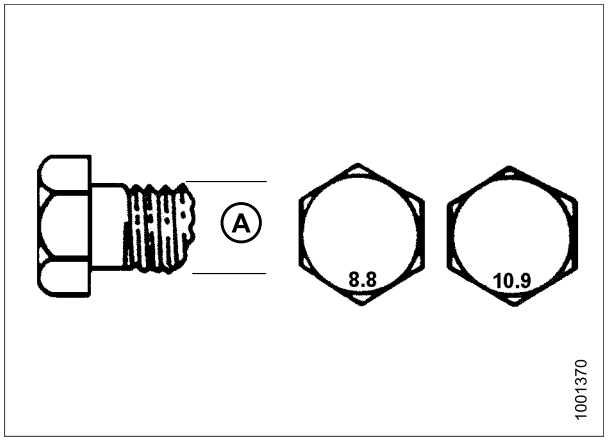

Figure 2.9: Bolt Grades

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.

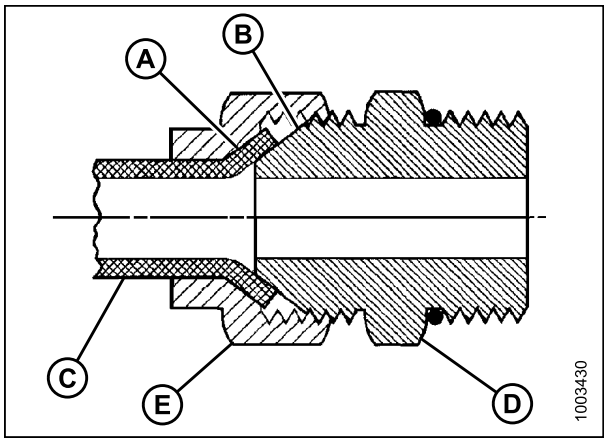

Figure 2.10: Hydraulic Fitting

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.

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).

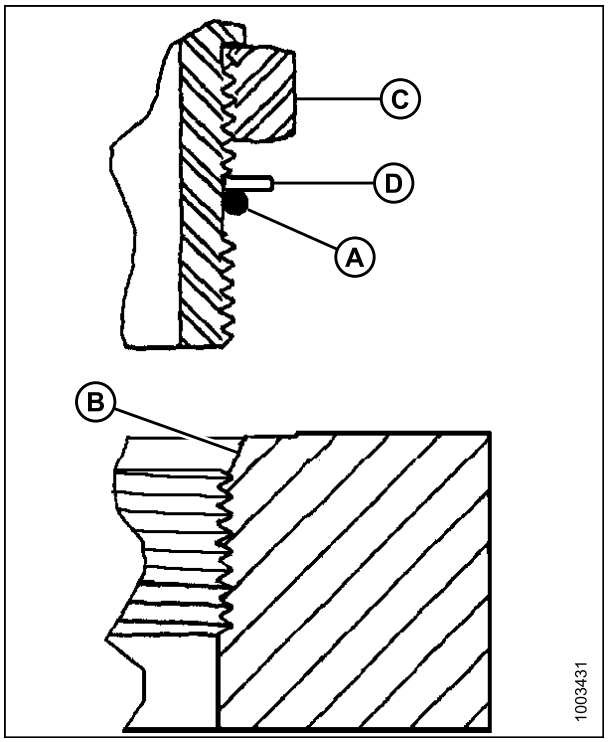

Figure 2.11: Hydraulic Fitting

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.

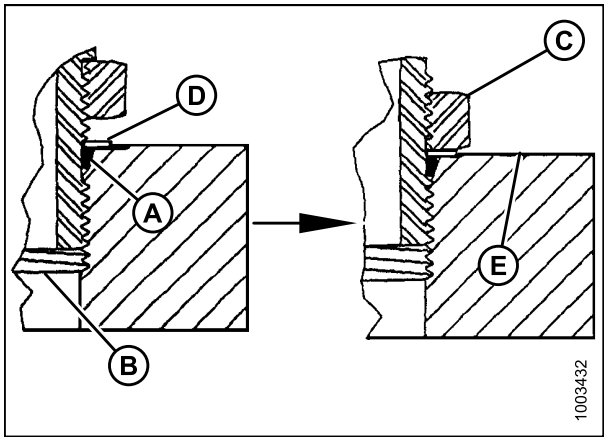

Figure 2.12: Hydraulic Fitting

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.

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.

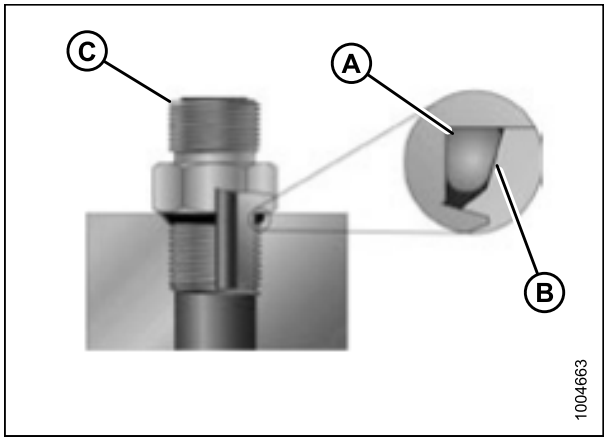

Figure 2.13: Hydraulic Fitting

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.

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 16*.

   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).

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

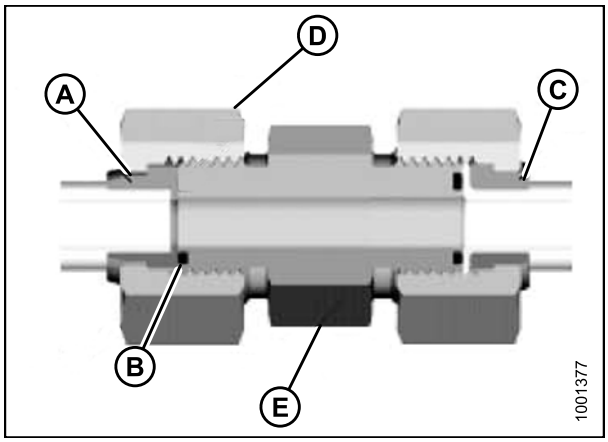

Figure 2.15: Hydraulic Fitting

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

SAE Dash Size	Thread Size (in.)	Torque Value[4]	
		ft·lbf (*in·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
-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

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.

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	x 0.4047 =	Hectares	ha
Flow	Us gallons per minute	gpm	x 3.7854 =	Liters per Minute	L/min
Force	Pounds force	lbf	x 4.4482 =	Newtons	N
Length	Inch	in.	x 25.4 =	Millimeters	mm
	Foot	ft.	x 0.305 =	Meters	m
Power	Horsepower	hp	x 0.7457 =	Kilowatts	kW
Pressure	Pounds per square inch	psi	x 6.8948 =	Kilopascals	kPa
			x .00689 =	Megapascals	MPa
			÷ 14.5038 =	Bar (Non-SI)	bar
Torque	Pound feet or foot pounds	ft·lbf	x 1.3558 =	Newton Meters	N·m
	Pound inches or inch pounds	in·lbf	x 0.1129 =	Newton Meters	N·m
Temperature	Degrees Fahrenheit	˚F	(˚F-32) x 0.56 =	Celsius	˚C
Velocity	Feet per minute	ft/min	x 0.3048 =	Meters per Minute	m/min
	Feet per second	ft/s	x 0.3048 =	Meters per Second	m/s
	Miles per hour	mph	x 1.6063 =	Kilometres per Hour	km/h
Volume	Us gallons	US gal	x 3.7854 =	Liters	L
	Ounces	oz.	x 29.5735 =	Milliliters	ml
	Cubic inches	$in.^3$	x 16.3871 =	Cubic Centimetres	cm^3 or cc
Weight	Pounds	lbs	x 0.4536 =	Kilograms	kg

4 Definitions

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

Term	Definition
API	American Petroleum Institute
ASTM	American Society of Testing and Materials
Bolt	A headed and externally threaded fastener that is designed to be paired with a nut
Cab-forward	Windrower operation with the Operator and cab facing in the direction of travel
CDM	Cab display module on a self-propelled windrower
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
DWA	Double Windrow Attachment
Export header	Header 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
Header	A machine that cuts and lays crop into a windrow and is attached to a self-propelled windrower
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
n/a	Not applicable
Nut	An internally threaded fastener that is designed to be paired with a bolt
N-DETENT	The slot opposite the NEUTRAL position on operator’s console
North American header	Header 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

DEFINITIONS

Term	Definition
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
R-Series header	MacDon rotary disc header
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)
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
Self-Propelled (SP) Windrower	Self-propelled machine consisting of a power unit with a header
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
Windrower	Power unit of a self-propelled header

5 Unloading the Header

CAUTION

To avoid injury to bystanders from being struck by machinery, do NOT allow people 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.

Table 5.1 Lifting Vehicle

Minimum Capacity[6]	8000 lb (3630 kg)
Minimum Fork Length	78 in. (1981 mm)

IMPORTANT:
Forklifts are normally rated for a load located 24 in. (610 mm) ahead of back end of the forks. To obtain the forklift capacity at 48 in. (1220 mm), check with your forklift distributor.

1. Remove hauler's tie down straps and chains.

WARNING

Be sure forks are secure before moving away from load. Stand clear when lifting.

2. Approach header from its underside and slide forks in under the lifting framework as far as possible.

   IMPORTANT:
   If load is two units wide, take care to avoid contacting the other machine.

3. Raise header off the deck.

Figure 5.1: Lifting Header off Trailer

4. Back up until the unit clears trailer, and slowly lower to 6 in. (150 mm) from the ground.
5. Take to storage or setup area.
6. Set machine down on secure, level ground.
7. If hydraulic motor and hoses are shipped separately on pallet, unload pallet.
8. Check for shipping damage and missing parts.

Figure 5.2: Moving Header with Forklift

6. At 48 in. (1220 mm) from back end of forks.

6 Assembling the Header

Follow each procedure in this chapter in order.

6.1 Removing Underside Shipping Support

To remove the underside shipping support, follow these steps:

CAUTION

Keep feet clear when removing final bolts.

1. Remove two bolts (A) on each end of support and remove shipping support (B). Discard support and hardware.
2. Cut and remove shipping wires that hold baffle (C) in shipping position.

   NOTE:
   Support baffle before cutting last wire and then slowly lower baffle.

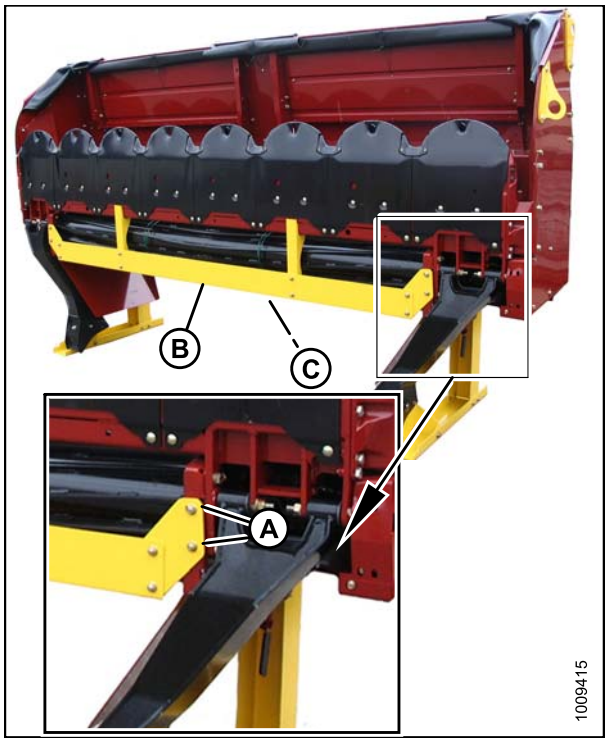

Figure 6.1: Underside Shipping Support

3. Remove two bolts (D) securing shipping channel to conditioner cover.

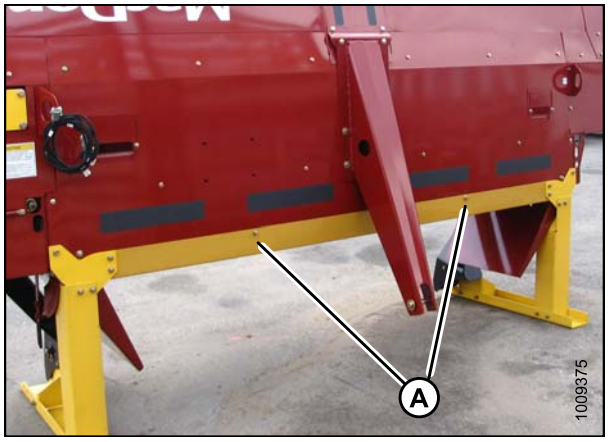

Figure 6.2: Underside Shipping Support

6.2 Lowering Header

1. Attach spreader bar to forks.

CAUTION

Ensure spreader bar is secured to the forks so that it cannot slide off the forks or towards the mast as the header is lowered to the ground.

Table 6.1 Lifting Vehicle

Chain Type	Overhead lifting quality (1/2 in.)
Minimum Working Load	5000 lb (2270 kg)

2. Drive lifting vehicle to approach header from its underside.
3. Attach chains to hooks (A) on either side of header.

CAUTION

Stand clear when lowering the header

IMPORTANT:
Do **NOT** lift at hooks when unloading from trailer. this procedure is only for laying the machine over into working position.

IMPORTANT:
Chain length must be sufficient to provide a minimum 4 ft (1.2 m) vertical chain height.

4. Raise forks until lift chains are fully tensioned.

Figure 6.3: Spreader Bar Attached to Header

5. Back up **SLOWLY**, while simultaneously lowering header until cutterbar rests on ground.
6. Remove chains from header.

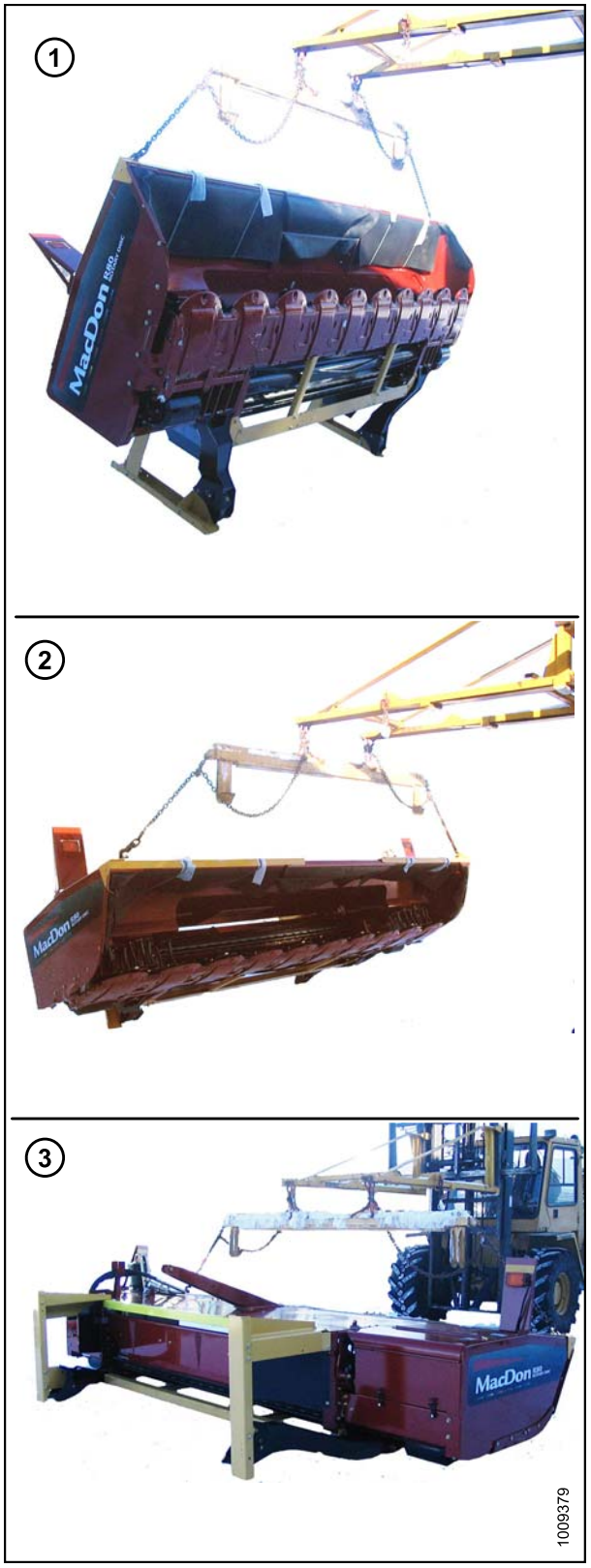

Figure 6.4: Lowering Header to the Ground

6.3 Removing Shipping Stands

To remove shipping stands, follow these steps:

1. Remove the three bolts (A) securing stand to shipping channel plate and shield.
2. Remove hairpin from clevis pin (B) and remove clevis pin.
3. Hold shipping stand and remove the bolt (C) securing shipping stand to header lifting arm.
4. Remove stand and discard.
5. Reinsert the clevis pin (B) in the header lifting arm and secure with the hairpin.
6. Repeat previous steps for other stand.

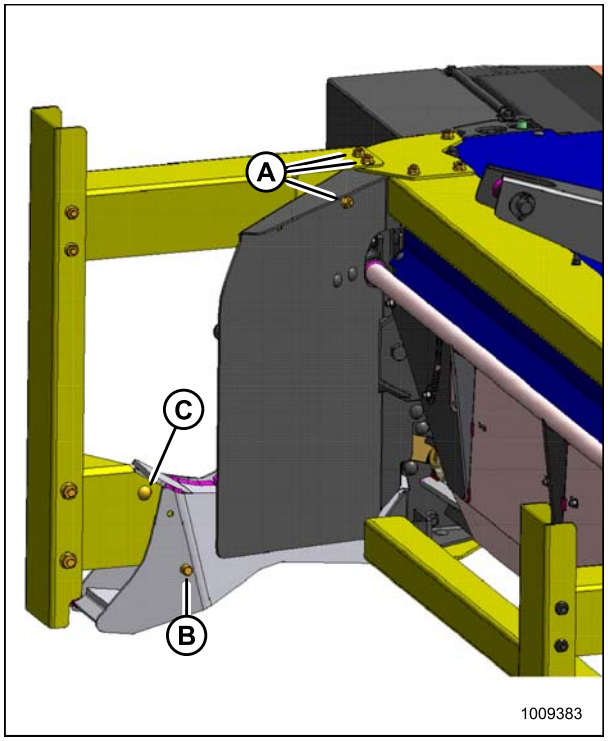

Figure 6.5: Shipping Stands

7. Remove the four bolts (A) attaching shipping channel and plate to conditioner cover.
8. Remove and discard channel and plate.

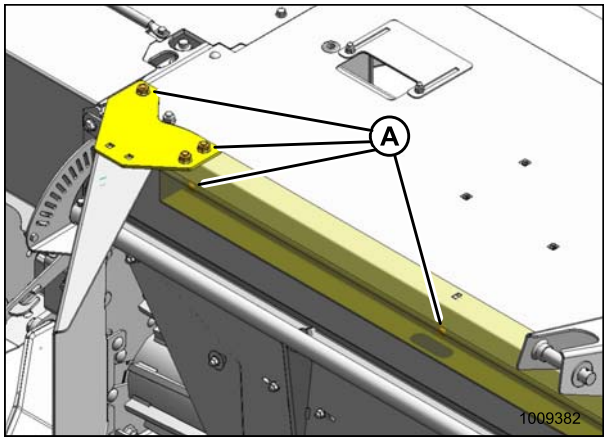

Figure 6.6: Shipping Stands (LH Shown, RH Opposite)

9. Remove the hook (E) at the front corner. Reinstall hardware.

   NOTE:
   If the Tall Crop Divider option will be installed, do NOT reinstall hardware.

10. Repeat the last three steps for the other side of the header.

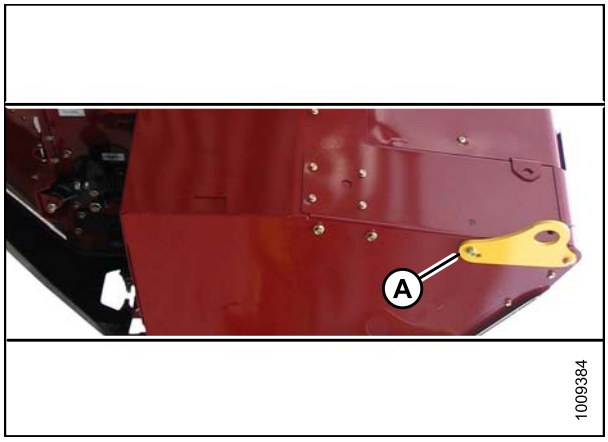

Figure 6.7: Shipping Hook

6.4 Unpacking Curtains

1. Remove nut and bolt (B) on the swath baffle adjuster plate (A) located next to the driveshield on the left-hand side.
2. Remove lynch pin in pin (D) and remove pin from lever (C).

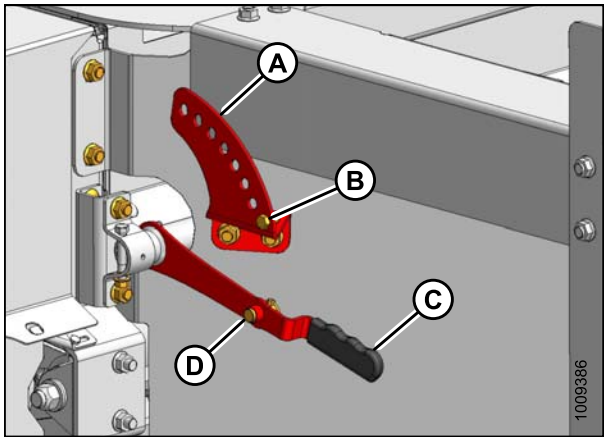

Figure 6.8: Adjuster Plate and Swath Baffle Lever

3. Move swath baffle lever (C) to middle hole in bracket (A) and reinstall pin (D) through lever and bracket.
4. Secure with lynch pin.

   NOTE:
   Baffle position may need to be adjusted for proper pin engagement. Loosen bolts (E) and adjust bracket (F) and baffle as required. Tighten bolts (E).
5. Reinstall bolt (B).

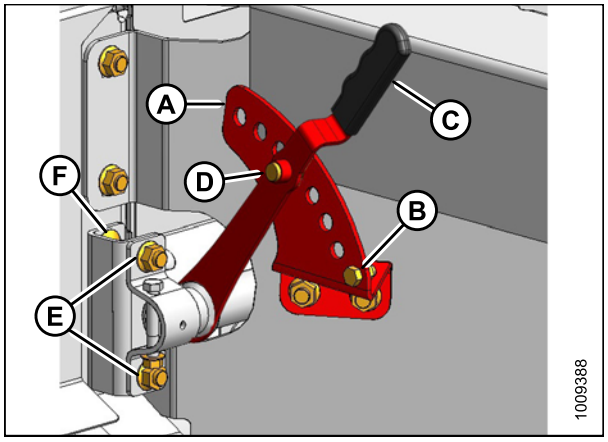

Figure 6.9: Adjuster Plate and Swath Baffle Lever

6. Remove two bolts (A) securing cutterbar doors to frame.
7. Remove shipping wire (B) around curtains.

⚠ WARNING

Ensure cutterbar is completely clear of foreign objects. These objects can be ejected with considerable force when the machine is started and may result in serious injury or machine damage.

