HC10
Hay Conditioner for D-Series Draper Headers

Setup, Operation, and Parts Manual

169254 Rev. D

Original Instruction

The harvesting specialists worldwide.

MacDon Model HC10 Hay Conditioner

Published on January, 2014.

Introduction

This manual contains safety information, set-up instructions, operating and maintenance procedures, and parts information for the Model HC10 Hay Conditioner. This hay conditioner, when teamed with an M-Series Self-Propelled Windrower power unit and a D-Series Draper Header, will cut and lay crop into uniform, fluffy windrows. Conditioning or crimping the cut hay allows moisture release for quicker drying and earlier processing.

CAREFULLY READ ALL THE MATERIAL PROVIDED BEFORE ATTEMPTING TO UNLOAD, ASSEMBLE, OR USE THE MACHINE.

Use this manual as your first source of information about the machine. If you follow the instructions given in this manual, your hay conditioner will work well for many years. Use this manual in conjunction with your M-Series Self-Propelled Windrower and D-Series Draper Header manuals.

Use the Table of Contents to guide you to specific topics. Review the Table of Contents to familiarize yourself with how the material is organized.

Keep this manual handy for frequent reference and to pass on to new Operators or Owners. Call your Dealer if you need assistance, information, or additional copies of this manual.

Serial Numbers

Record the serial number of the hay conditioner in the space below.

HAY CONDITIONER SERIAL NO: _____

Serial Number Plate (A) is located on the rear cover of the conditioner frame as shown below.

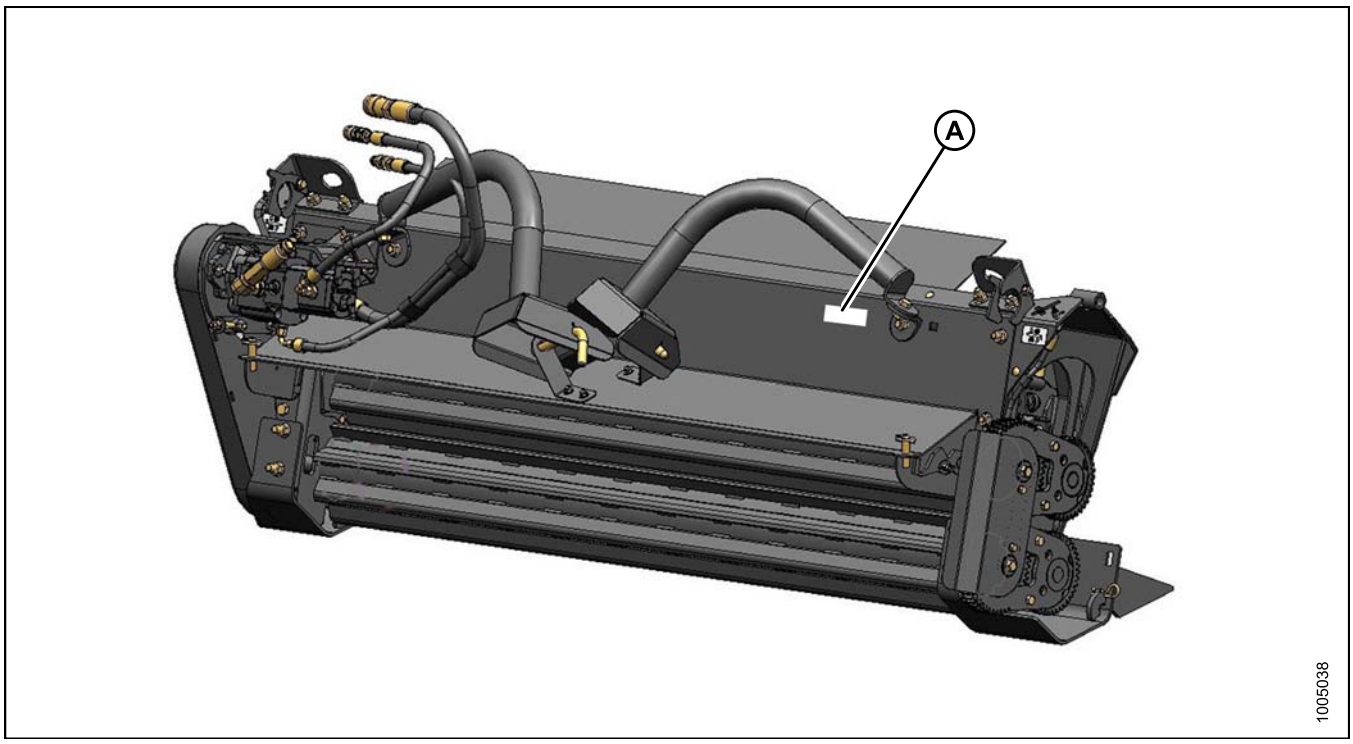

Figure 1: Serial Number Plate

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1 Safety

1.1 Safety Alert Symbols

This safety alert symbol indicates important safety messages in this manual and on safety signs on the hay conditioner.

This symbol means:

- **ATTENTION!**
- **BECOME ALERT!**
- **YOUR SAFETY IS INVOLVED!**

Carefully read and follow the safety message accompanying this symbol.

Why is safety important to you?

- Accidents disable and kill.
- Accidents cost.
- Accidents can be avoided.

Figure 1.1: Read Operator's Manual Before Operating

1.2 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.

1.3 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.

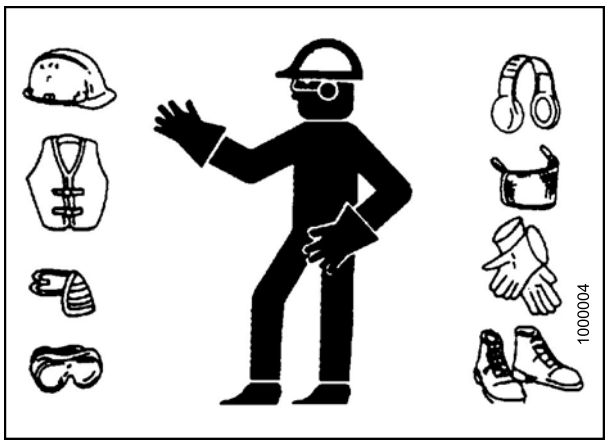


Figure 1.2

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

Figure 1.3

- 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.

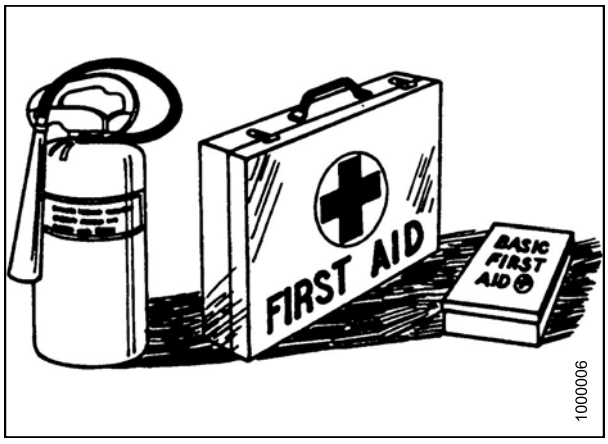


Figure 1.4

- 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 1.5

- 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 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.

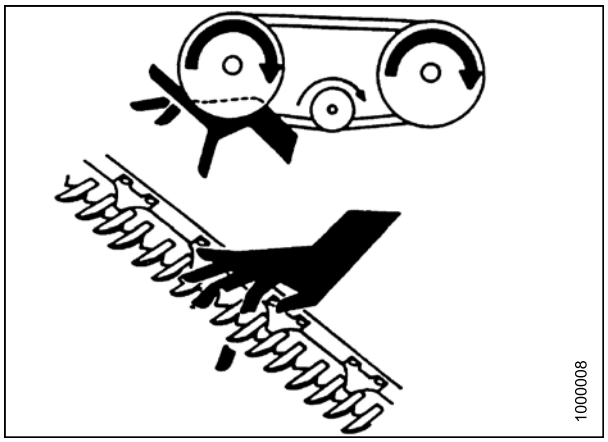


Figure 1.6

- Keep the area used for servicing machinery 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 1.7