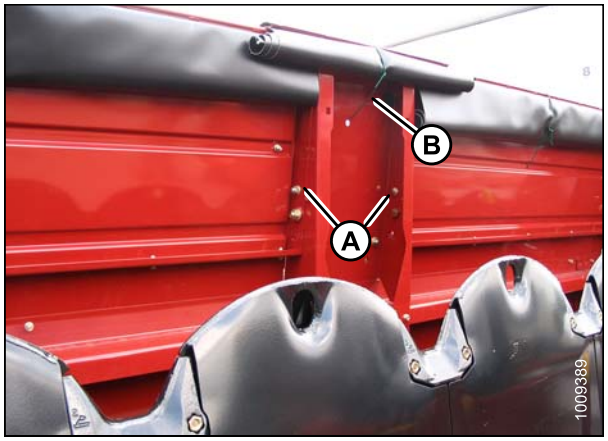

Figure 6.10: Cutterbar Door and Curtain Secured for Shipping

8. Open cutterbar doors and check cutterbar area for debris and foreign objects. Ensure all material is removed.

Figure 6.11: Cutterbar Doors Open

9. Close cutterbar doors. Ensure that curtains hang properly and completely enclose cutterbar area. Minor creases in curtains will eventually straighten out.

Figure 6.12: Curtain – Unacceptable

Figure 6.13: Curtain – Acceptable

10. Fasten latches (A) at corners of curtains.

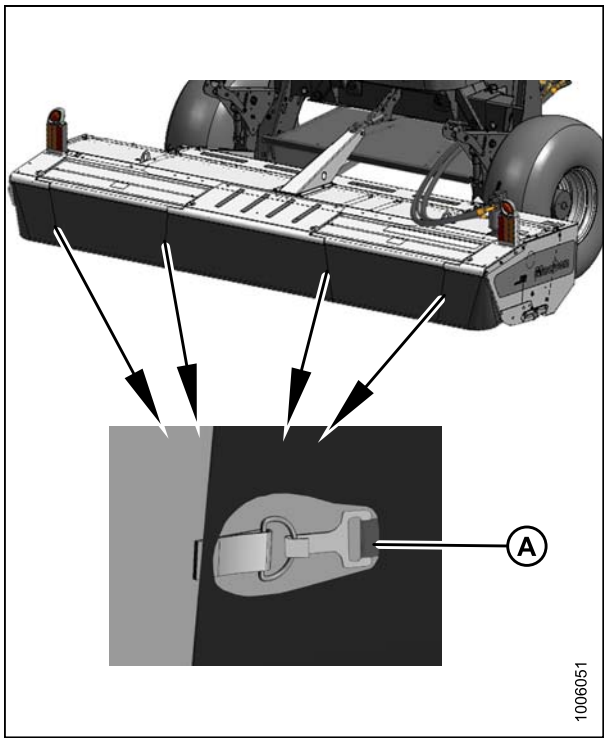

Figure 6.14: Curtain Latches

11. Remove shipping edge trim (A).
12. Close the shields (B) over the two lifting holes and tighten nuts (C).

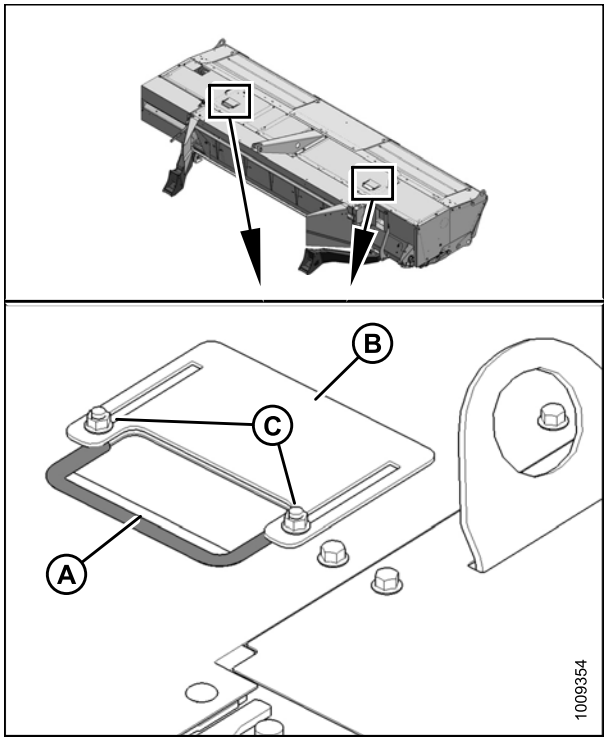

Figure 6.15: Top Shield Cover

6.5 Installing the Hydraulic Motor

To install the motor, follow these steps:

1. Unpack motor with preassembled hoses/lines. Ensure correct motor bundle for your windrower was supplied with the shipment.

Table 6.2 :Motor Bundles

Windrower Model	Bundle
M205	B5456
M200	B5511
M155 and M150	B5510

2. Remove four bolts (A) and remove plate (B) from gearbox. Retain bolts for reinstallation and discard plate.

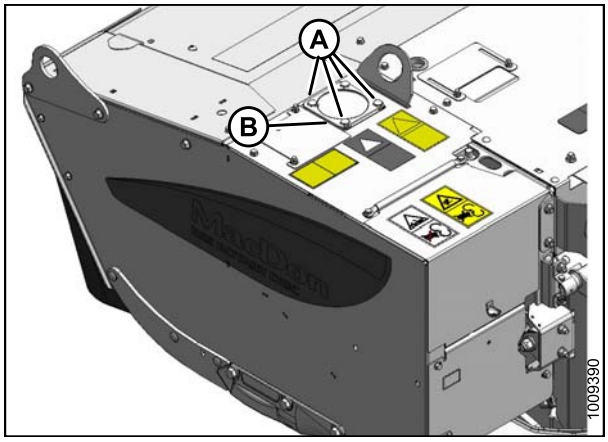

Figure 6.16: Header with Gearbox Plate in Position for Shipping

3. Attach a sling to motor and the other end to lifting device. Motor and lines weigh approximately 150 lb (68 kg).

   IMPORTANT:
   Do NOT lift motor with hydraulic lines.

4. Position motor (B) onto gearbox opening as shown and lay hoses on top of header.

   IMPORTANT:
   Slowly lower motor (B) onto gearbox, ensuring splines on motor shaft and gearbox are aligned and properly engaged.

5. Remove sling.

6. Reinstall four bolts (A) to secure motor to gearbox. Torque bolts to 103 lbf·ft (140 N·m).

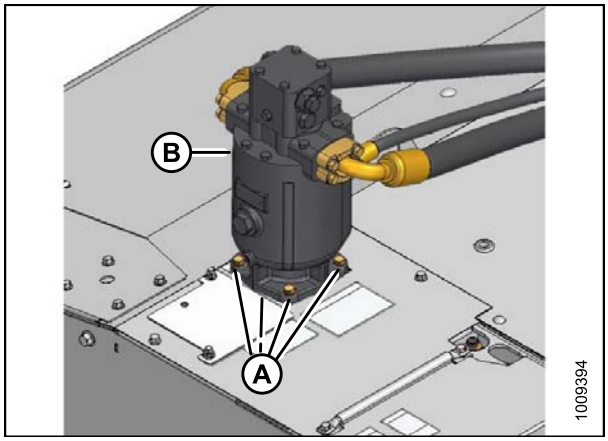

Figure 6.17: M205 Configuration

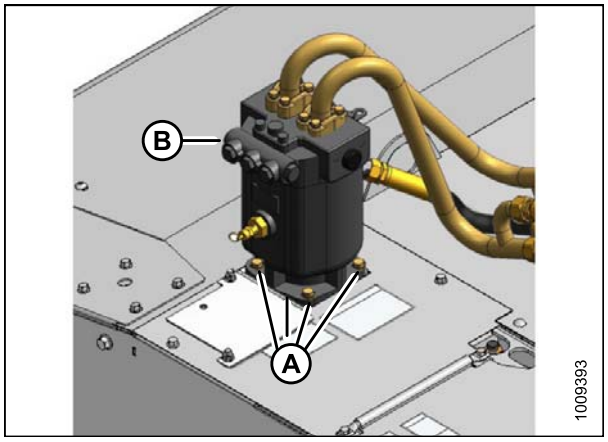

Figure 6.18: M200 Configuration

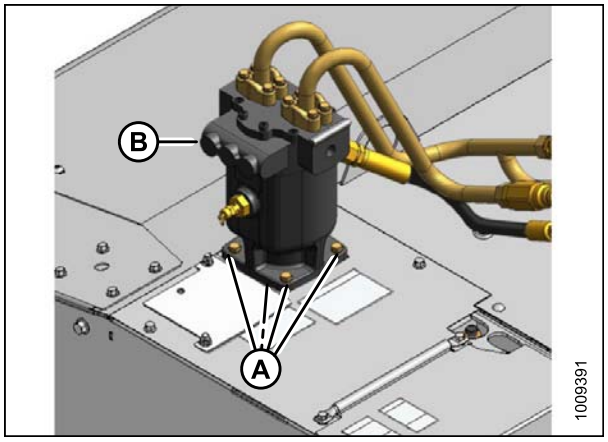

Figure 6.19: M155 and M150 Configuration

6.6 Hose Supports

6.6.1 Installing Hose Support: M205

1. Retrieve hose stand (A) from shipping bundle, and install in accordance with instructions supplied.

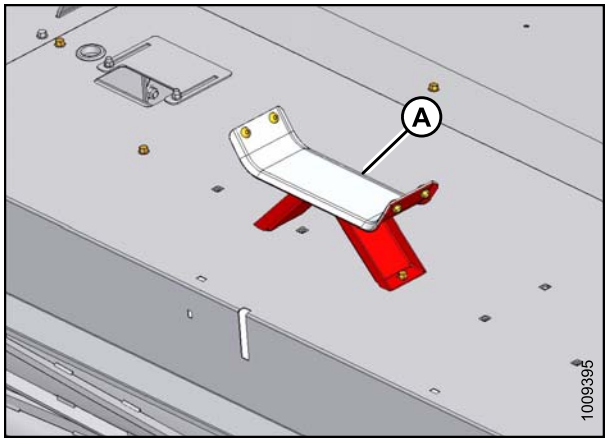

Figure 6.20: Hose Support for Use with M205 Self-propelled Windrower

6.6.2 Installing Hose Support: M200, M155, M150

1. Retrieve hose support and hardware from shipping bundle.
2. Attach support (A) to header with the two carriage bolts (B) and nuts.

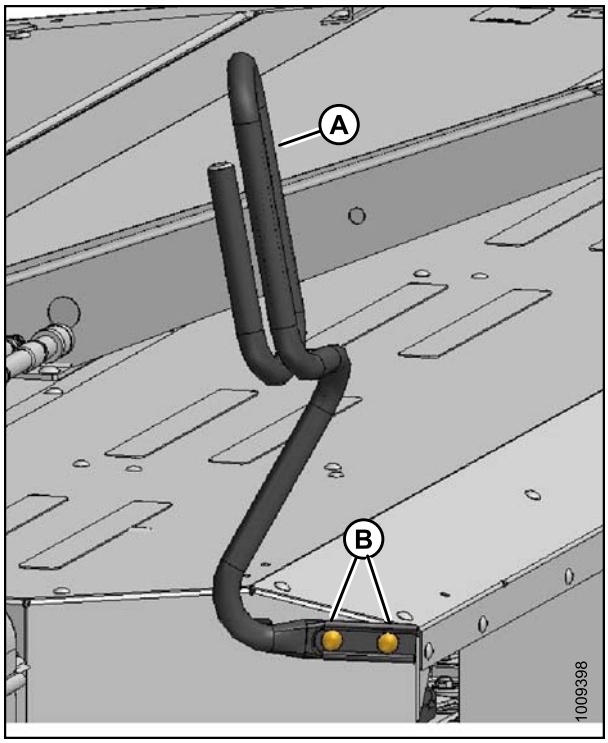

Figure 6.21: Hose Support for Use with M200, M155, or M150 Self-propelled Windrower

6.7 Assembling Forming Shield

1. Unpack and remove shipping material from side deflectors (A).
2. Remove hardware bag (B).
3. Open the hardware bag.

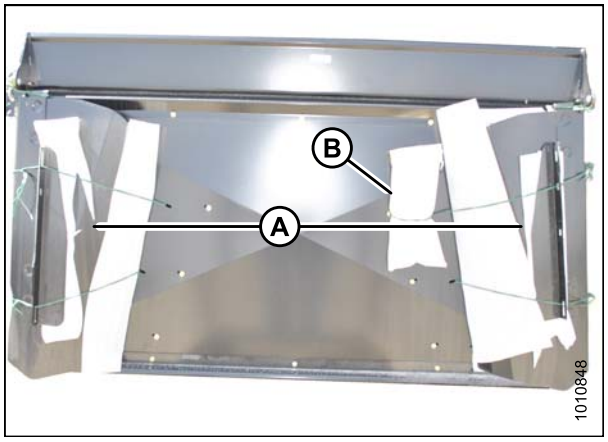

Figure 6.22: Forming Shield in Shipping Configuration

4. Install rubber strap (A) to the side bracket (B) using bolt (C), washer (D), and nut (E).
5. Repeat for the other side.

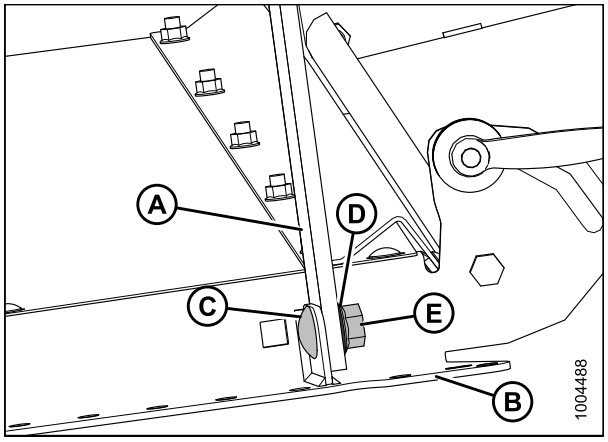

Figure 6.23: Forming Shield Cover Upside Down

6. Lay cover (A) upside down on a flat surface.
7. Install the center deflectors (B) using three bolts (C) on each side.

   NOTE:
   Deflector's (B) narrow end faces front and deep end faces the rear.

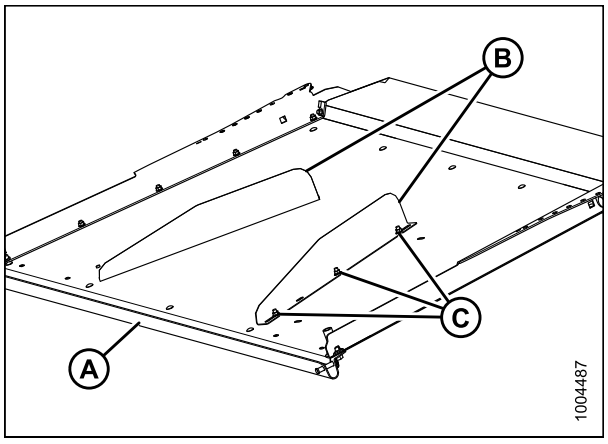

Figure 6.24: Forming Shield Cover Upside Down

8. Assemble side deflectors (C) to cover with 5/8 in. x 7 in. bolt (B), jam nut (E), washer (D), and nut (A).
9. Tighten flange nut (A) enough to hold deflectors (C) in position, but still allow deflectors to move.
10. Tighten jam nut (E) against cover while holding bolt (B).

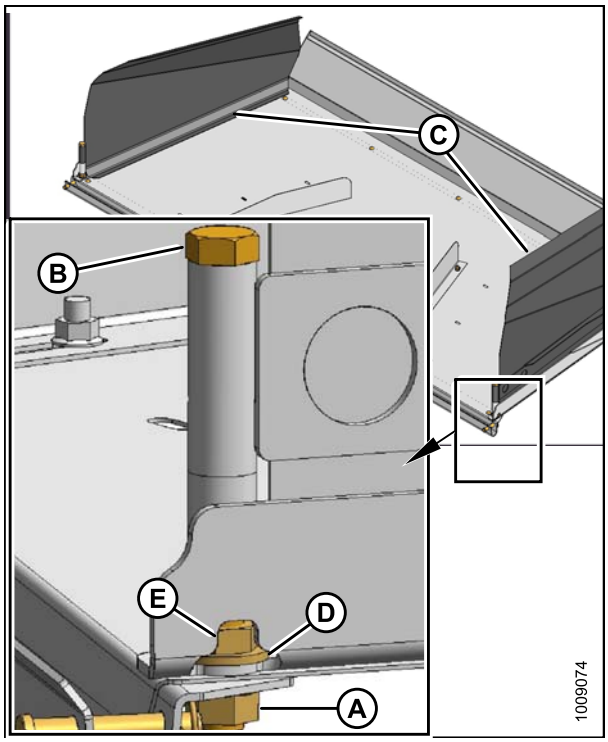

Figure 6.25: Forming Shield: Side Deflectors

11. Remove lynch pin (A) from adjuster rod (B) and position rod in hole in side deflector (C). Secure with lynch pin (A).
12. Repeat for other deflector.

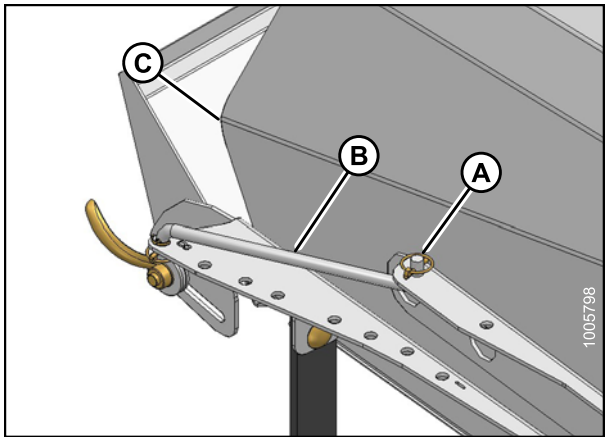

Figure 6.26: Positioning Adjuster Rod

13. Invert forming shield to installation position as shown.

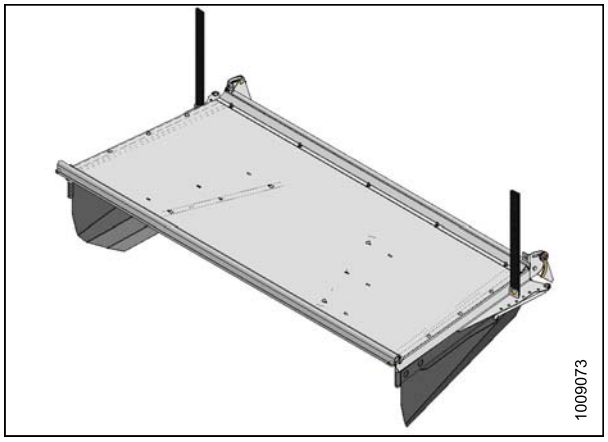

Figure 6.27: Forming Shield Right Side Up

14. Install hose support (A) to the left hand side of the top shield (B) and channel (C) using two bolts and nuts (D).

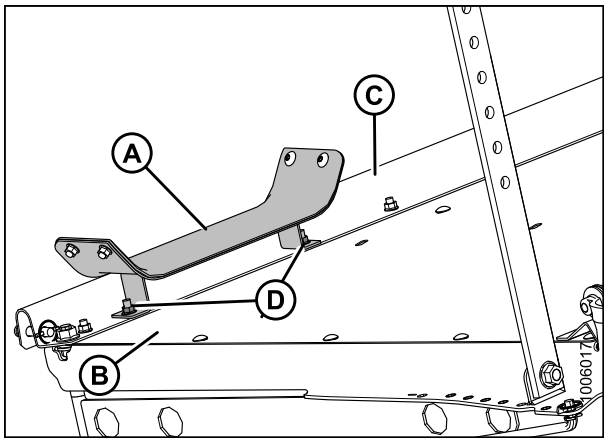

Figure 6.28: Hose Support

NOTE:
If there are no mounting slots for the hose support, drill two 7/16 in. (11 mm) holes (A) through top shield (B) and channel (C).

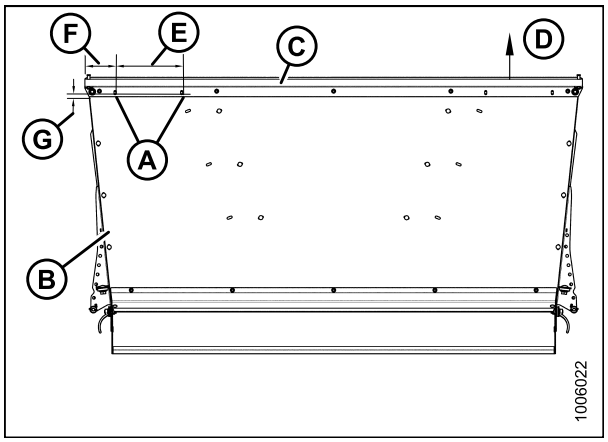

Figure 6.29: Forming Shield Top View

A - Two 7/8 in. (11 mm) Holes
B - Top Shield
C - Channel
D - Header Forward
E - 12.6 in. (320 mm)
F - 5.7 in. (144.8 mm)
G - 0.77 in. (19.5 mm)

6.8 Installing Forming Shield

To install the forming shield, follow these steps:

1. Remove header from the windrower (if attached) for ease of installation of the forming shield. Refer to your windrower operator's manual for instructions.
2. Retrieve plate (A) and attachment hardware from forming shield bundle.
3. Attach plate (A) to windrower leg with two 1/2 in. x 5.25 in. hex bolts (B) and nuts. Repeat for opposite leg. Hardware is supplied with forming shield bundle.

   IMPORTANT:
   Plate (A) is shown in standard position. If Double Windrow Attachment (DWA) will be installed, install plate in inverted position.
4. Install a 1/2 in. x 4 in. hex bolt (C) with spacer (D) and nut on each plate. Hardware is supplied with forming shield bundle.
5. Remove the two clevis pins (A) from forming shield forward end.