1.4 Maintenance Safety

To ensure your safety while maintaining the machine:

- Review the operator's manual and all safety items before operation and/or maintenance of the machine.
- Place all controls in Neutral, stop the engine, set the park brake, remove the ignition key, and wait for all moving parts to stop before servicing, adjusting, and/or repairing.
- Follow good shop practices:
  - Keep service area clean and dry.
  - Be sure electrical outlets and tools are properly grounded.
  - Use adequate light for the job at hand.
- Relieve pressure from hydraulic circuits before servicing and/or disconnecting the machine.
- Before applying pressure to a hydraulic system, make sure all components are tight and that steel lines, hoses, and couplings are in good condition.
- Keep hands, feet, clothing, and hair away from all moving and/or rotating parts.
- Clear the area of bystanders especially children when carrying out any maintenance and repairs or when making any adjustments.
- Install transport lock or place safety stands under the frame before working under the hay conditioner.
- If more than one person is servicing the machine at the same time, be aware that rotating a driveline or other mechanically driven component by hand (for example, accessing a lube fitting) will cause drive components in other areas (belts, pulleys, and knife) to move. Stay clear of driven components at all times.
- Wear protective gear when working on the machine.
- Wear heavy gloves when working on knife components.

Figure 1.8: Slip on Puddle

Figure 1.9: Keep Away

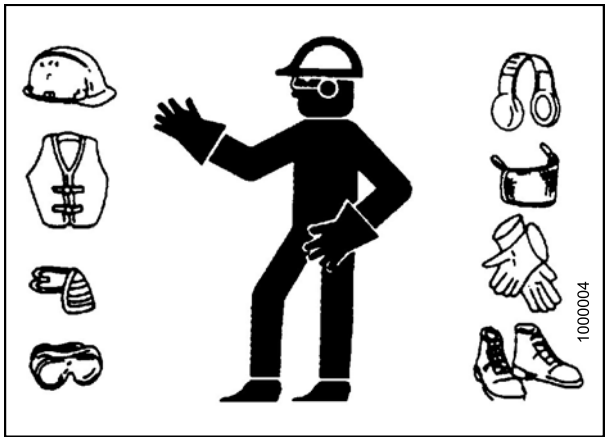


Figure 1.10: Safety Gear

1.5 Hydraulic Safety

- Always place all hydraulic controls in Neutral before dismounting.
- Make sure that all components in the hydraulic system are kept in good condition and clean.
- Replace any worn, cut, abraded, flattened, or crimped hoses and steel lines.
- Do not attempt any makeshift repairs to the hydraulic lines, fittings, or hoses by using tapes, clamps, cements, or welding. The hydraulic system operates under extremely high pressure. Such makeshift repairs will fail suddenly and create a hazardous and unsafe condition.

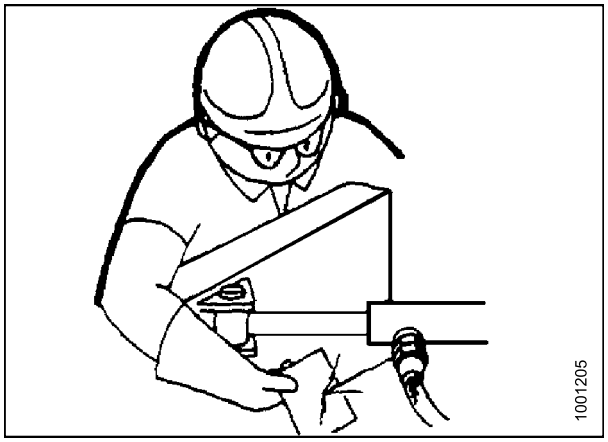


Figure 1.11: Checking Hydraulic Leaks

- Wear proper hand and eye protection when searching for a high-pressure hydraulic leak. Use a piece of cardboard as a backstop instead of hands to isolate and identify a leak.
- If injured by a concentrated high-pressure stream of hydraulic fluid, seek medical attention immediately. Serious infection or toxic reaction can develop from hydraulic fluid piercing the skin.