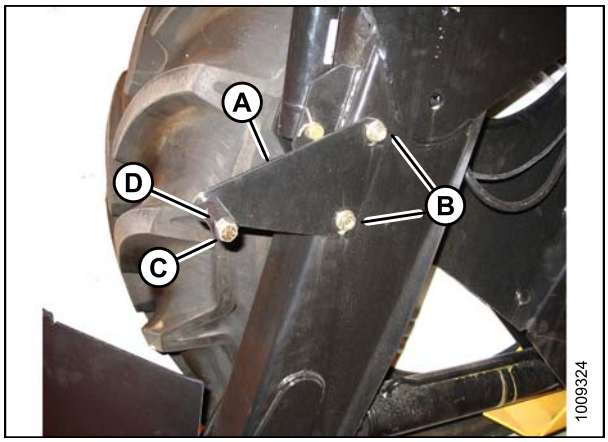

Figure 6.30: Attaching Plate to Windrower Leg

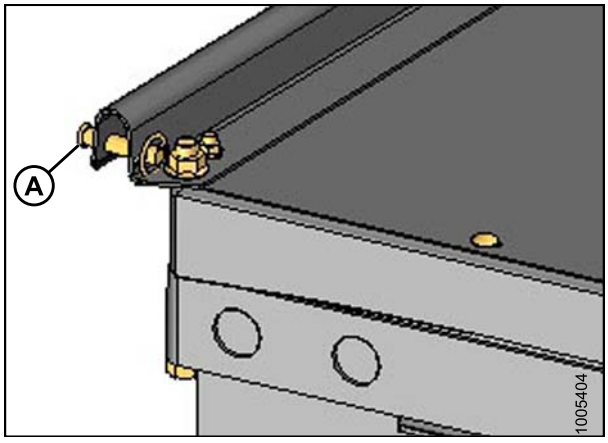

Figure 6.31: Clevis Pin at Forward End of Forming Shield

6. Position the forming shield (A) under the windrower frame.

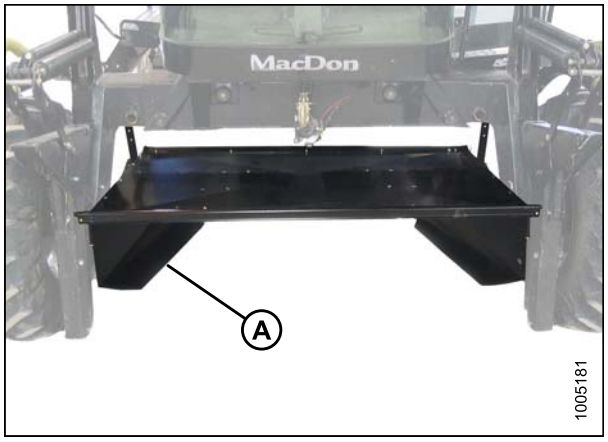

Figure 6.32: Forming Shield under Windrower Frame

7. Position the forming shield onto spacers (B) on windrower legs. Secure with clevis pins (A) and lynch pin.

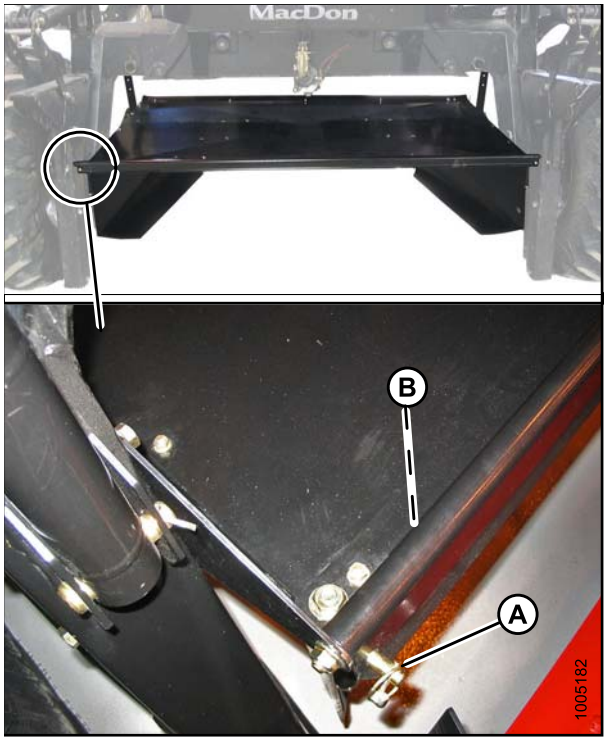

Figure 6.33: Attaching Forming Shield to Windrower Legs

8. Lift the aft end of the forming shield and attach straps (B) to pins (A) on windrower frame. Install washer and hairpin to secure strap. Use the middle hole and adjust height to suit the crop.

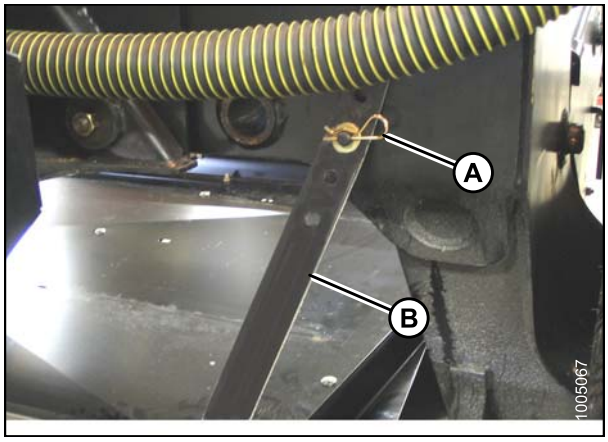

Figure 6.34: Attaching Forming Shield to Windrower Frame

9. Set the forming shield side deflectors to the desired width by repositioning adjuster bars (A). Use the same hole location on both sides.
10. Adjust rear fluffer deflector (C) to middle position. Loosen handles (B) if required.

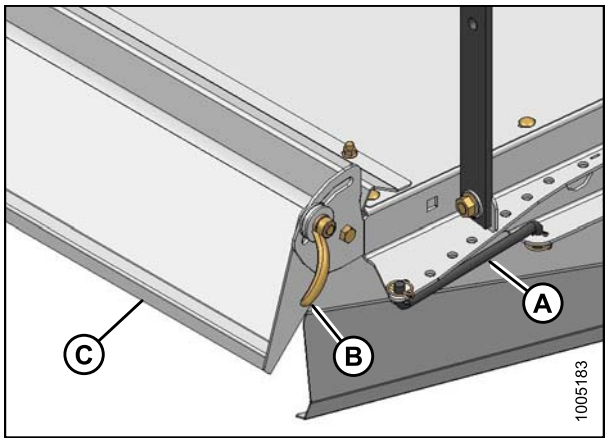

Figure 6.35: Adjusting Forming Shield

6.9 Attaching Header to Windrower

The procedure for attaching the header to a windrower varies depending on the type of center-link installed. The center-link consists of either a hydraulic cylinder that adjusts the header tilt or angle and is controlled with switches in the windrower cab, or a manually adjusted mechanical link.

An optional self-alignment kit controls the alignment of the center-link when attaching the link to the header.

Follow the appropriate procedure:

- *6.9.1 Attaching Header to Windrower: Hydraulic Center-Link with Optional Self-Alignment, page 40*
- *6.9.2 Attaching Header to Windrower: Hydraulic Center-Link without Self-Alignment, page 45*
- *6.9.3 Attaching Header to Windrower: Mechanical Center-Link, page 50*

NOTE:
Refer to your windrower operator's manual for windrower operating instructions.

6.9.1 Attaching Header to Windrower: Hydraulic Center-Link with Optional Self-Alignment

To attach an R85 header to an M155 or M205 Self-propelled Windrower equipped with a hydraulic center-link and optional self-alignment, follow these steps:

DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

1. Remove hairpin (B) from clevis pin (A) and remove pin from on left and right header boots (C) on header.

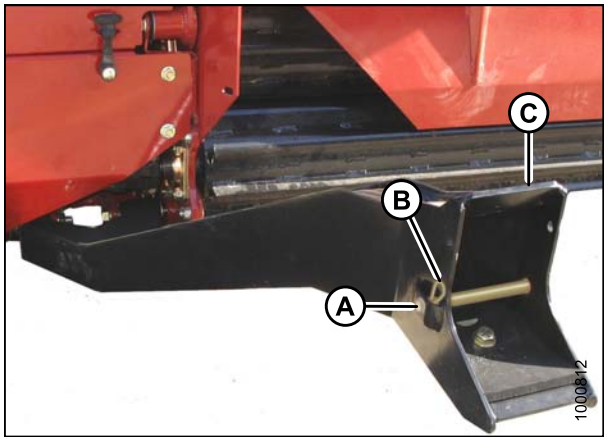

Figure 6.36: Header Boot

CAUTION

To prevent damage to the lift system when lowering header lift linkages without a header or weight box attached to windrower, ensure that float engagement pin is installed in storage position (B) and NOT installed in hole position (A).

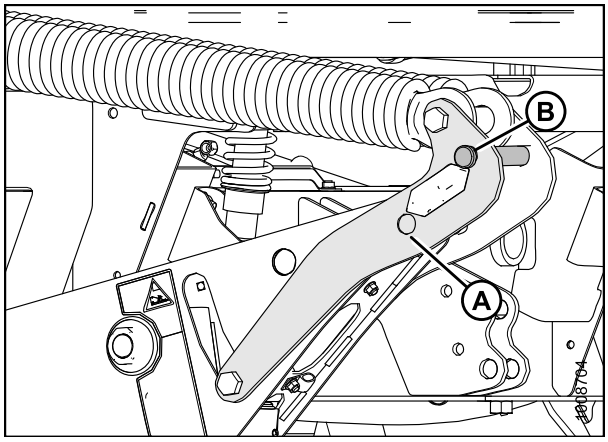

Figure 6.37: Header Lift Linkage

CAUTION

Check to be sure all bystanders have cleared the area.

2. Start the engine and activate HEADER DOWN button (A) on the ground speed lever (GSL) to fully retract header lift cylinders.

   IMPORTANT:
   If the center-link is too low, it may contact the header as the windrower approaches the header for hookup.

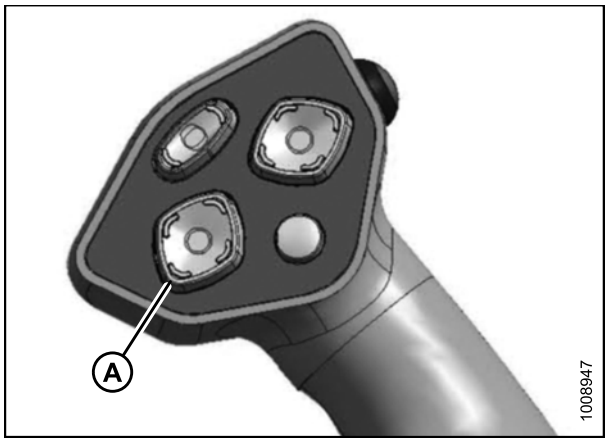

Figure 6.38: GSL

3. If necessary, activate the REEL UP switch (A) on the GSL to raise the center-link so that the hook is above the attachment pin on the header.

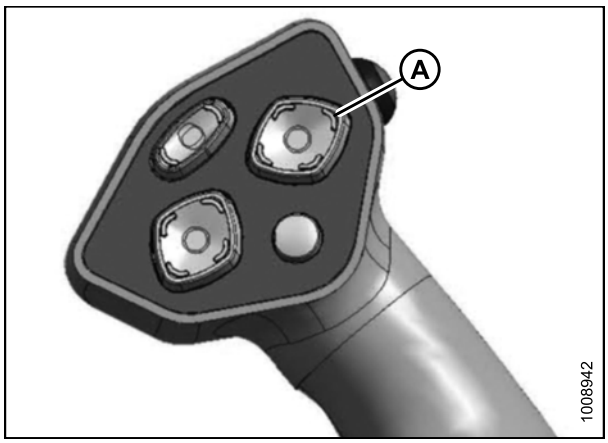

Figure 6.39: GSL

4. Slowly drive windrower forward so that feet (A) on windrower enter boots (B) on the header. Continue to drive slowly forward until feet engage the boots and header nudges forward.

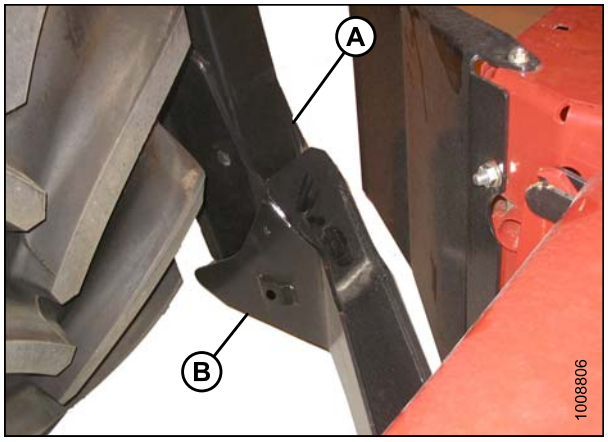

Figure 6.40: Header Boot

5. Use the following GSL functions to position the center-link hook above the header attachment pin:
   - Reel up (A) to raise the center-link
   - Reel down (B) to lower the center-link
   - Header tilt up (C) to retract the center-link
   - Header tilt down (D) to extend the center-link

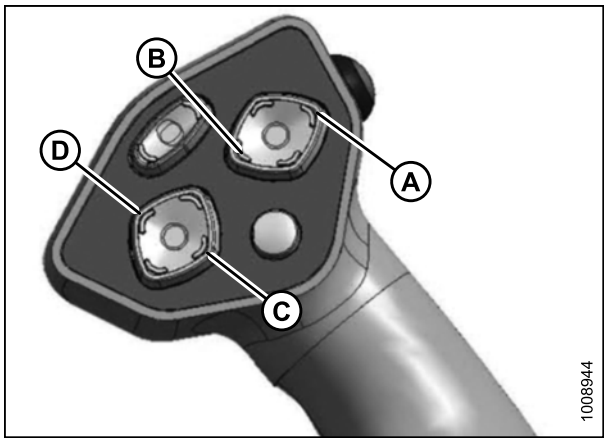

Figure 6.41: GSL

6. Adjust position of the center-link cylinder (E) with the REEL UP and REEL DOWN switches. Position the hook above the header attachment pin using HEADER TILT switches on the GSL.
7. Lower center-link (A) onto the header with REEL DOWN switch until it locks into position (hook release [B] is down).
8. Check that center-link is locked onto header by pressing the REEL UP switch on the GSL.

   IMPORTANT:
   Hook release (B) must be down to enable self-locking mechanism. If the release is open (up), manually push it down after hook engages header pin.

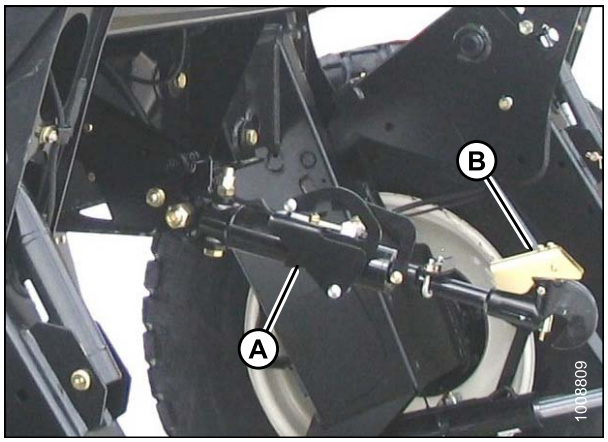

Figure 6.42: Hydraulic Center-Link

9. Start engine and press HEADER UP switch (A) to raise header to maximum height.

   NOTE:
   If one end of the header does NOT raise fully, the lift cylinders require rephasing. If rephasing is needed, proceed as follows:

   a. Press and hold the HEADER UP switch until both cylinders stop moving.

   b. Continue to hold the switch for 3–4 seconds. Cylinders are now phased.

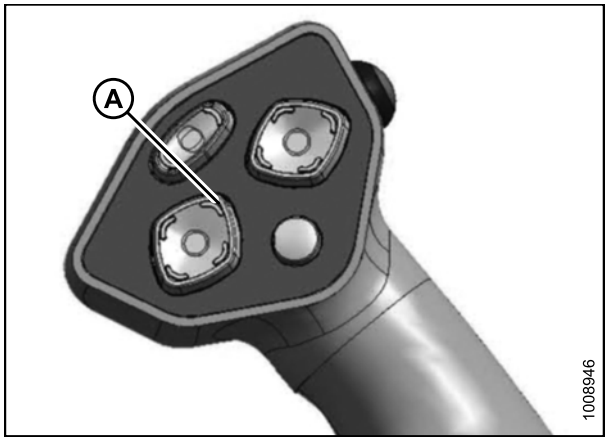

Figure 6.43: GSL

10. Safety props are located on both of the windrower's header lift cylinders. Engage safety props on both lift cylinders as follows:

    a. Stop engine and remove key from ignition.

    b. Pull lever (A) and rotate toward header to release and lower the safety prop (B) onto cylinder.

    c. Repeat for the opposite lift cylinder.

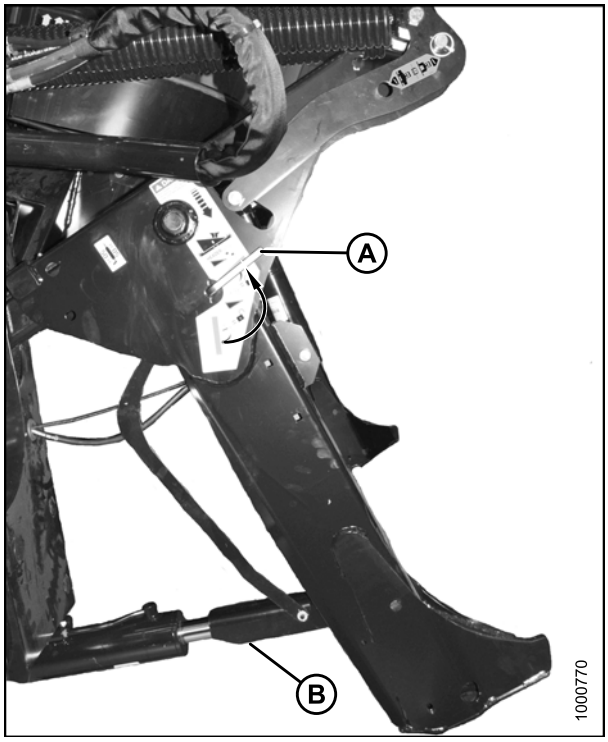

Figure 6.44: Safety Prop

11. Install clevis pin (A) through each boot and foot, and secure with hairpin (B). Do this to both sides.

    IMPORTANT:
    Ensure clevis pin (A) is fully inserted and hairpin is installed behind bracket.

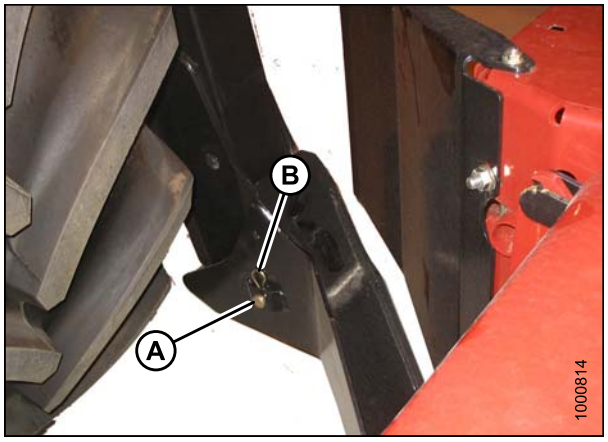

Figure 6.45: Header Boot

12. Remove clevis pin from storage position (B) in linkage, and insert in hole (A) to engage float springs. Secure with hairpin.

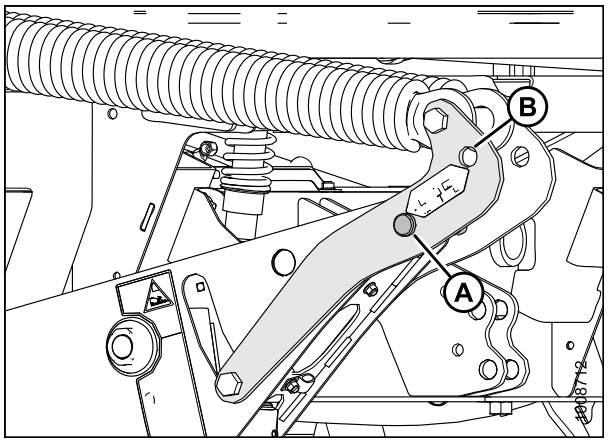

Figure 6.46: Header Lift Linkage

13. Disengage safety prop by turning lever (A) downward to release and lower safety prop until lever locks into vertical position.
14. Repeat for opposite safety prop.

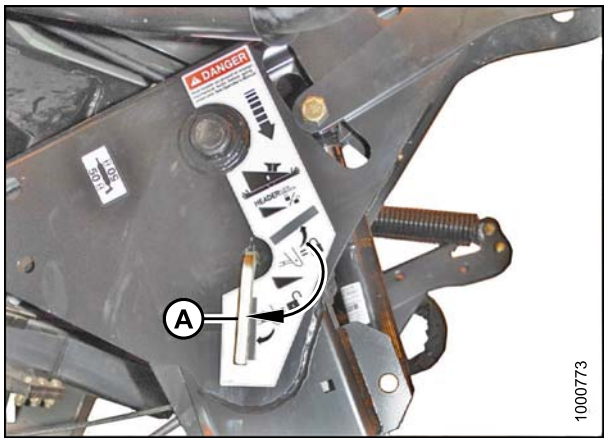

Figure 6.47: Safety Prop

CAUTION

Check to be sure all bystanders have cleared the area.

15. Start engine and activate HEADER DOWN switch (A) on GSL to lower header fully. Stop engine and remove key.

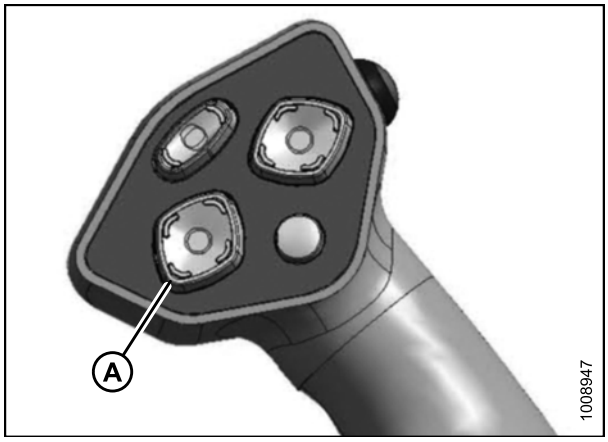

Figure 6.48: GSL

6.9.2 Attaching Header to Windrower: Hydraulic Center-Link without Self-Alignment

To attach an R85 header to an M155 or M205 Self-propelled Windrower equipped with a non-self-aligning hydraulic center-link, follow these steps:

DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

1. Remove hairpin (B) from clevis pin (A) and remove pin from left and right header boots (C) on header.

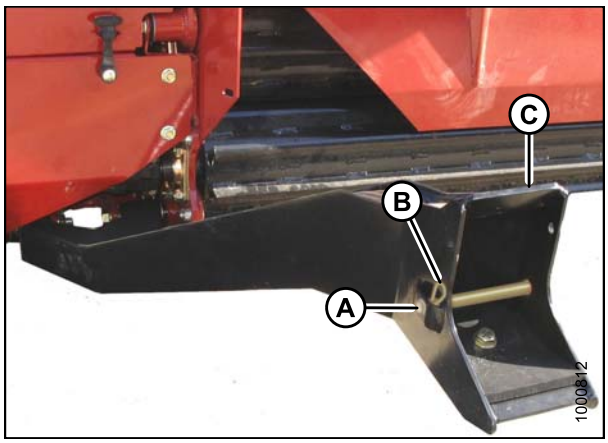

Figure 6.49: Header Boot

CAUTION

To prevent damage to the lift system when lowering header lift linkages without a header or weight box attached to windrower, ensure that float engagement pin is installed in storage position (B) and NOT installed in hole position (A).

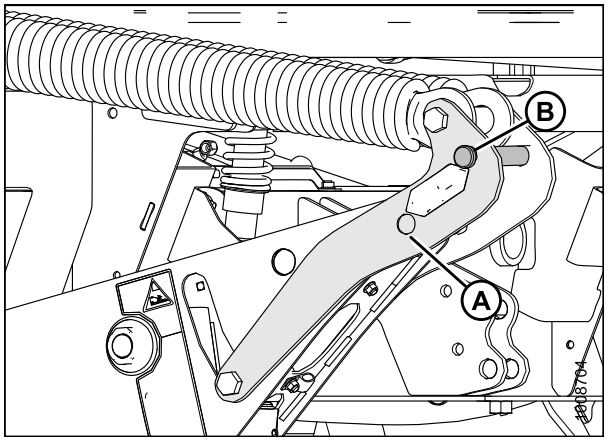

Figure 6.50: Header Lift Linkage

CAUTION

Check to be sure all bystanders have cleared the area.

2. Start the engine and activate HEADER DOWN button (A) on the ground speed lever (GSL) to fully retract header lift cylinders.

   IMPORTANT:
   If the center-link is too low, it may contact the header as the windrower approaches the header for hookup.

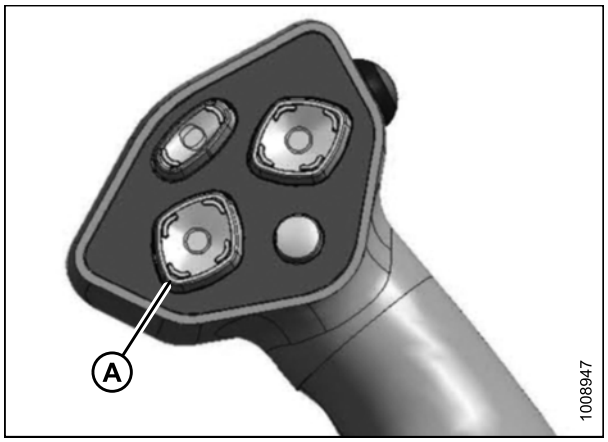

Figure 6.51: GSL

3. If necessary, relocate the clevis pin (A) at the frame linkage as required to raise the center-link (B), so that the hook is above the attachment pin on the header.

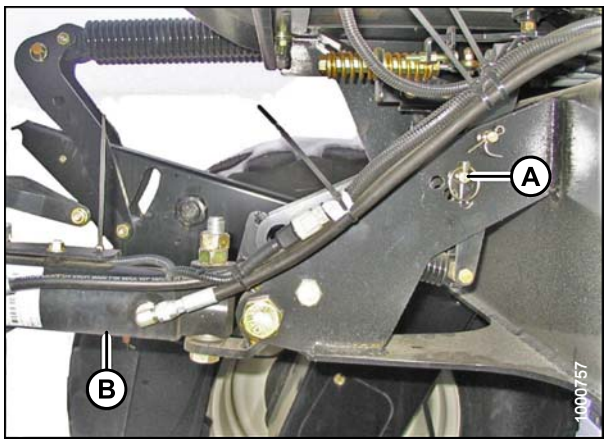

Figure 6.52: Hydraulic Center-Link without Self-Alignment

4. Slowly drive windrower forward so that feet (A) on windrower enter boots (B) on the header. Continue to drive slowly forward until feet engage the boots and header nudges forward.

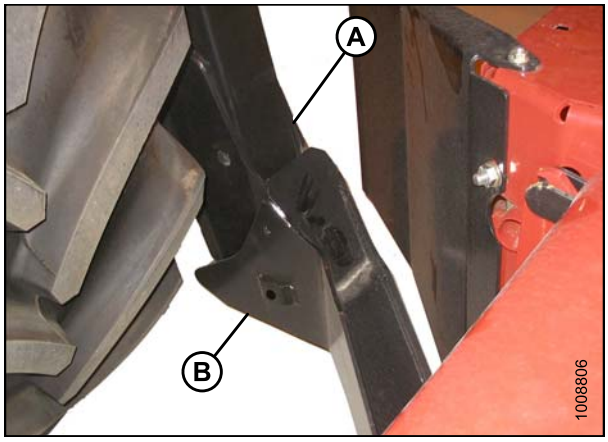

Figure 6.53: Header Boots

5. Activate HEADER TILT cylinder switches on ground speed lever (GSL) to extend or retract center-link cylinder so that the hook lines up with the header attachment pin.
6. Stop engine and remove key from ignition.

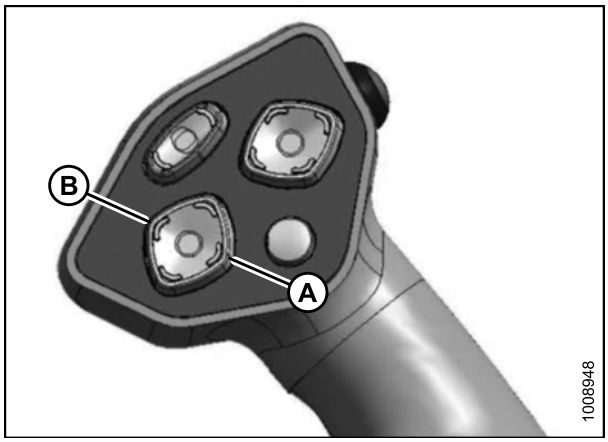

Figure 6.54: GSL

7. Push down on rod end of link cylinder (B), until hook engages pin on header and is locked.

   IMPORTANT:
   Hook release must be down to enable self-locking mechanism. If the release is open (up), manually push it down after hook engages header pin.

8. Check that center-link (A) is locked onto header by pulling upward on rod end (B) of cylinder.

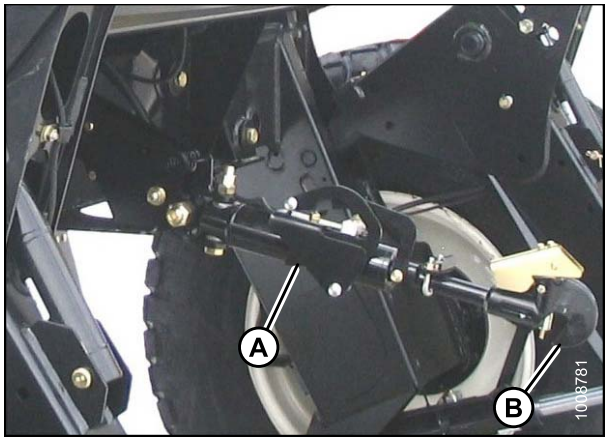

Figure 6.55: Hydraulic Center-Link

9. Start engine and press HEADER UP switch (A) to raise header to maximum height.

   NOTE:
   If one end of the header does NOT raise fully, the lift cylinders require rephasing. If rephasing is needed, proceed as follows:

   a. Press and hold the HEADER UP switch until both cylinders stop moving.

   b. Continue to hold the switch for 3–4 seconds. Cylinders are now phased.

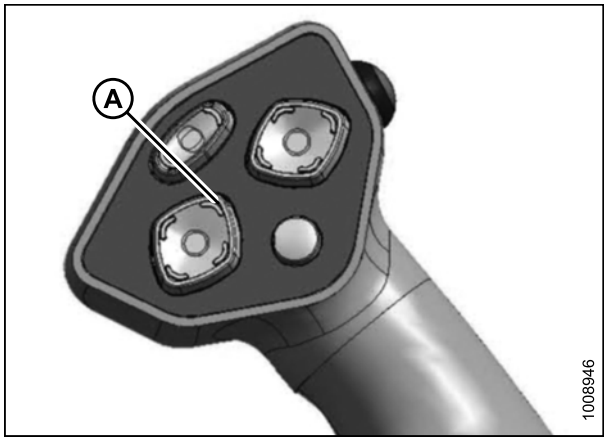

Figure 6.56: GSL

10. Safety props are located on both of the windrower's header lift cylinders. Engage safety props on both lift cylinders as follows:

    a. Stop engine and remove key from ignition.

    b. Pull lever (A) and rotate toward header to release and lower the safety prop (B) onto cylinder.

    c. Repeat for the opposite lift cylinder.

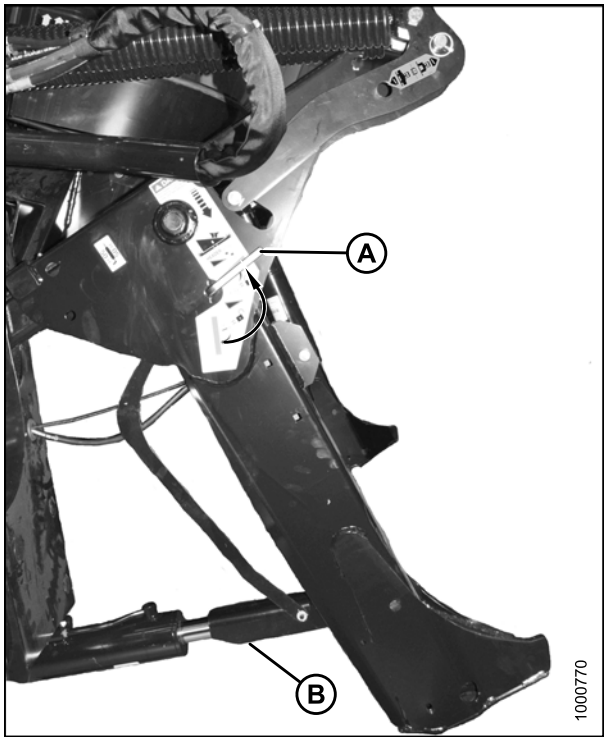

Figure 6.57: Safety Prop

11. Install clevis pin (A) through each boot and foot, and secure with hairpin (B). Do this to both sides.

    IMPORTANT:
    Ensure clevis pin (A) is fully inserted and hairpin is installed behind bracket.

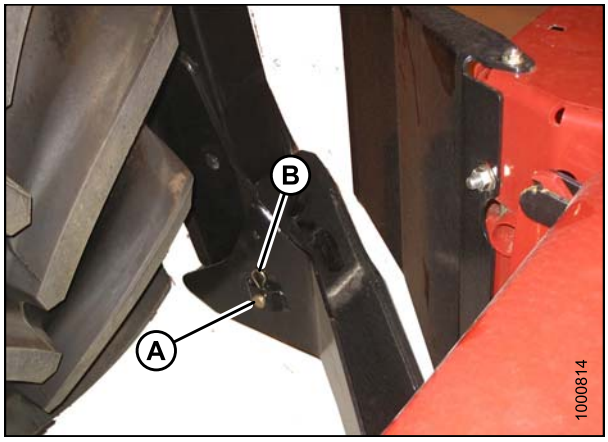

Figure 6.58: Header Boot

12. Remove clevis pin from storage position (B) in linkage, and insert in hole (A) to engage float springs. Secure with hairpin.

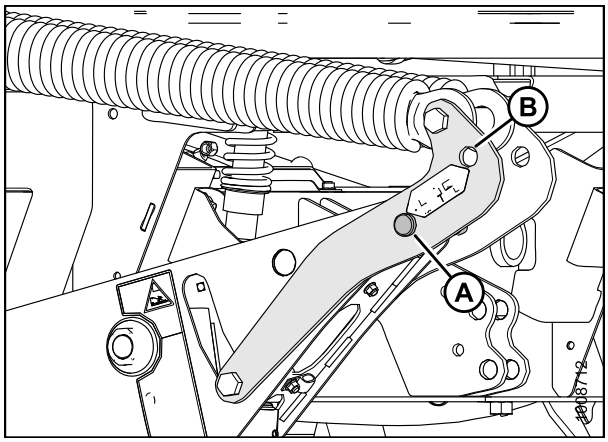

Figure 6.59: Header Lift Linkage

13. Disengage safety prop by turning lever (A) downward to release and lower safety prop until lever locks into vertical position.
14. Repeat for opposite safety prop.

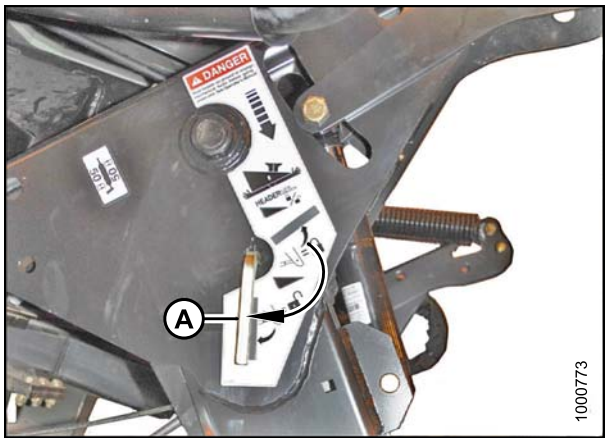

Figure 6.60: Safety Prop

CAUTION

Check to be sure all bystanders have cleared the area.

15. Start engine and activate HEADER DOWN switch (A) on GSL to lower header fully. Stop engine and remove key.

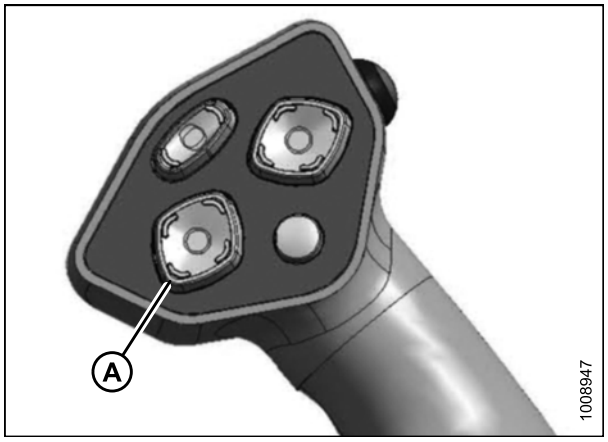

Figure 6.61: GSL

6.9.3 Attaching Header to Windrower: Mechanical Center-Link

To attach an R85 header to an M155 Self-propelled Windrower with the mechanical center-link option, follow these steps:

DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

1. Remove hairpin (B) from clevis pin (A) and remove pin from on left and right header boots (C) on header.

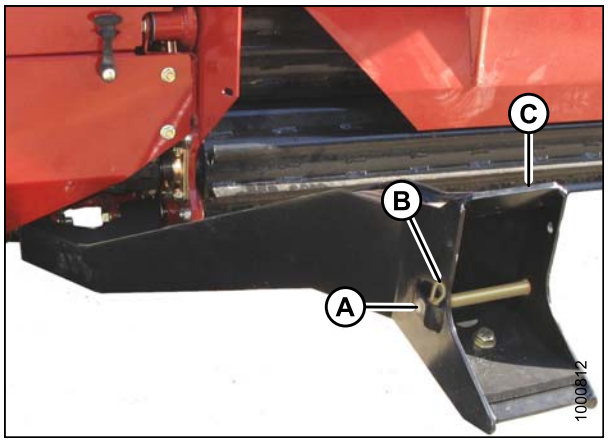

Figure 6.62: Header Boot

CAUTION

To prevent damage to the lift system when lowering header lift linkages without a header or weight box attached to windrower, ensure that float engagement pin is installed in storage position (B) and NOT installed in hole position (A).

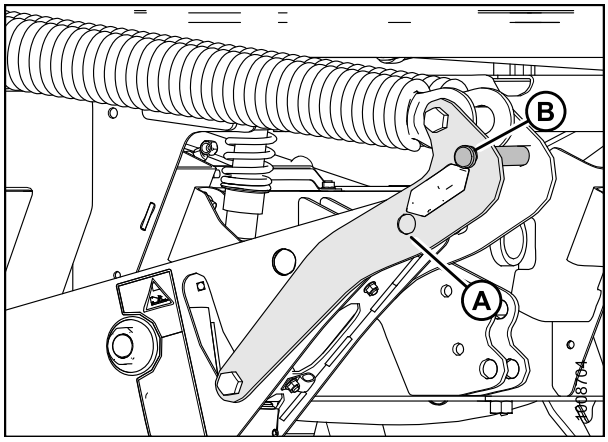

Figure 6.63: Header Lift Linkage

CAUTION

Check to be sure all bystanders have cleared the area.

2. Start the engine and activate HEADER DOWN button (A) on the ground speed lever (GSL) to fully retract header lift cylinders.

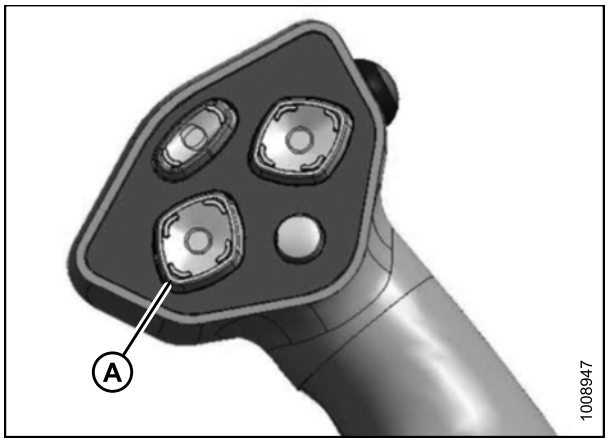

Figure 6.64: GSL

3. Slowly drive windrower forward so that feet (A) on windrower enter boots (B) on the header. Continue to drive slowly forward until feet engage the boots and header nudges forward.

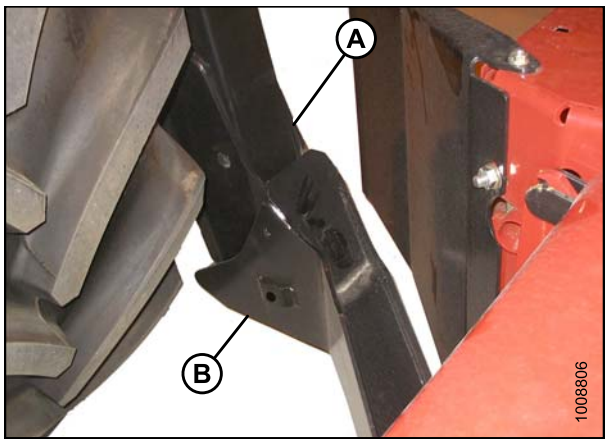

Figure 6.65: Header Boot

4. Stop engine and remove the key.
5. Loosen nut (A) and rotate barrel (B) to adjust length so that the link lines up with header bracket.
6. Install pin (C) and secure with cotter pin (D).
7. Adjust link to required length for proper header angle by rotating barrel (B). Tighten nut (A) against barrel. A slight tap with a hammer is sufficient.

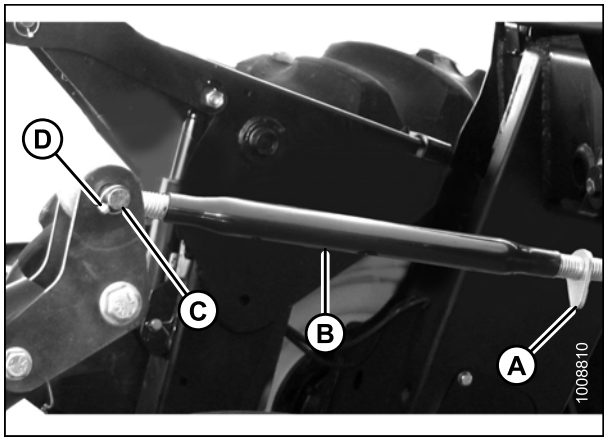

Figure 6.66: Mechanical Center-Link

8. Start engine and press HEADER UP switch (A) to raise header to maximum height.

   NOTE:
   If one end of the header does NOT raise fully, the lift cylinders require rephasing. If rephasing is needed, proceed as follows:

   a. Press and hold the HEADER UP switch until both cylinders stop moving.

   b. Continue to hold the switch for 3–4 seconds. Cylinders are now phased.

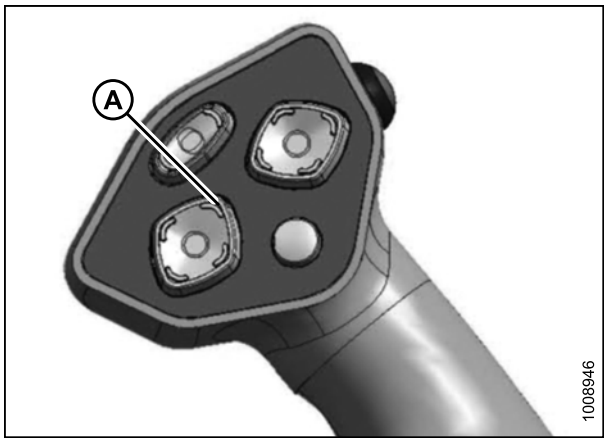

Figure 6.67: GSL

9. Safety props are located on both of the windrower's header lift cylinders. Engage safety props on both lift cylinders as follows:

   a. Stop engine and remove key from ignition.

   b. Pull lever (A) and rotate toward header to release and lower the safety prop (B) onto cylinder.

   c. Repeat for the opposite lift cylinder.

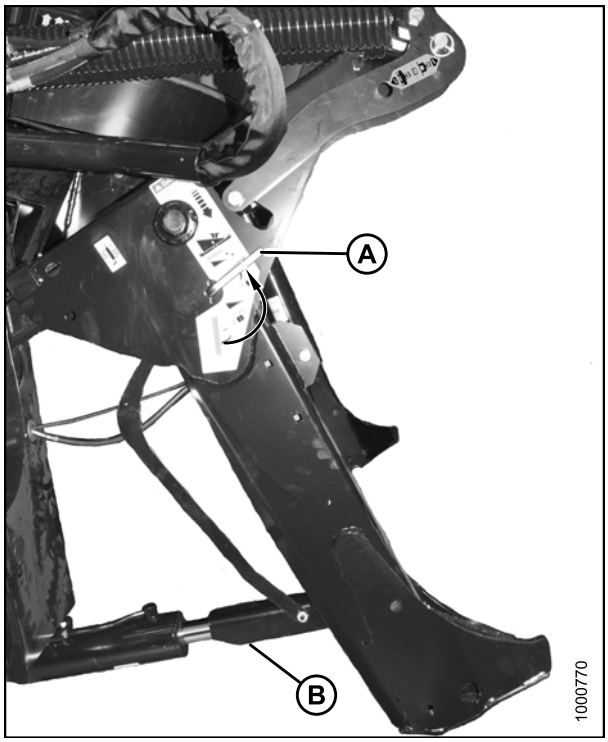

Figure 6.68: Safety Prop

10. Install clevis pin (A) through each boot and foot, and secure with hairpin (B). Do this to both sides.

    IMPORTANT:
    Ensure clevis pin (A) is fully inserted and hairpin is installed behind bracket.

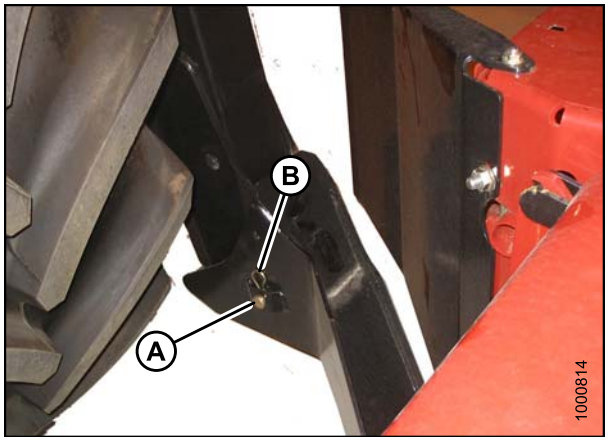

Figure 6.69: Header Boot

11. Remove clevis pin from storage position (B) in linkage, and insert in hole (A) to engage float springs. Secure with hairpin.

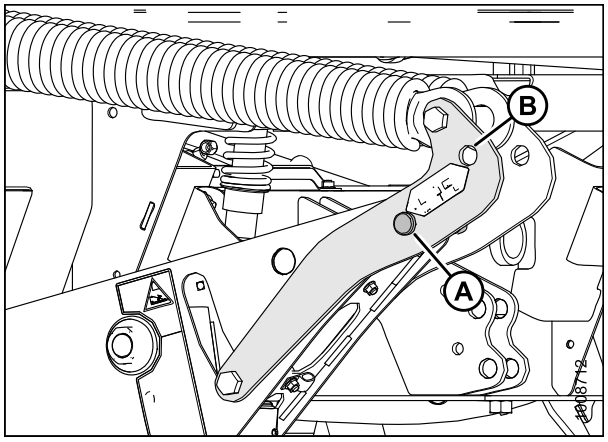

Figure 6.70: Header Lift Linkage

12. Disengage safety prop by turning lever (A) downward to release and lower safety prop until lever locks into vertical position.
13. Repeat for opposite safety prop.

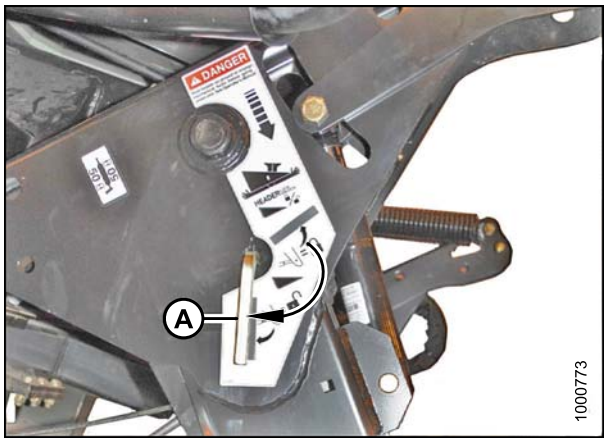

Figure 6.71: Safety Prop

CAUTION

Check to be sure all bystanders have cleared the area.

14. Start engine and activate HEADER DOWN switch (A) on GSL to lower header fully. Stop engine and remove key.

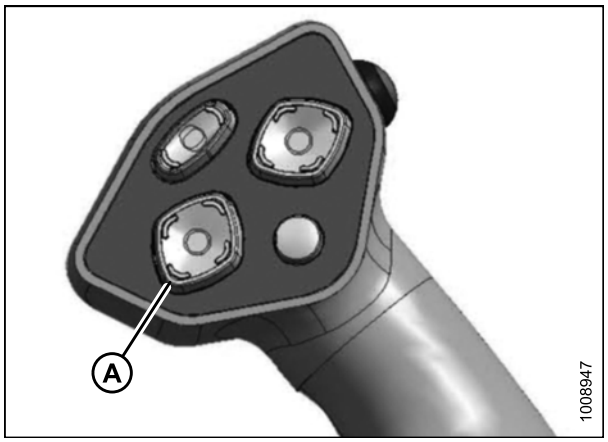

Figure 6.72: GSL

6.10 Attaching Hydraulics and Electrical

The procedure for connecting the header hydraulics and electrical depends on the windrower model. Refer to the appropriate procedure:

- *6.10.1 Attaching the Header (M205 Windrowers), page 55*
- *6.10.2 Attaching the Header (M200 Windrowers), page 59*
- *6.10.3 Attaching the Header (M150/M155 Windrowers), page 65*

6.10.1 Attaching the Header (M205 Windrowers)

DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

The R85 13-foot header requires motor/hose kit MD #B5456 installed to enable operation on a M205 windrower.

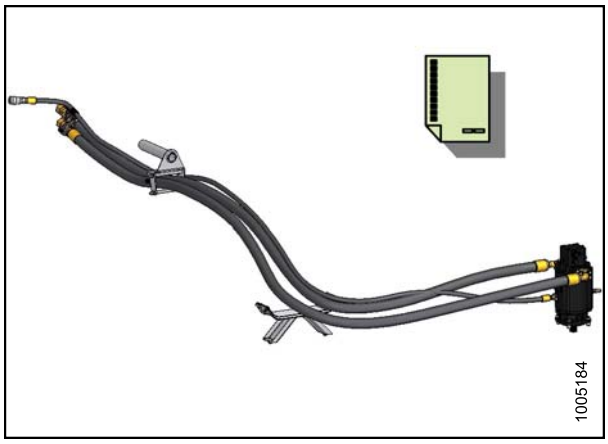

Figure 6.73: MD #B5456

1. Move windrower left-hand (cab-forward) platform (A) to OPEN position.

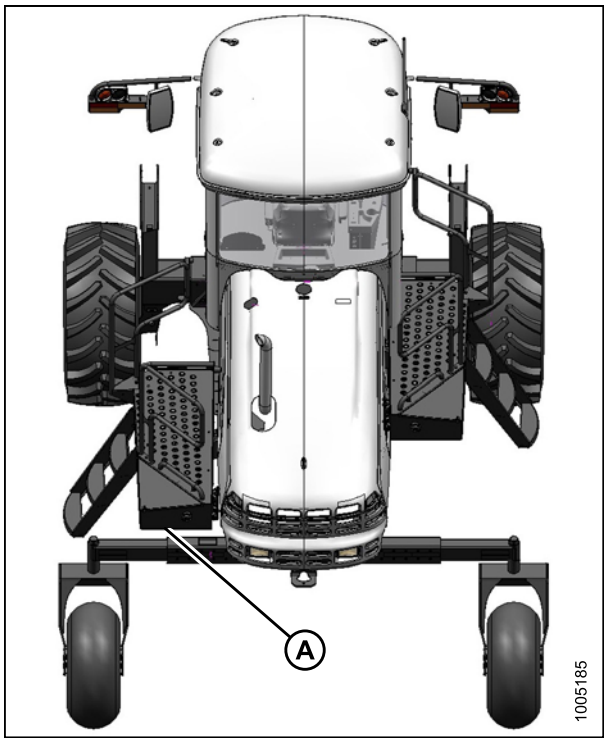

Figure 6.74: Windrower LH Platform

2. Route the hose bundle (A) from the header, under the windrower frame and insert pin (B) into hole in windrower frame.
3. Place hoses on support (C).
4. If optional couplers and lock are installed on hoses and lines, proceed as follows. Otherwise, proceed to Step *12., page 58*.

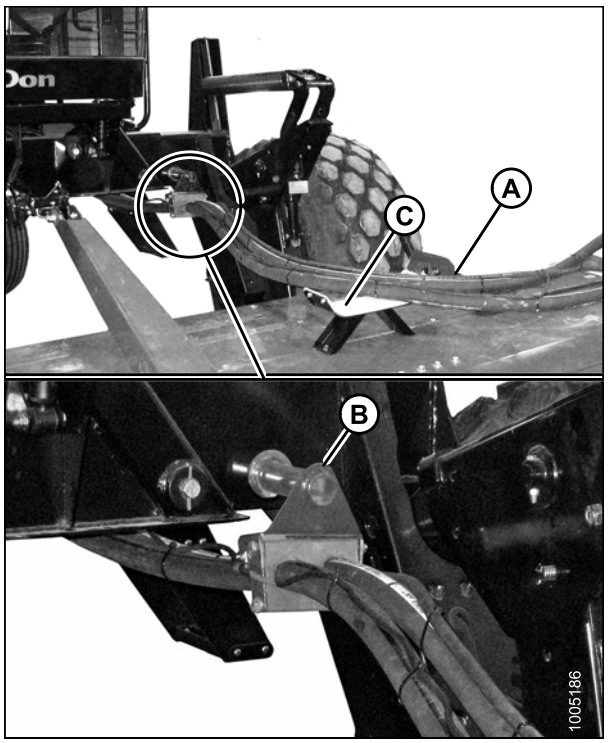

Figure 6.75: Hydraulic Hoses

5. Remove coupler lock as follows:

   a. Remove lynch pin (A) and open up coupler lock (B).

   b. Remove lock from coupler.

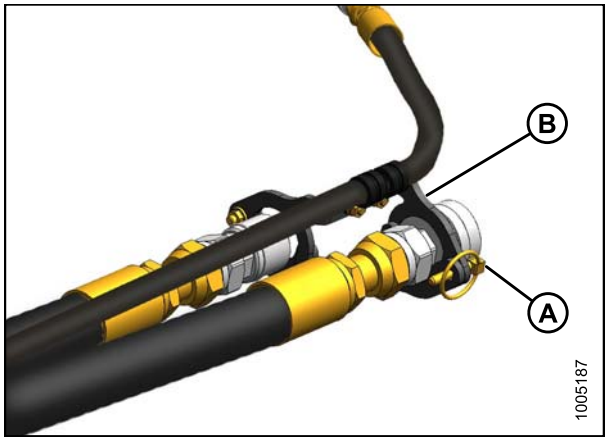

Figure 6.76: Hydraulic Couplers

6. Position hose couplers against mating couplers on windrower and screw sleeves (A) onto mating receptacles. Use a wrench to tighten the couplers.

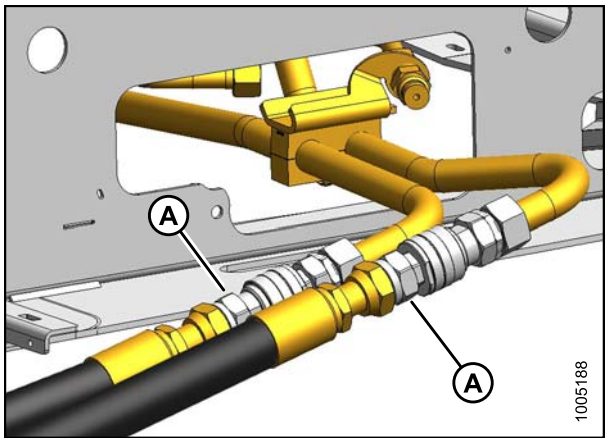

Figure 6.77: Hydraulic Couplers

7. Position the lock onto the couplers so that retainer (A) rests under the fitting next to the sleeve on each coupler.

   NOTE:
   The retainer can be adjusted by loosening bolts (B). Tighten bolts after adjusting.

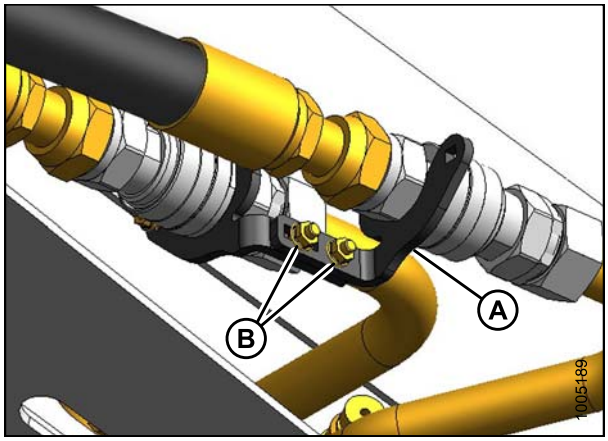

Figure 6.78: Hydraulic Couplers

8. Lower holder (A) onto sleeves (B) so that the flats are positioned on the holder.

   NOTE:
   Holder can be adjusted by loosening bolts (C). Tighten bolts after adjusting.

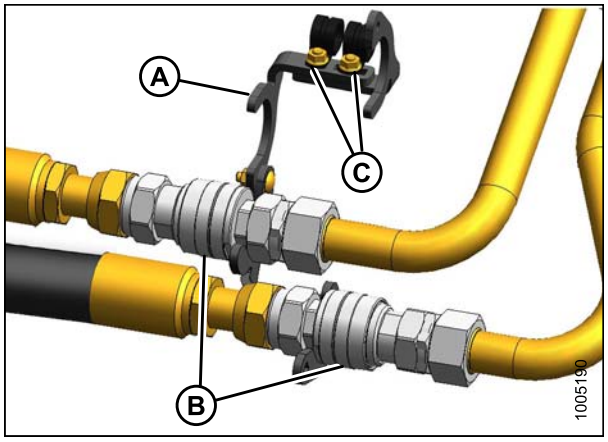

Figure 6.79: Hydraulic Couplers

9. Insert lynch pin (A) to secure the lock.
10. Attach case drain hose coupler at (B).
11. Proceed to Step *14., page 59*.

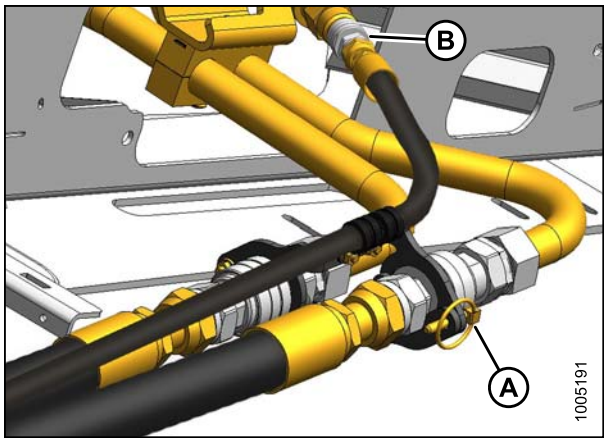

Figure 6.80: Hydraulic Couplers

12. Connect large hoses to the lines at (A) and (B) as shown using fittings (C). Torque fittings to 135 lbf·ft (183 N·m).
13. Attach case drain hose and coupler (D) to (E).

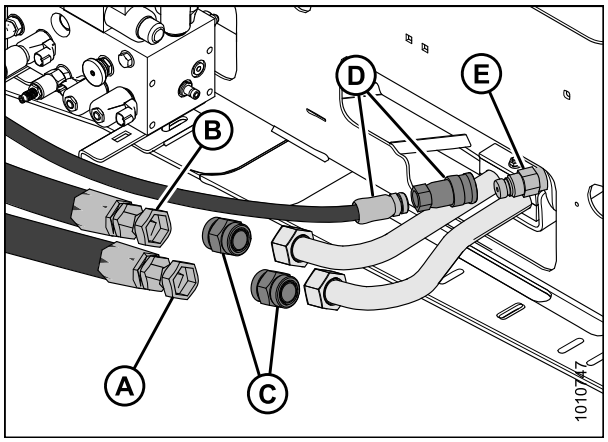

Figure 6.81: Hydraulic Couplers

14. Connect the electrical harness to connector (A) (located beside the forward valve block on the windrower).

    NOTE:
    Valve block hidden to show the electrical connector.

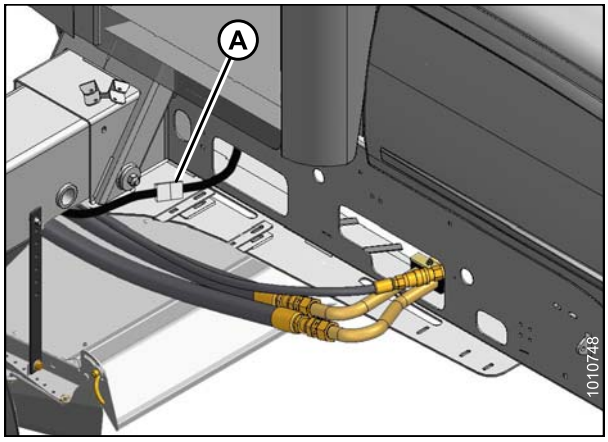

Figure 6.82: Electrical Connection

15. Move the windrower platform (A) to the CLOSED position.

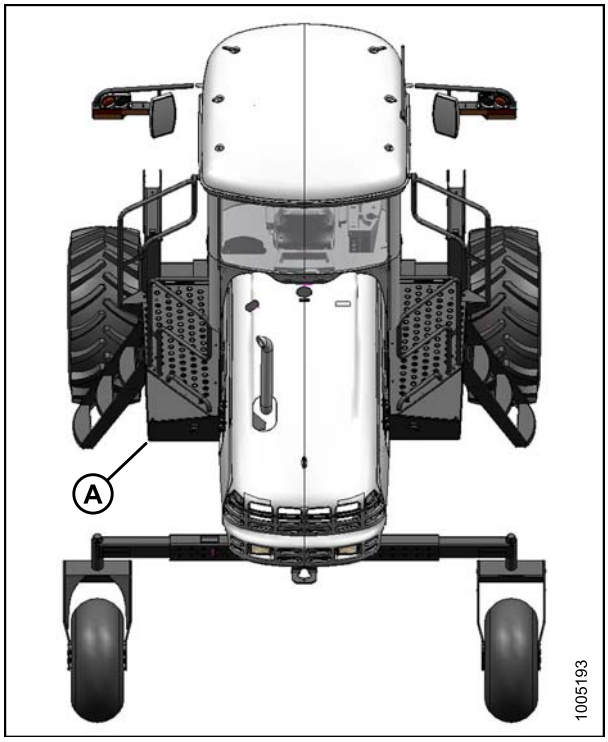

Figure 6.83: Windrower LH Platform

6.10.2 Attaching the Header (M200 Windrowers)

DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

The 13-foot header requires kit MD #B5511 installed to operate on an M200 windrower.

Figure 6.84: MD #B5511

1. Disengage and rotate lever (A) counterclockwise to the UP position.
2. Remove the cap (B) securing the electrical connector to the frame.

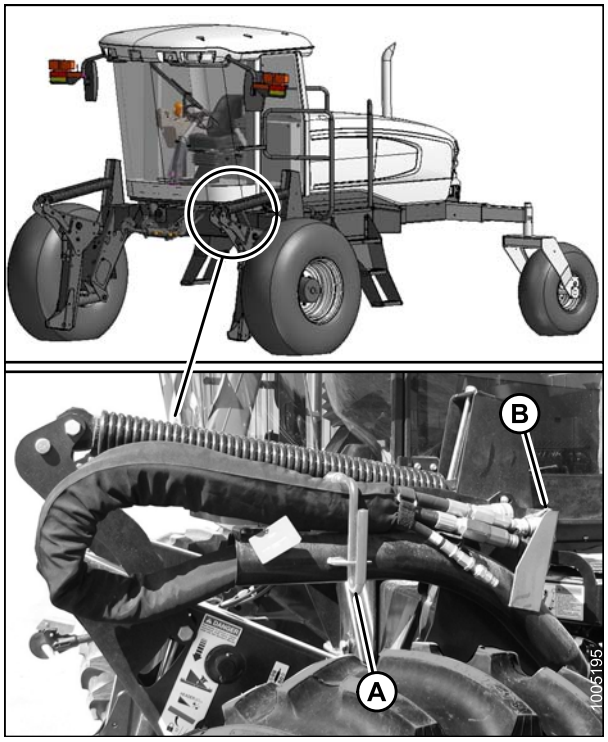

Figure 6.85: Hose Bundle

3. Move hose bundle (A) from the windrower and rest the bundle on the header.

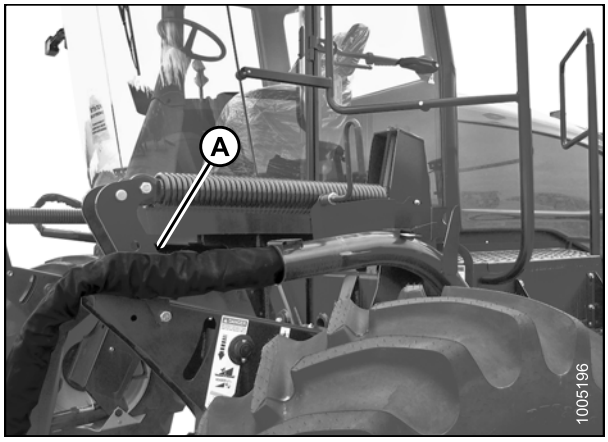

Figure 6.86: Hose Bundle

4. Position the hose support with the lower bolt (A) in the forward hole and the support positioned as shown. Loosen both bolts and adjust as required.

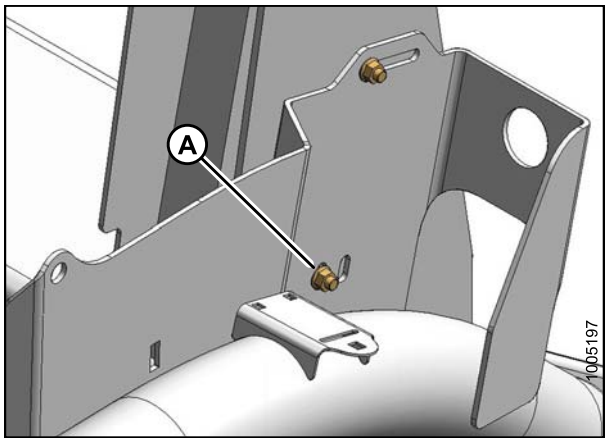

Figure 6.87: Hose Support

5. Route hose bundle (A) from the windrower through the support (B) on header.
6. Route header return and pressure hose bundle (C) through support (B) on header to the windrower.

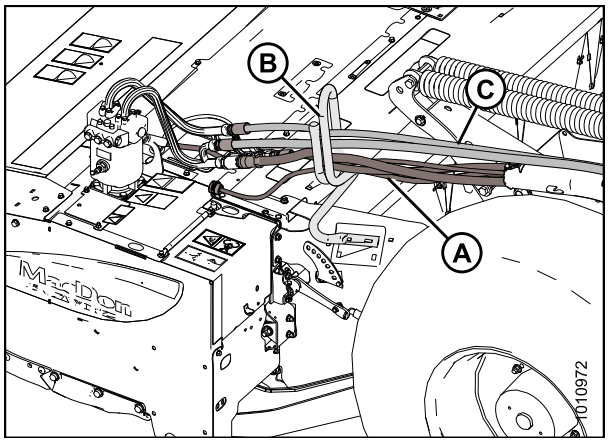

Figure 6.88: Hose Bundle

7. Secure hose bundles with three cinch straps (B).
8. Lower and lock lever (A).

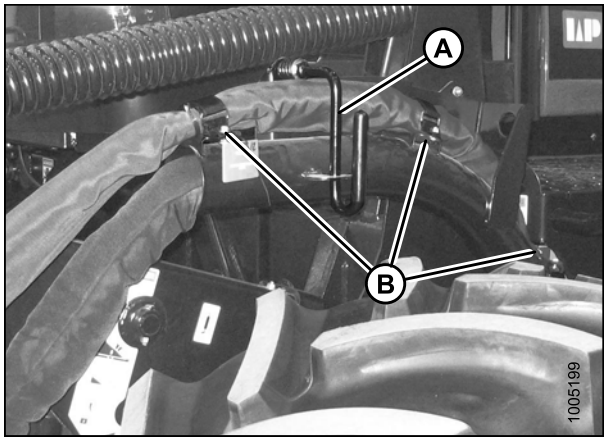

Figure 6.89: Hose Bundle

9. Move the windrower's left side (cab-forward) platform (A) to the OPEN position to access the valve blocks.

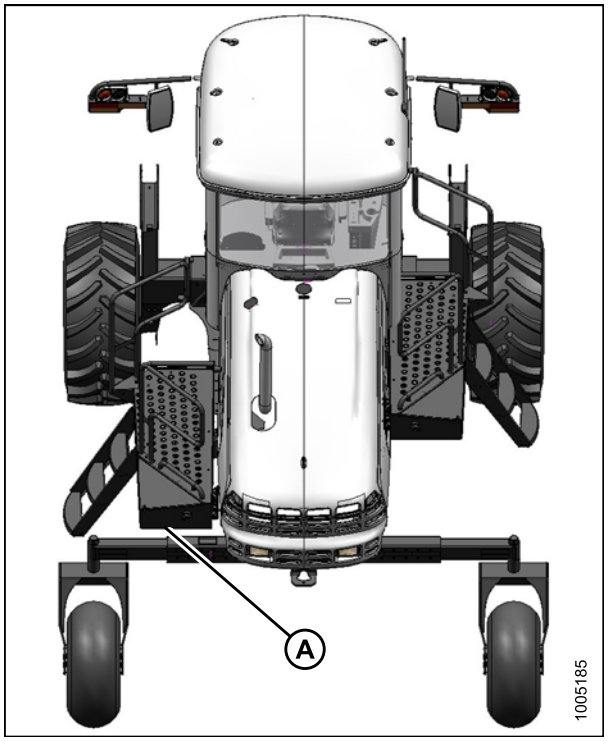

Figure 6.90: Windrower LH Platform

10. Connect the pressure hose (C) from port (A) on the header motor to port (M2) on the header drive valve block.
11. Connect the return hose (D) coming from port (B) on the header motor to port (R2) on the header drive valve block.

    NOTE:
    If the windrower is equipped with a reverser valve for an auger header, replace the 90° fitting on hose (D) with a 45° fitting.

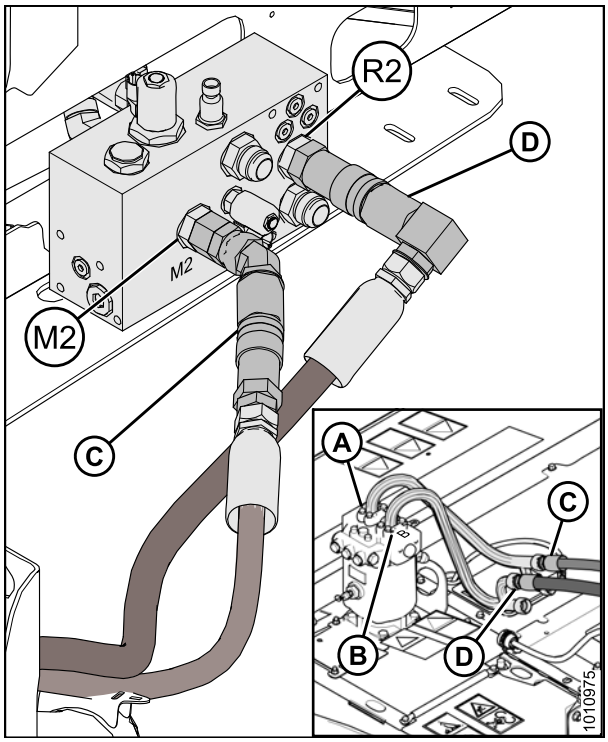

Figure 6.91: Header Hydraulic Connections

12. Connect the return hose (A) from the header drive valve block port (R1) to the steel line attached to motor port (B).

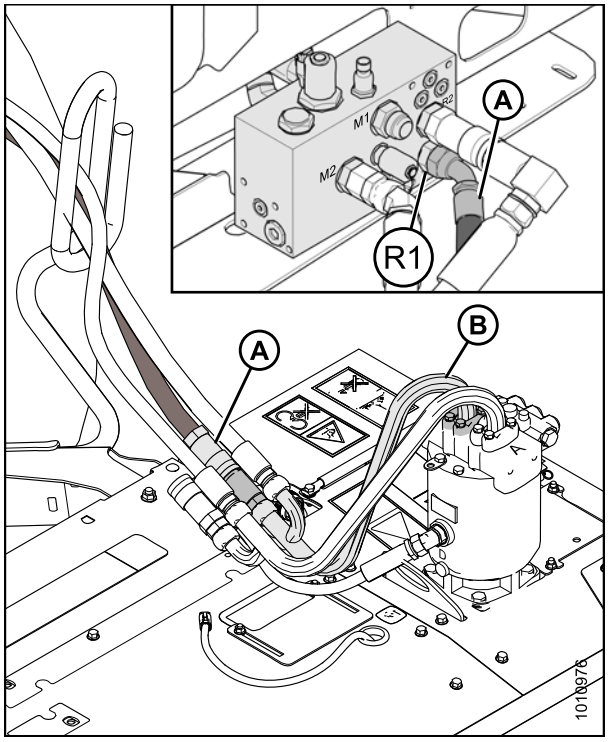

Figure 6.92: Windrower Connections

13. Connect the pressure hose (B) from the header drive valve block port (M1) to the steel line attached to motor port (A).

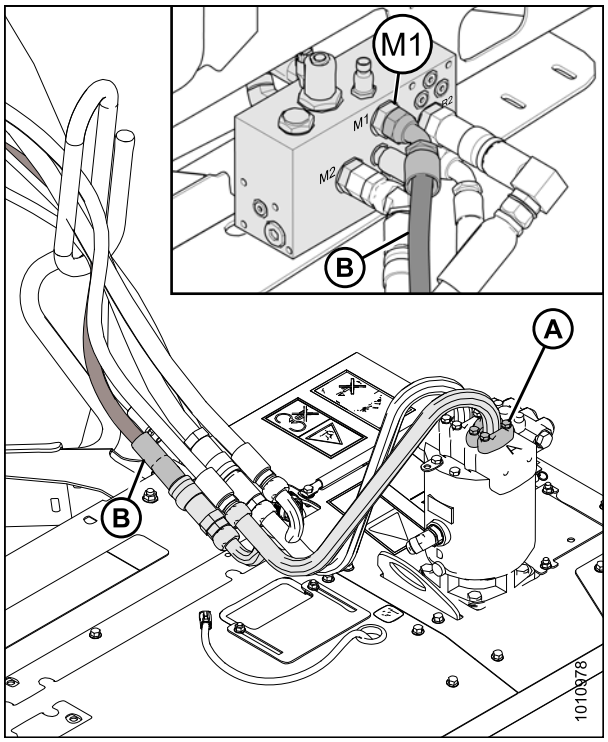

Figure 6.93: Windrower Connections

14. Connect the case drain hose (A) from the header lift valve block port (T3) to the hose attached to motor port (D).

    NOTE:
    Hydraulic pressure lines and hoses hidden to show the case drain hose.

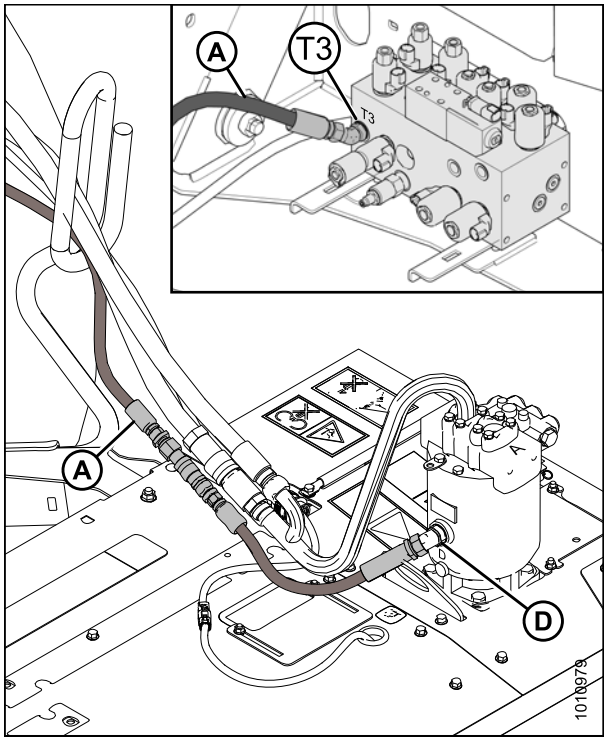

Figure 6.94: Windrower Connections

15. Connect the electrical harness (A) from windrower to the electrical connector on the header.

    NOTE:
    Hydraulic lines and hoses hidden on illustration to show the electrical connection.

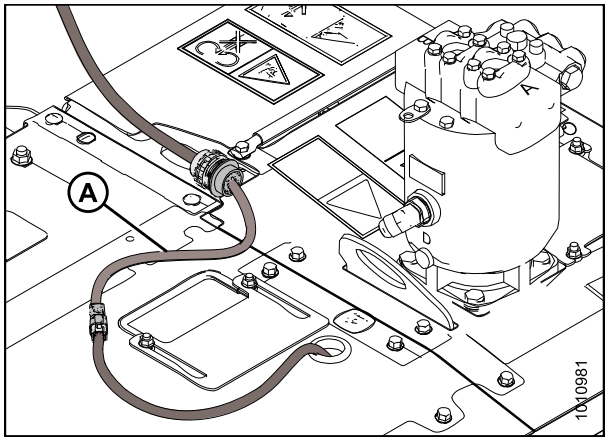

Figure 6.95: Windrower Connections

16. Move platform (A) to the CLOSED position.

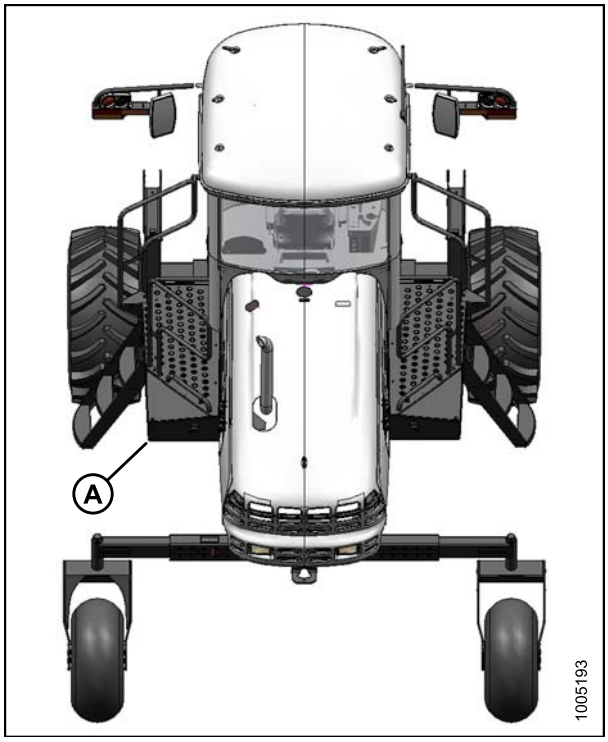

Figure 6.96: Windrower LH Platform

6.10.3 Attaching the Header (M150/M155 Windrowers)

DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

NOTE:
The M150 and M155 windrowers require the disc drive manifold kit (MD #B4657) to hydraulically connect the R85 13-foot header.

The R85 13-foot header requires motor/hose kit MD #B5510 installed to enable operation on an M150 or M155 windrower.

Figure 6.97: MD #B5510

1. Disengage and rotate lever (A) counterclockwise to FULLY UP position.
2. Remove the cap (B) securing the electrical connector to the frame.

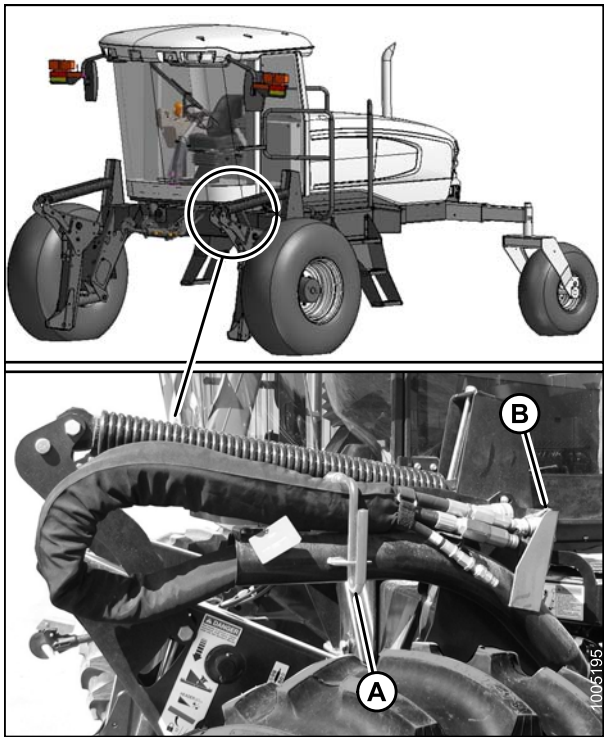

Figure 6.98: Hose Bundle

3. Move hose bundle (A) from the windrower and rest the bundle on the header.

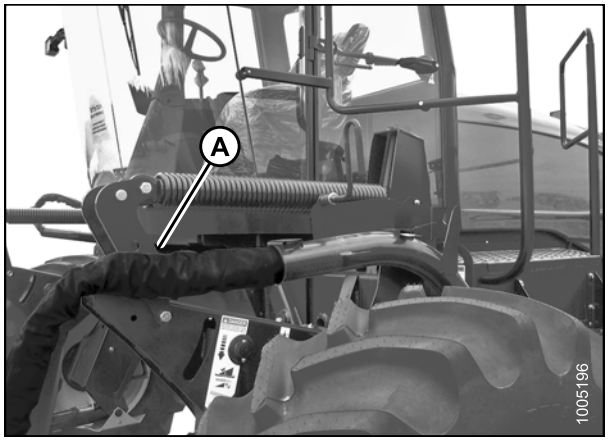

Figure 6.99: Hose Bundle

4. Position the hose support with lower bolt (A) in the forward hole and support positioned as shown. Loosen both bolts and adjust as required.

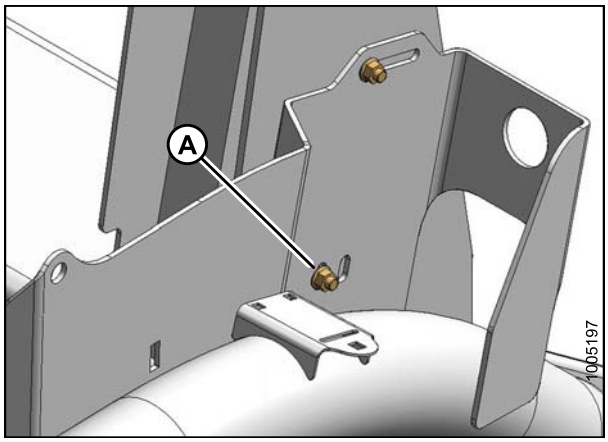

Figure 6.100: Hose Support

5. Move the windrower's left side (cab forward) platform (A) to the OPEN position.

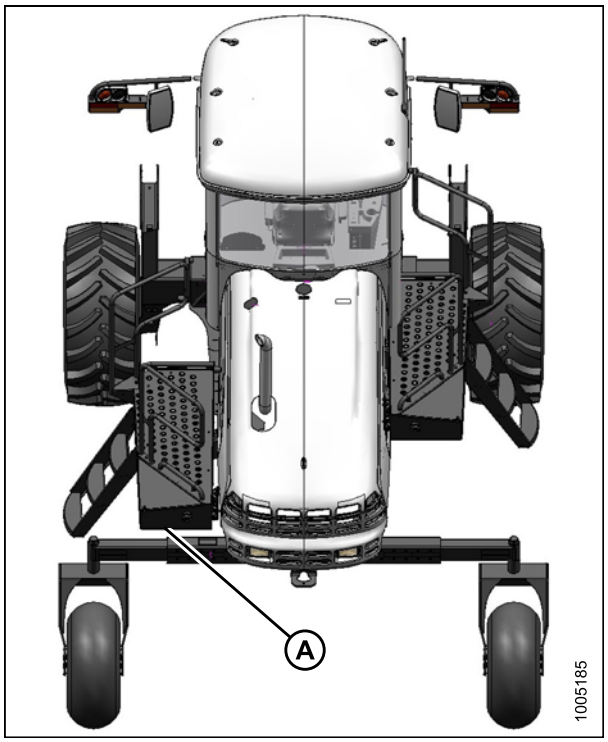

Figure 6.101: Windrower LH Platform

6. Route the windrower hose bundle (A) through hose support (B) on the header.
7. Route hose (C) from the header through support (B), to the windrower.

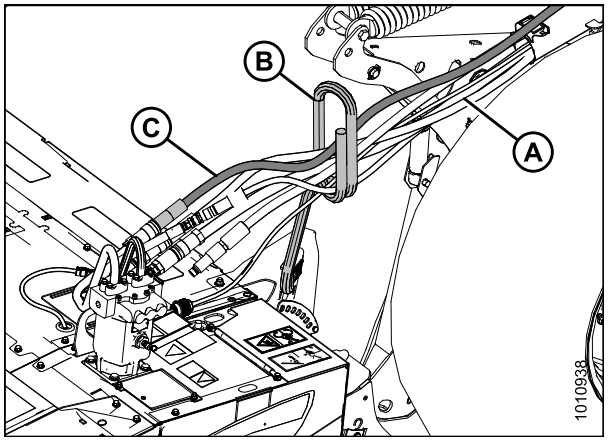

Figure 6.102: Hose Bundle

8. Connect the single pressure hose (A) routed from the header to port (M2) on the disc drive valve (middle block).

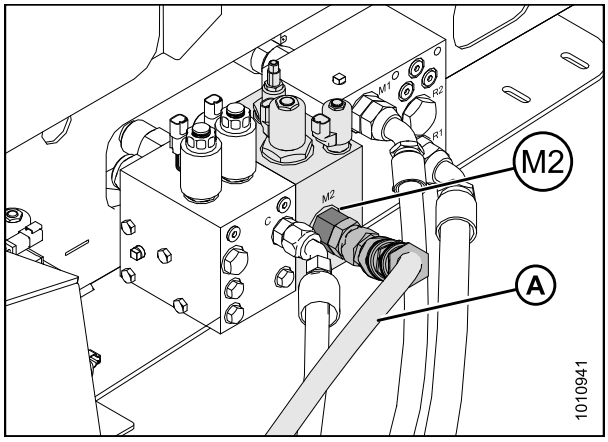

Figure 6.103: Hydraulic Connections

9. Remove caps and plugs on hoses from windrower and lines on header.
10. Connect the pressure hose (B) from the drive manifold port (M1) to the steel line attached to motor port (A).

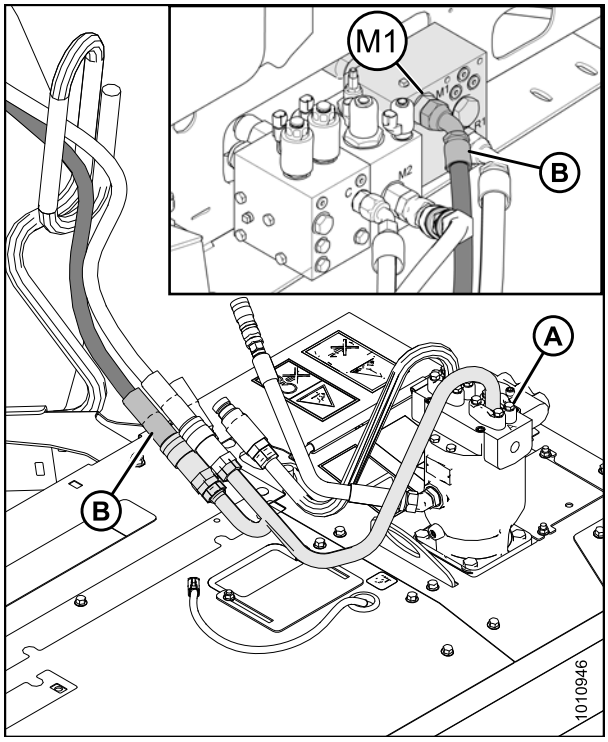

Figure 6.104: Hydraulic Connections

11. Connect the return hose (A) from the drive manifold port (R1) to the steel line attached to motor port (B).

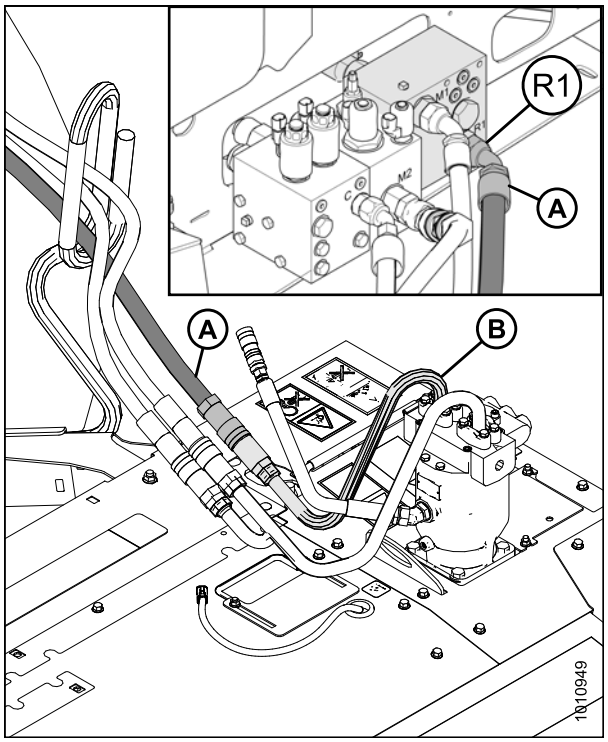

Figure 6.105: Hydraulic Connections

12. Connect the case drain hose (A) from the lift manifold port (T3) to the fitting attached to motor port (D).

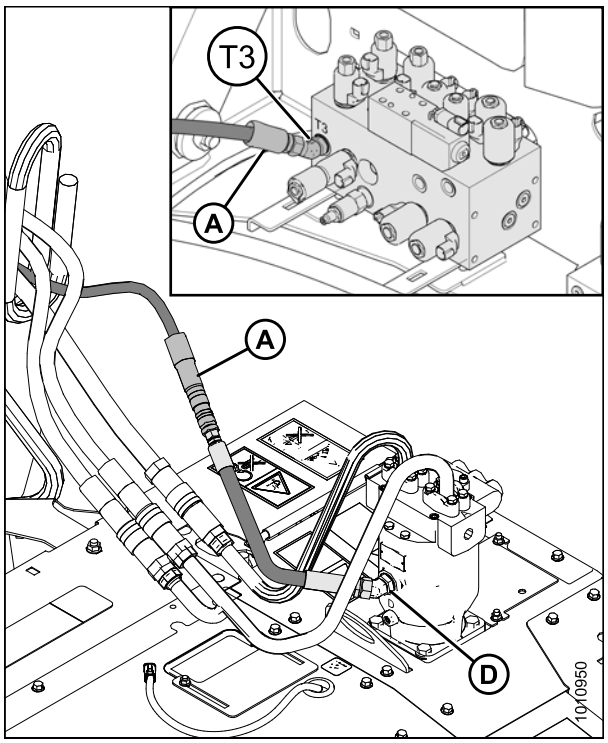

Figure 6.106: Hydraulic Connections

13. Connect the electrical harness (A) from windrower to the electrical connector on the header.

    NOTE:
    Hydraulic hoses removed from the illustration to improve clarity.

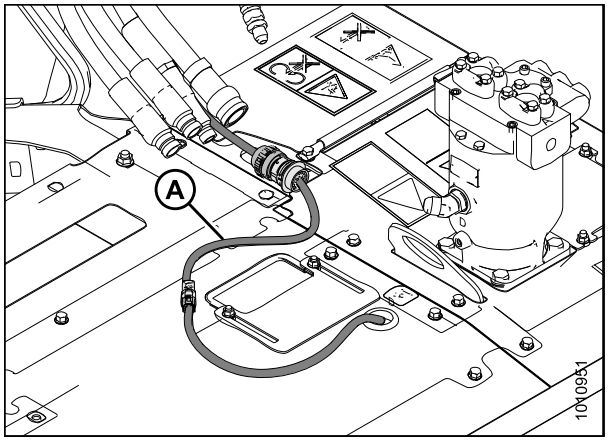

Figure 6.107: Electrical Connection

14. Lower and lock lever (A). Secure hose (B) with three cinch straps (C).

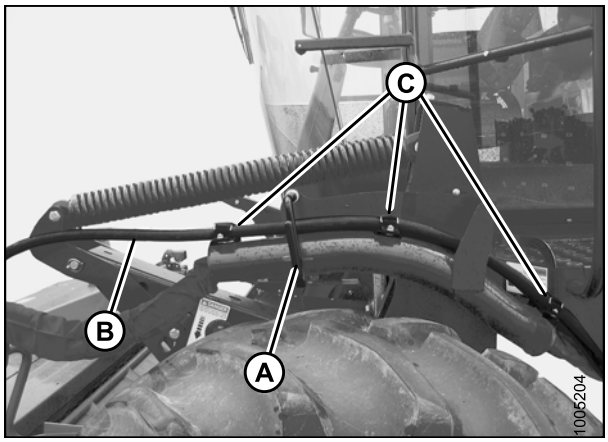

Figure 6.108: Hose Bundle

15. Move platform (A) to the CLOSED position.

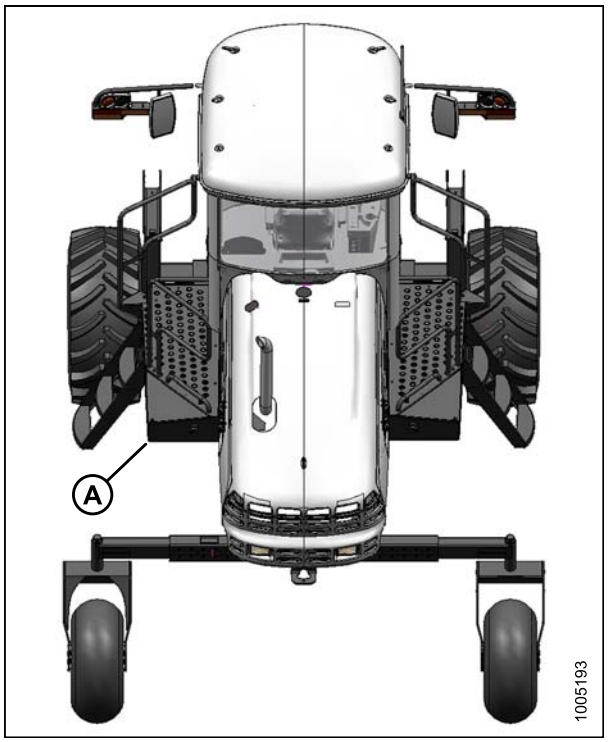

Figure 6.109: Windrower LH Platform

6.11 Installing Options

Install options (if supplied with shipment) in accordance with the instructions supplied with each kit or as follows if instructions are not supplied.

6.11.1 Installing Tall Crop Divider Kit

To install the tall crop divider kit, follow these steps:

DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

1. Lower header to the ground, shut off engine, and remove key from ignition.
2. Unpack kit.
3. Open cutterbar doors.

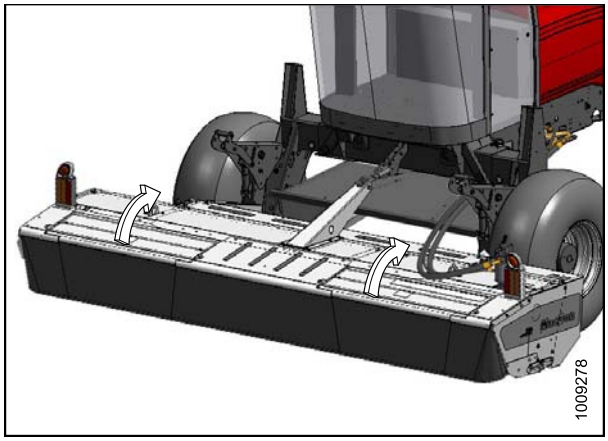

Figure 6.110: Cutterbar Doors

4. Remove the four bolts (A) from the divider (B).

   NOTE:
   Mounting holes in header should be vacant. Remove fasteners if necessary.

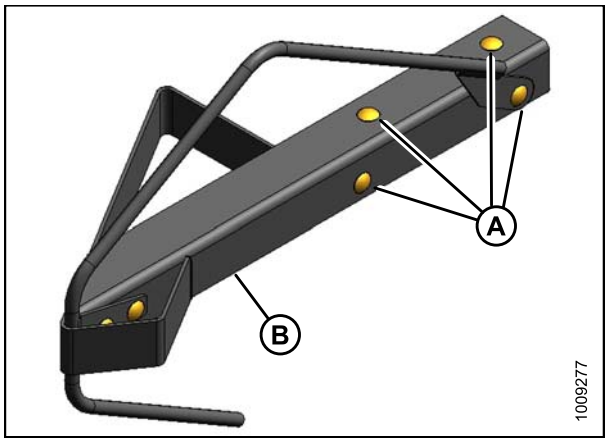

Figure 6.111: Tall Crop Divider Kit (LH Shown, RH Opposite)

5. Position left-hand divider (B) on header left front corner, and install with four bolts (A) and nuts in existing holes. Tighten hardware.
6. Repeat for right-hand side.
7. Lower cutterbar doors.

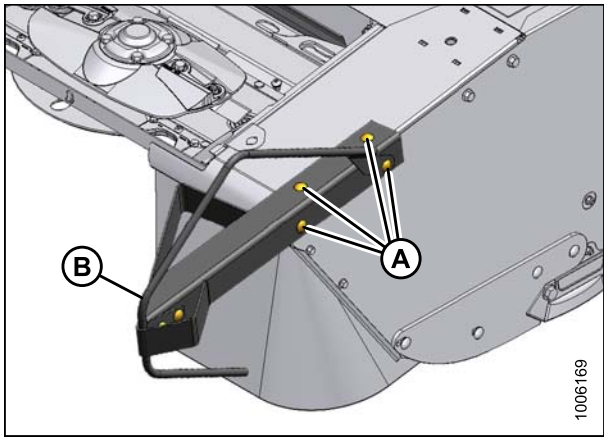

Figure 6.112: Tall Crop Divider Installed

6.11.2 Installing Double Windrow Attachment (DWA)

Refer to instructions supplied with kit.

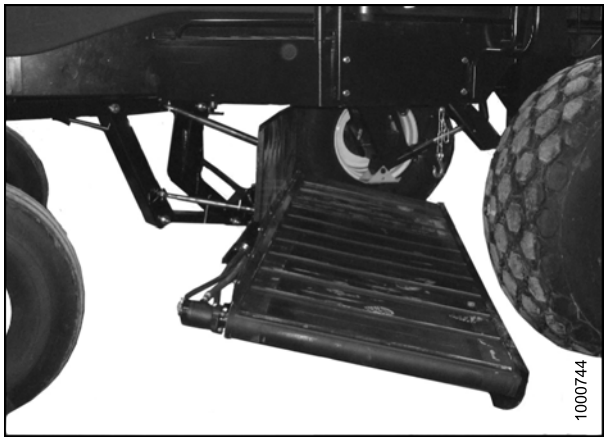

Figure 6.113: DWA

6.11.3 Installing Skid Shoes

DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

1. Lower header to the ground, shut off engine, and remove key from ignition.
2. Unpack kit.

3. Install skid shoes. See instruction (MD #169466) supplied with kit.

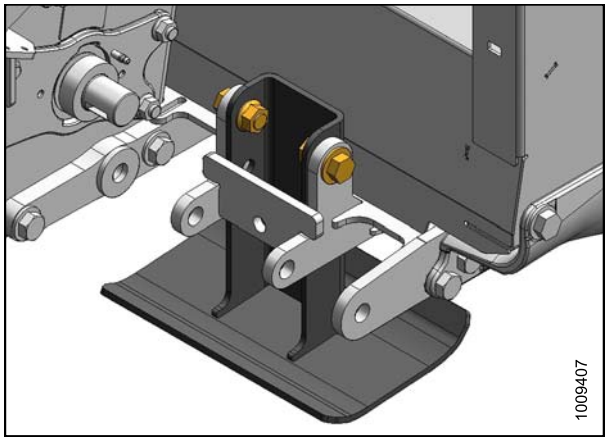

Figure 6.114: Skid Shoe

6.12 Header Lubrication

The header has been lubricated at the factory. However, it is recommended that you lubricate the header prior to delivery to offset the effects of weather during outside storage and transport and to familiarize yourself with the header.

6.12.1 Greasing Procedure

DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

The greasing points are marked on the machine by decals showing a grease gun and grease interval in hours of operation.

1. Wipe grease fitting with a clean cloth before greasing, to avoid injecting dirt and grit.
2. Inject grease through fitting with grease gun until grease overflows fitting, except where noted.
3. Leave excess grease on fitting to keep out dirt.
4. Replace any loose or broken fittings immediately.
5. If fitting will not take grease, remove and clean thoroughly. Also clean lubricant passageway. Replace fitting if necessary.

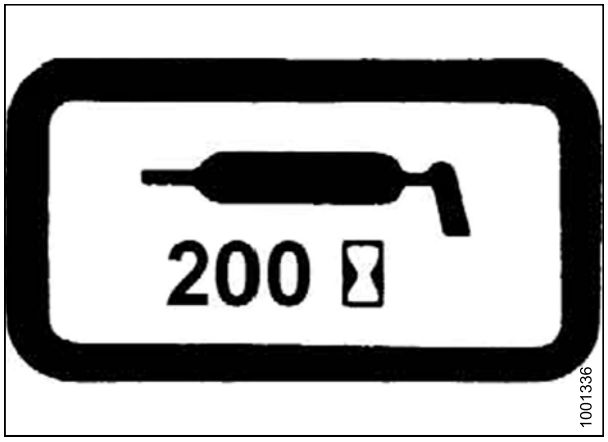

Figure 6.115: Grease Interval Decal

6.12.2 Lubrication Points

To identify the various locations that require lubrication, refer to the following illustrations.

NOTE:
Use high temperature extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI grade 2) lithium base except where noted.

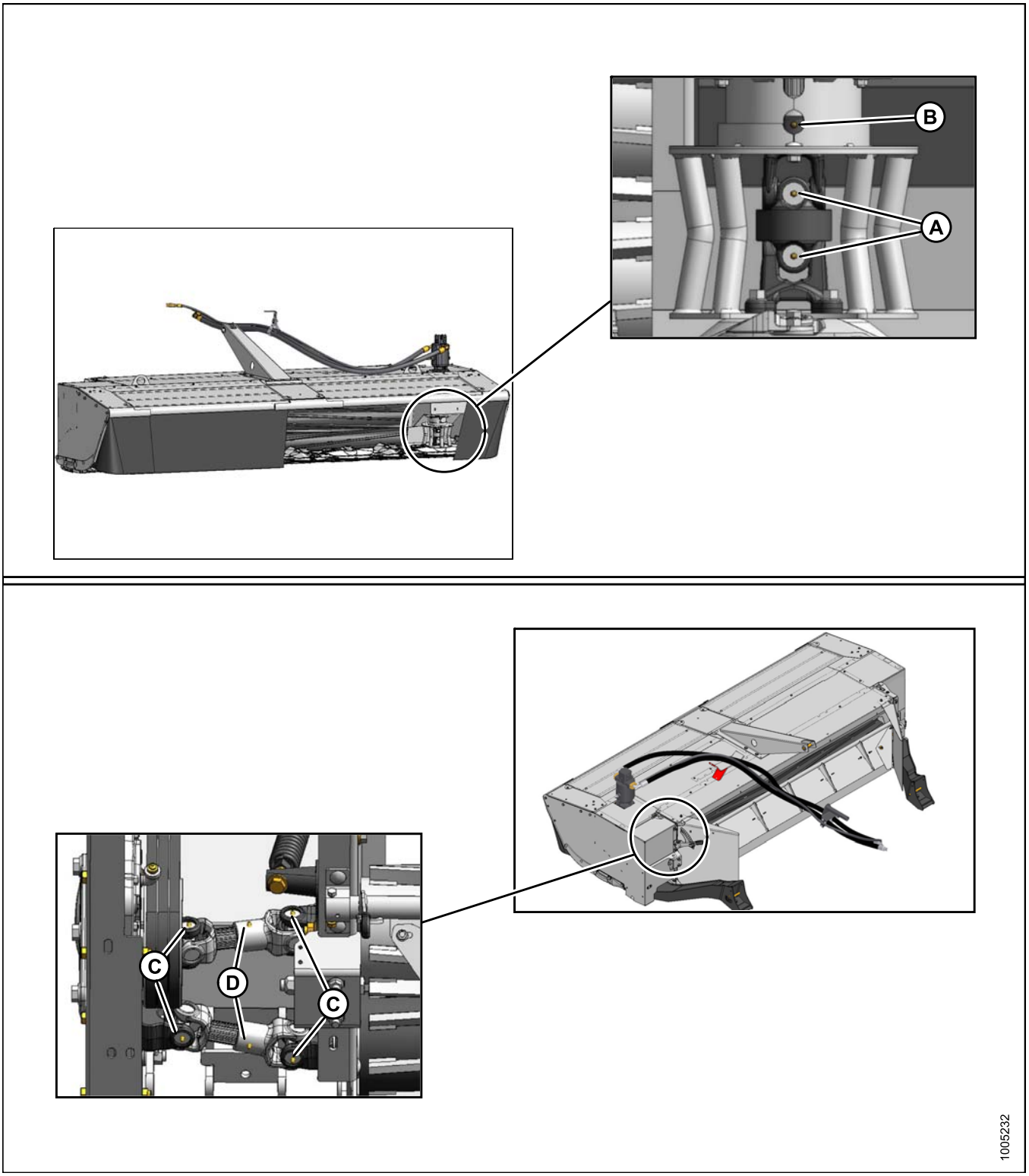

Figure 6.116: Lubrication Points

A - Cutterbar Driveline Universals (2 Places)
B - Driveshaft[7]
C - Conditioner Driveline Universals (4 Places)
D - Driveline Shaft[7]

7. 10% moly grease is recommended for driveline shaft slip joint only.

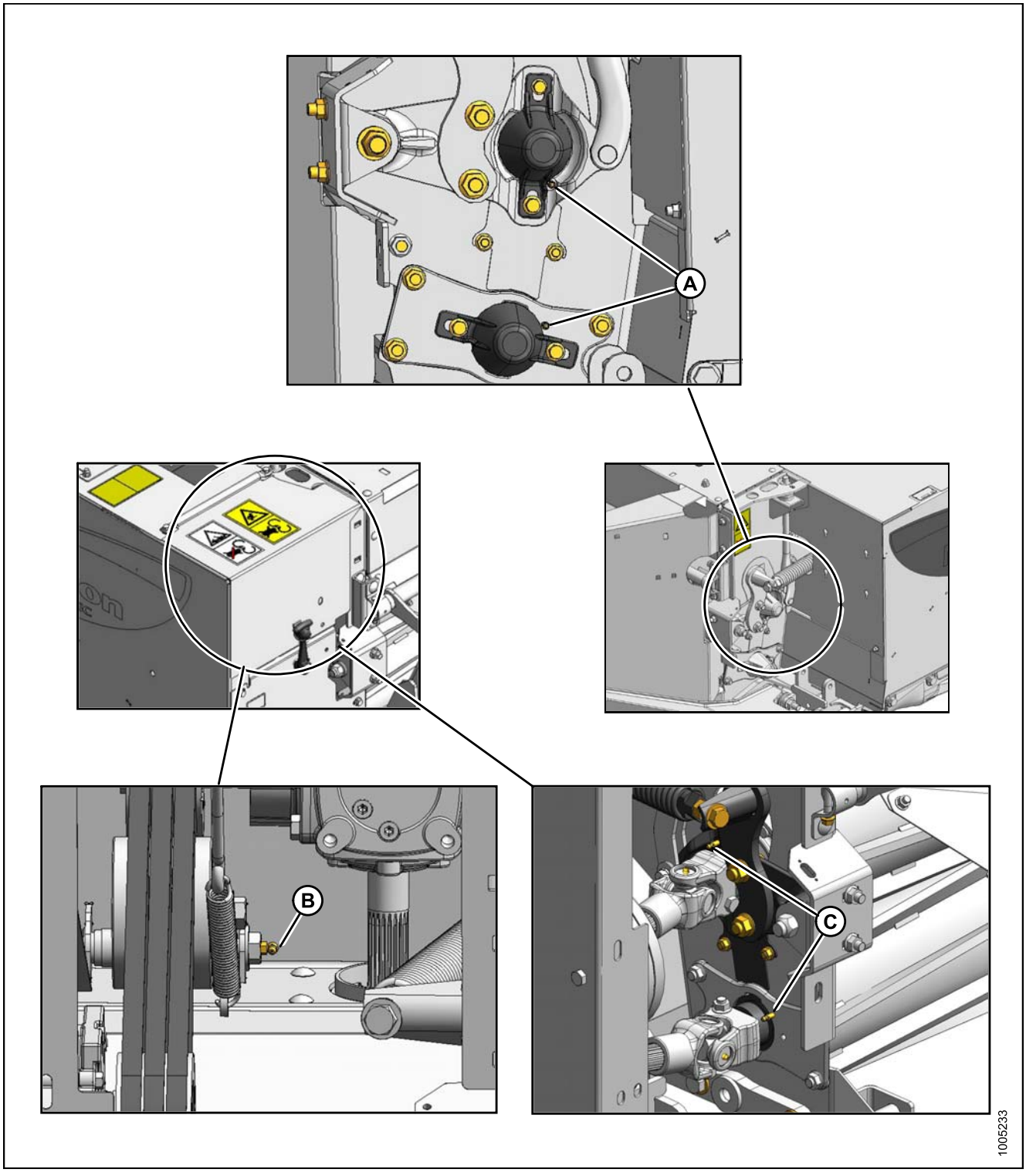

Figure 6.117: Lubrication Points

A - Roll Shaft Bearing (2 Places) **B - Belt Tensioner Pivot (1 Place)** **C - Roll Shaft Bearing (2 Places)**

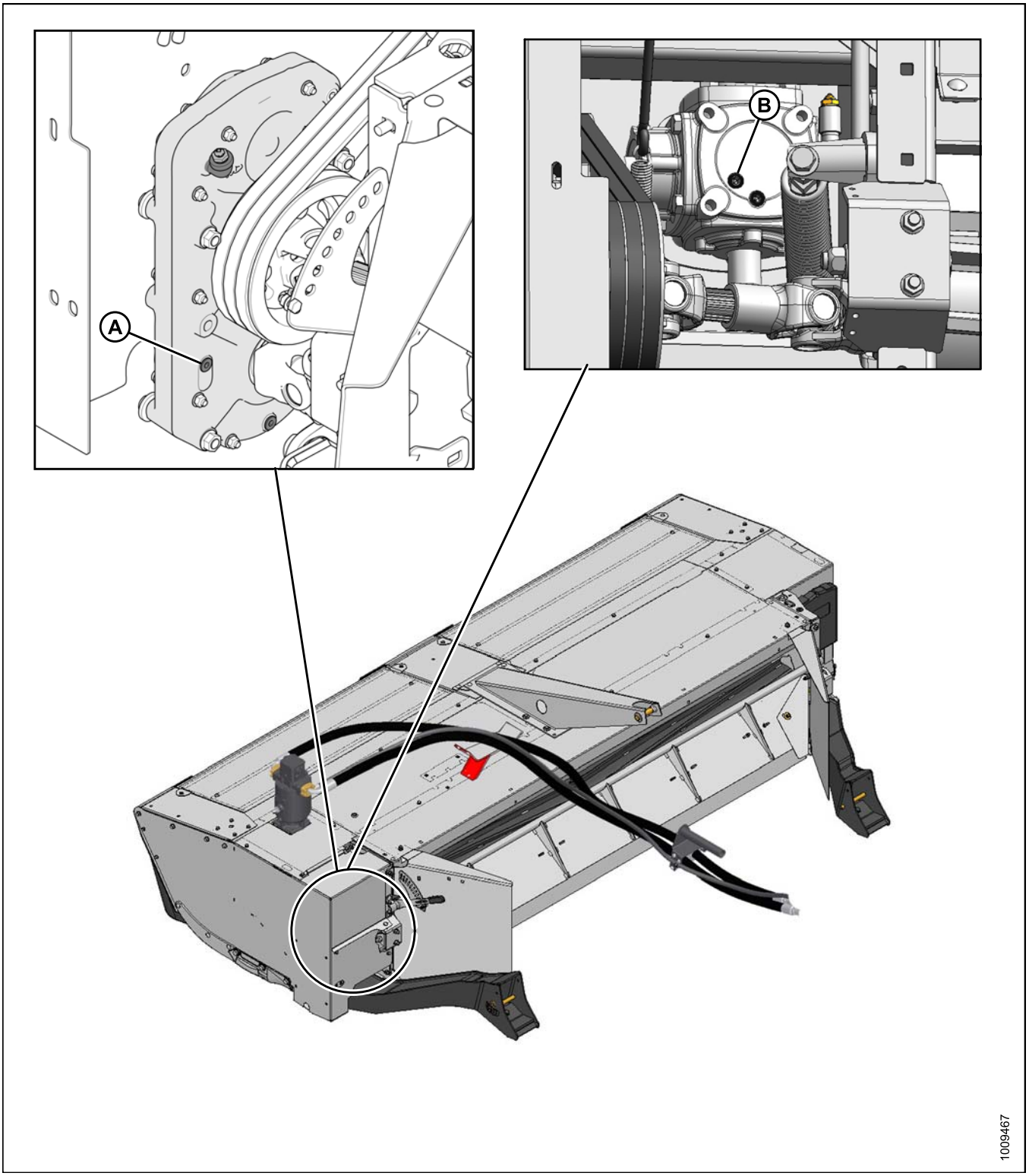

Figure 6.118: Oil Levels

A - Conditioner Gearbox Oil Level **B - Gearbox Lubricant Level**

NOTE:

Check plugs with top of header horizontal. Oil should slightly run out when plugs are removed.

7 Performing Predelivery Checks

DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

IMPORTANT:
To avoid machine damage, check that no shipping dunnage has fallen down between auger and pans.

1. Perform 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 checklist.
2. The completed checklist should be retained either by the Operator or the Dealer.

7.1 Checking Drive Belt

Drive belt tension has been properly set at the factory and should not require any further adjustment. Check as follows:

1. Open driveshield (A).

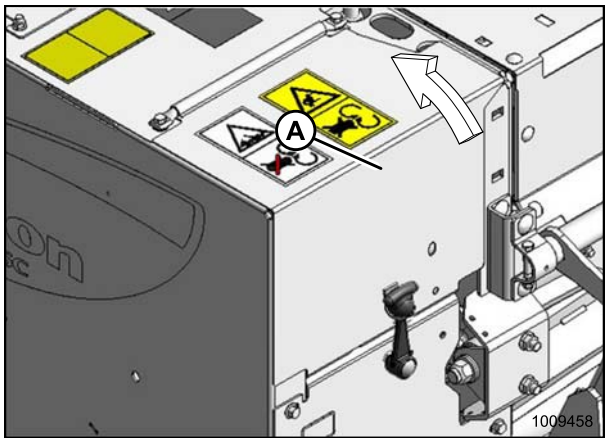

Figure 7.1: Driveshield

2. Check that drive belt (A) is properly installed on pulleys.
3. Check that belt adjuster nuts (B) are tight.

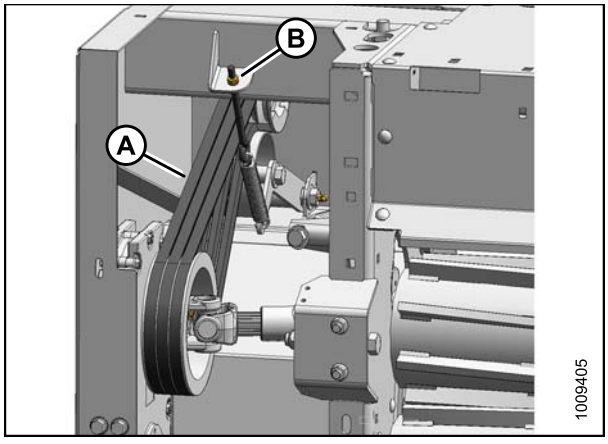

Figure 7.2: Drive Belt

4. When properly tensioned, the tensioner spring should measure approximately 5-9/16–5-15/16 in. (141–151 mm) in length.

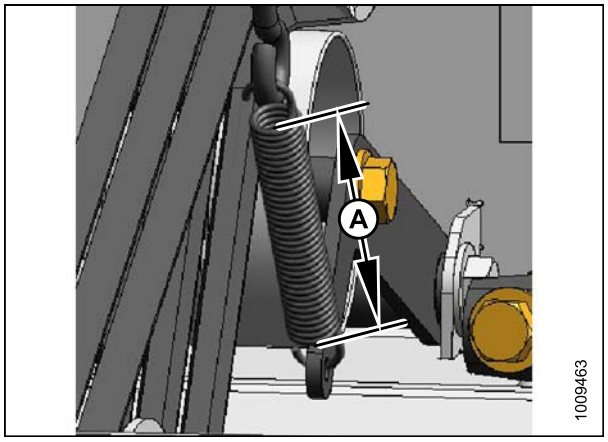

Figure 7.3: Tensioner Spring

7.2 Checking Header Float

1. Start engine and lower header to ground and ensure header lift cylinders are fully retracted.
2. Adjust the header angle/tilt to mid-range position with the switches (A) and (B) on the windrower ground speed lever (GSL).
3. Set the float fine adjustment to mid-range with the windrower float adjustment system in the cab. Refer to the windrower operator's manual.

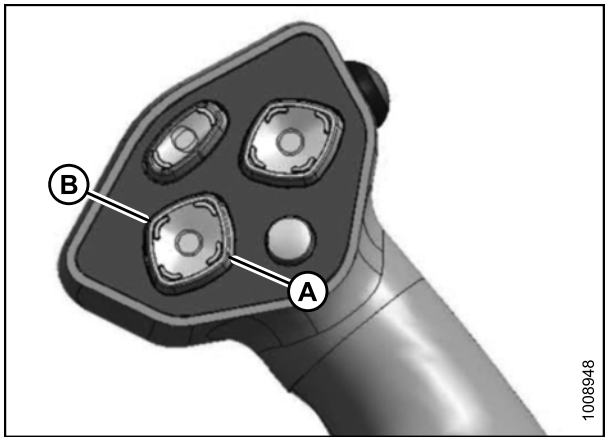

Figure 7.4: Header Tilt Switches

DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

4. Stop engine and remove key from ignition.
5. Check float by grasping the front corner of header and lifting. The force to lift should be 95–105 lbf (426–471 N) and should be approximately the same at both ends.
6. Perform the following steps to adjust the float (if necessary):
   a. Start engine and raise header fully.
   b. Shut down engine and remove the key.
   c. Turn drawbolt (A):
      - **Clockwise to increase float** (make header lighter)
      - **Counterclockwise to decrease float** (make header heavier)
   d. Recheck the float.

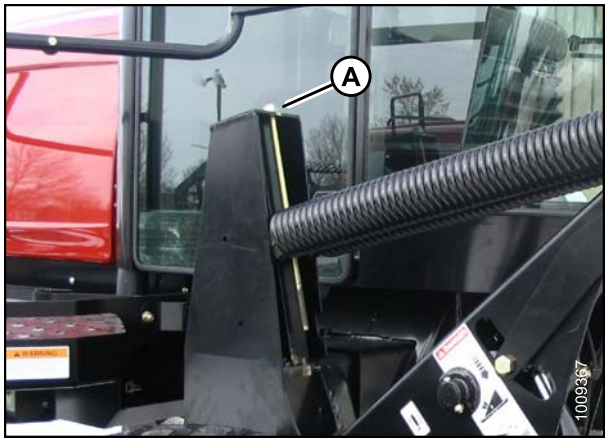

Figure 7.5: Float Adjustment

7.3 Checking Header Level

To check if header is level, and adjust if necessary, follow these steps.

DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

1. Park windrower on level ground and raise header off ground approximately 6 in. (150 mm) .
2. Shut off engine and check that clearances (A) between header and ground at each end of the header are approximately the same.
3. If header does **NOT** need levelling, skip remaining steps. If header **DOES** need levelling, proceed as follows.

   IMPORTANT:
   The header float springs are **NOT** used to level the header.

4. Observe which side of header is the high side and which is the low side.
5. Raise header fully.
6. Stop engine and remove key.
7. Move float engagement pin from hole (A) to hole (B) at front of linkage.

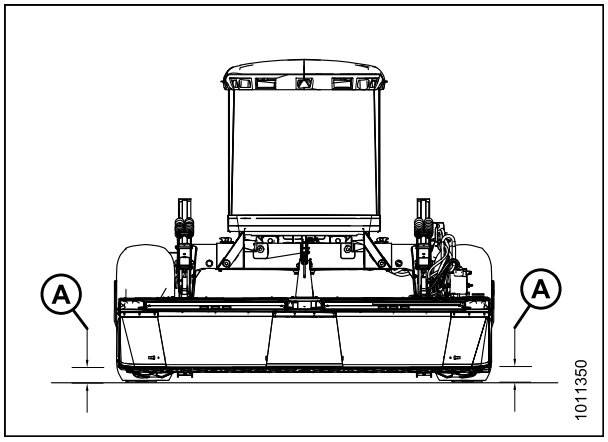

Figure 7.6: Header Level

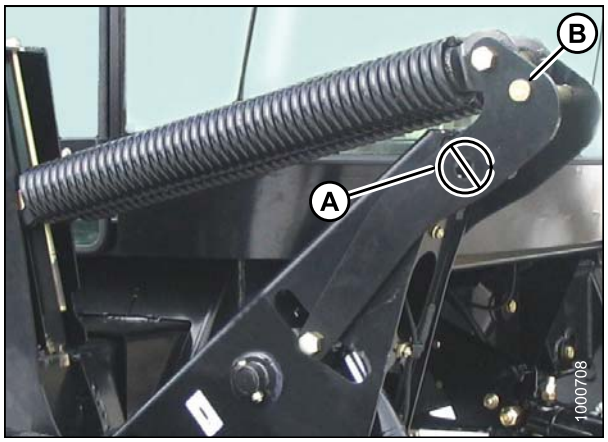

Figure 7.7: Header Lift Linkage

8. Place wooden blocks under header cutterbar and header lift linkage.
9. Disengage header safety props.

Figure 7.8: Wooden Block

10. Start engine and lower header onto blocks so that header lift linkage (A) lifts at windrower leg and off of shims.
11. Shut down engine and remove key.

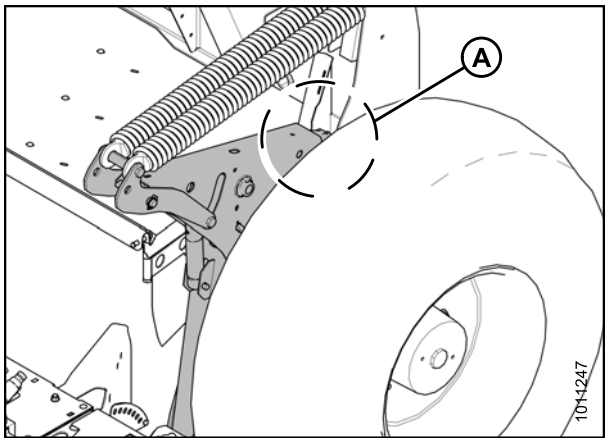

Figure 7.9: Header Lift Linkage

12. On the high side linkage (A), remove nut, washer, and bolt (C) that attach shims (B) to link.
13. Remove one or both shims (B) and reinstall the hardware (C).
14. Raise header approximately 6 in. (150 mm) off ground and check level of header.
15. If additional levelling is required, install the removed shim on the opposite linkage (low side).

    NOTE:
    Float does NOT require adjustment after levelling header.

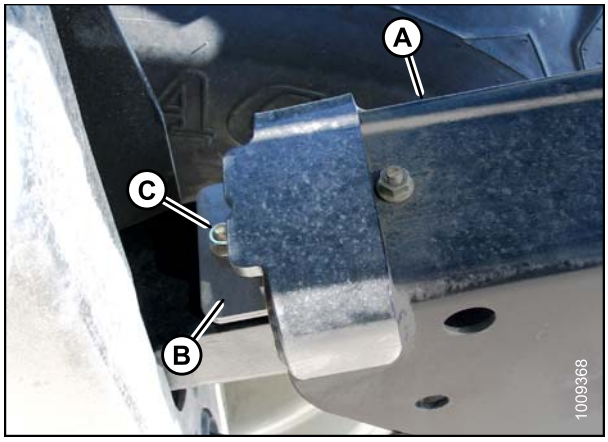

Figure 7.10: Header Lift Linkage: Top View

7.4 Checking Conditioner Rolls

7.4.1 Checking Conditioner Roll Gap

1. Check the size of the gap between the conditioner rolls. The amount of thread protruding through jam nut should be 3/4 in (19 mm). This equates to 1/2 in. (13 mm) of roll gap (B).

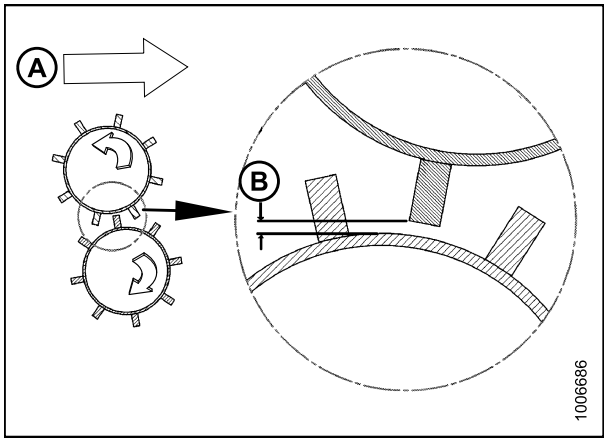

Figure 7.11: Roll Gap

A - Crop **B - Roll Gap**

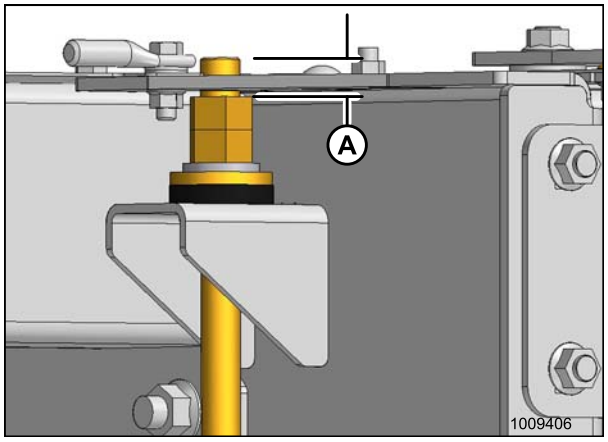

Figure 7.12: Measuring Threads

A - 3/4 in. (19 mm)

7.4.2 Checking Conditioner Roll Timing

DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

1. Place header on the ground, stop engine, and remove key from ignition.
2. Open driveshield.

3. At each end of rolls, loosen nuts (A) and slide cover (B) upwards to expose observation hole.

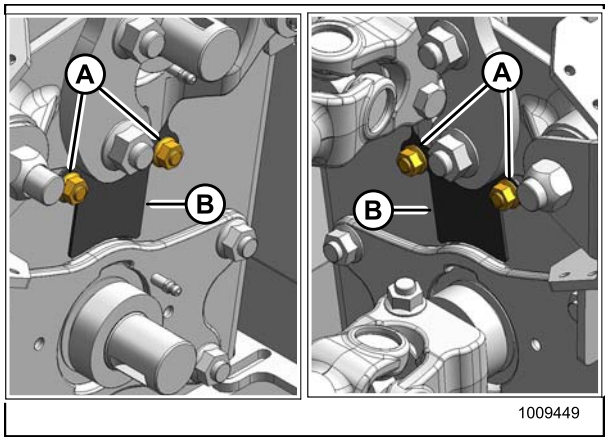

Figure 7.13: Ends of Conditioner Rolls

4. Examine the roll timing at each end of the rolls with the header fully lowered.
   Each steel bar (A) on one roll should be centered between two bars of the other roll so that distance (B) is approximately equal on both sides of the bar.
5. Reposition covers and tighten nuts.

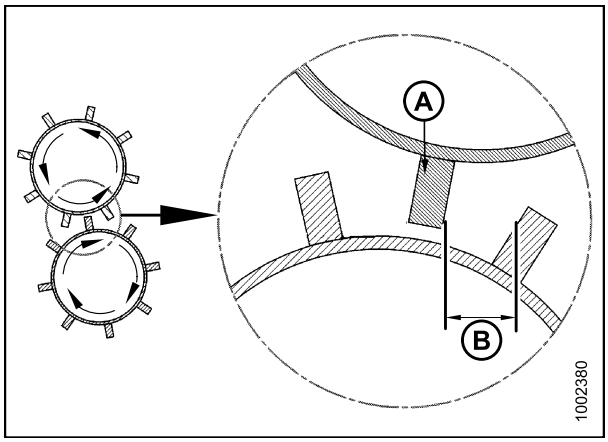

Figure 7.14: Roll Timing

6. Check that the four timing flange bolts (A) are tight.
7. Close driveshield.

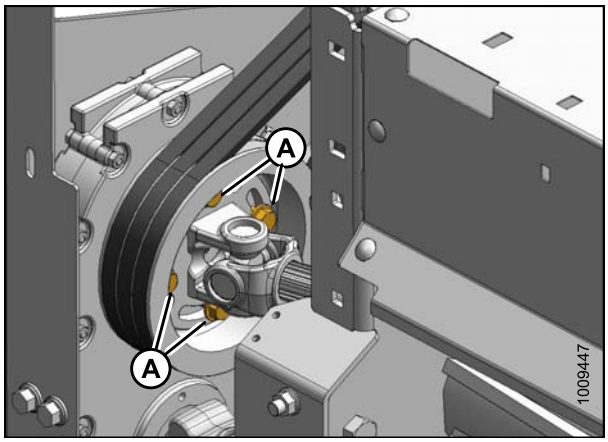

Figure 7.15: Conditioner Gearbox

7.5 Checking Skid Shoes

DANGER

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

1. Raise header and engage header safety props.
2. Both skid shoes should be set at the same position.

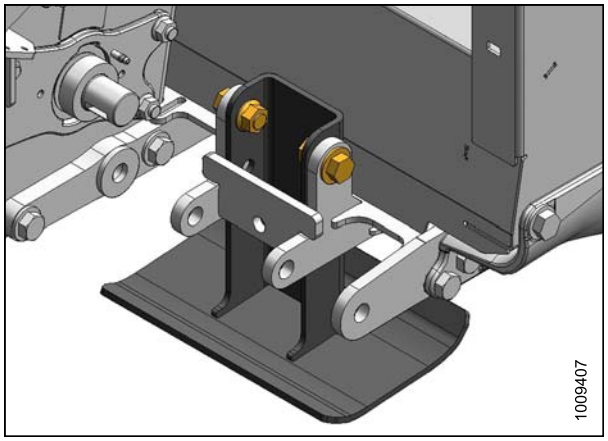

Figure 7.16: Skid Shoe

7.6 Preparing the Bevel Gearbox

To prepare the bevel gearbox and check the oil level, follow these steps:

1. Adjust header height and angle so that top of header is horizontal.
2. Open the driveshield.

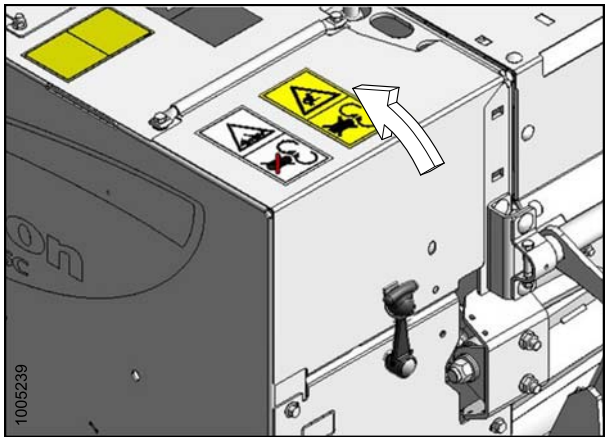

Figure 7.17: Driveshield

3. Cut cable ties and remove bags (A) and (B) from the breather pipe elbows.

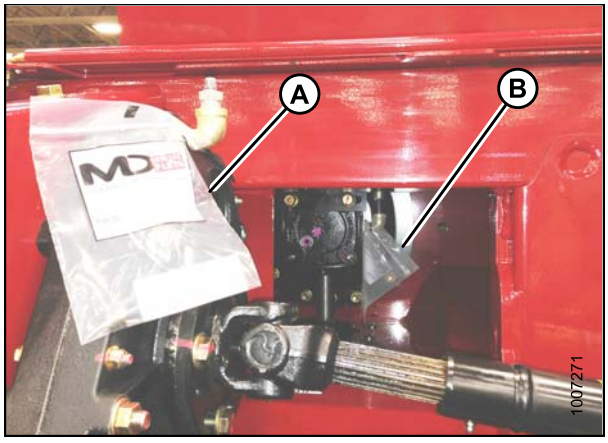

Figure 7.18: Bevel Gearbox 16 ft Shown, 13 ft Similar

4. Remove plug from breather pipe (A) and replace with breather cap in bag. Discard bag and plug.
5. Remove check plug (B) to check oil level. Oil should slightly run out when removed.

NOTE:
If the oil level is low, top up with a 75W90 synthetic gear lubricant with high thermal and oxidation stability conforming to API GL-5 minimum (SAE J2360 preferred) specifications such as Traxon E Synthetic 75W90 gear oil.

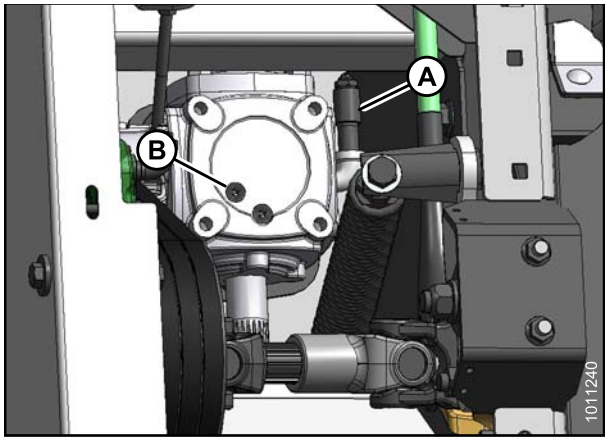

Figure 7.19: Bevel Gearbox

7.7 Preparing the Conditioner Gearbox

To prepare the conditioner gearbox and check the oil level, follow these steps:

1. Adjust the header height and angle until the top of header is horizontal.
2. Open the driveshield.

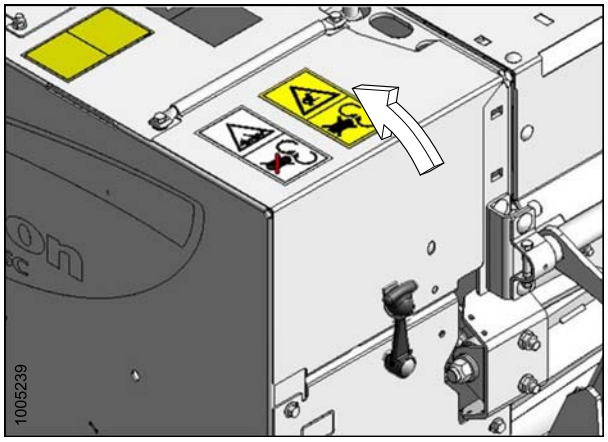

Figure 7.20: Driveshield

3. Cut cable ties and remove bags (A) and (B) from the breather pipe elbows.

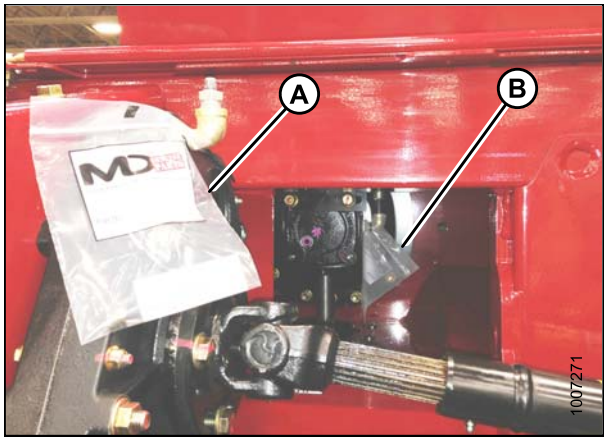

Figure 7.21: Bevel Gearbox 16 ft Shown, 13 ft Similar

4. Remove the plug from breather pipe (A) and replace it with the breather cap in bag. Discard bag and plug.
5. Remove check plug (B) to check oil level. Oil should slightly run out when removed.

   NOTE:
   If the oil does not run out, top up with a 75W90 synthetic gear lubricant with high thermal and oxidation stability conforming to API GL-5 minimum (SAE J2360 preferred) specifications such as Traxon E Synthetic 75W90 gear oil.

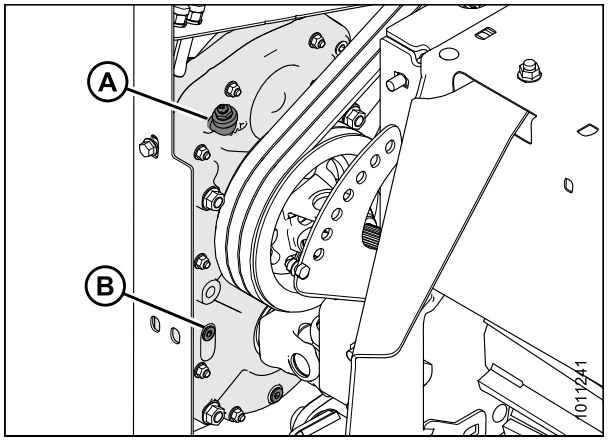

Figure 7.22: Conditioner Gearbox

7.8 Checking Manuals

The following manuals should be stored in the manual storage case (A) on the right-hand side of the header:

- R85 13-Foot Rotary Disc Pull-Type Mower Conditioner and Self-propelled Windrower Header Parts Catalog
- R85 Rotary Disc 13-Foot Self-Propelled Windrower Header Operator's Manual

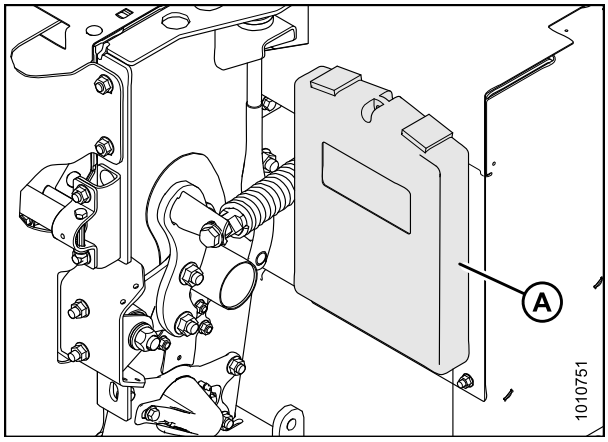

Figure 7.23: Manual Storage Case

7.9 Running Up the Header

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 header 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 header. 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.**

Refer to your windrower operator's manual for windrower operating instructions.

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

1. Start windrower.
2. Set header to working position and adjust center-link to mid-position.
3. Run the machine slowly for five 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.

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.

Header Serial Number: _____

Table 1 R85 Rotary Disc 13-Foot Self-Propelled Windrower Header 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.	*7.1 Checking Drive Belt, page 81*
	Check header angle. Set center link to middle of adjustment range.	*6.9 Attaching Header to Windrower, page 40*
	Check header float.	*7.2 Checking Header Float, page 83*
	Check if header is level.	*7.3 Checking Header Level, page 84*
	Check if side forming shields are evenly set to desired position.	*6.8 Installing Forming Shield, page 37*
	Check if rear fluffer deflector is about halfway down.	*6.8 Installing Forming Shield, page 37*
	Check if swath baffle lever is set about halfway.	*6.4 Unpacking Curtains, page 28*
	Check if skid shoes are evenly set.	*7.5 Checking Skid Shoes, page 88*
	Check if bevel gearbox breather is installed and confirm proper lubricant level.	*7.6 Preparing the Bevel Gearbox, page 89*
	Check if conditioner gearbox breather installed and confirm proper lubricant level.	*7.7 Preparing the Conditioner Gearbox, page 90*
	Grease all bearings and drivelines.	*6.12 Header Lubrication, page 76*
	Check conditioner roll gap and timing.	*7.4 Checking Conditioner Rolls, page 86*
	Check if roll intermesh hardware is securely tightened.	*7.4 Checking Conditioner Rolls, page 86*
	Check if cutterbar curtains are hanging properly.	*6.4 Unpacking Curtains, page 28*
	Check hydraulic hose and wiring harness routing.	—

PREDELIVERY CHECKLIST

✓	Item	Reference
	Check cutterbar area carefully for loose parts and hardware on the cutterbar. **WARNING** **These objects can be ejected with considerable force when the machine is started, and may result in serious injury or machine damage.**	—
RUN-UP PROCEDURE		*7.9 Running Up the Header, page 92*
	Check hydraulic hose and wiring harness routing for clearance when raising or lowering header.	—
POST RUN-UP CHECK. STOP ENGINE.		
	Check belt drives for idler alignment and heated bearings.	*7.1 Checking Drive Belt, page 81*
	Check for hydraulic leaks.	—
	Check that header manuals are in windrower cab storage compartment.	*7.8 Checking Manuals, page 91*

Date Checked: **Checked by:**

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