Figure 1.12: Hydraulic Pressure Hazard

- Before applying pressure to a hydraulic system, make sure all components are tight and that steel lines, hoses, and couplings are in good condition.

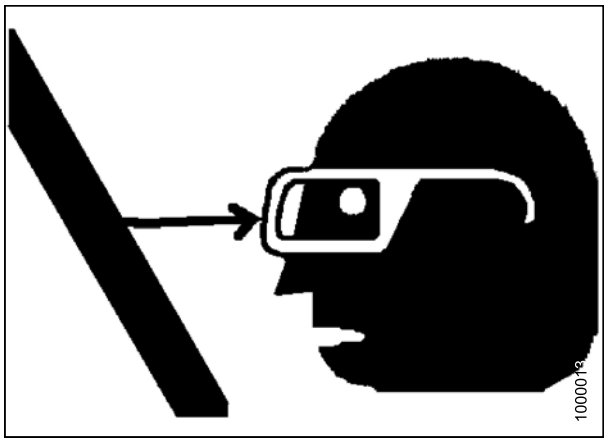


Figure 1.13: Wear Safety Glasses

1.6 Tire Safety

- Failure to follow proper procedures when mounting a tire on a wheel or rim can produce an explosion that may result in serious injury or death.

Figure 1.14: Lower All Safety Stops

- Do **NOT** attempt to mount a tire unless you have the proper training and equipment.

Figure 1.15: Safely Filling a Tire with Air

- Have a qualified tire dealer or repair service perform required tire maintenance.

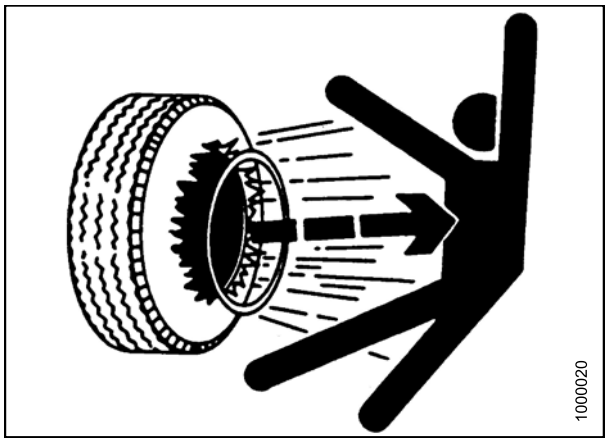


Figure 1.16: Over-Inflation of Tire

1.7 Battery Safety

WARNING

- **Keep all sparks and flames away from the batteries, as a gas given off by electrolyte is explosive.**
- **Ventilate when charging in enclosed space.**

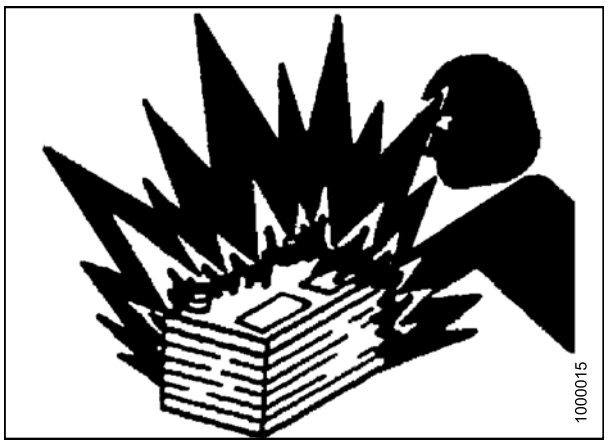


Figure 1.17

WARNING

- **Wear safety glasses when working near batteries.**
- **Do not tip batteries more than 45° to avoid electrolyte loss.**
- **Battery electrolyte causes severe burns. Avoid contact with skin, eyes, or clothing.**
- **Electrolyte splashed into the eyes is extremely dangerous. Should this occur, force the eye open, and flood with cool, clean water for five minutes. Call a doctor immediately.**
- **If electrolyte is spilled or splashed on clothing or the body, neutralize it immediately with a solution of baking soda and water, then rinse with clear water.**

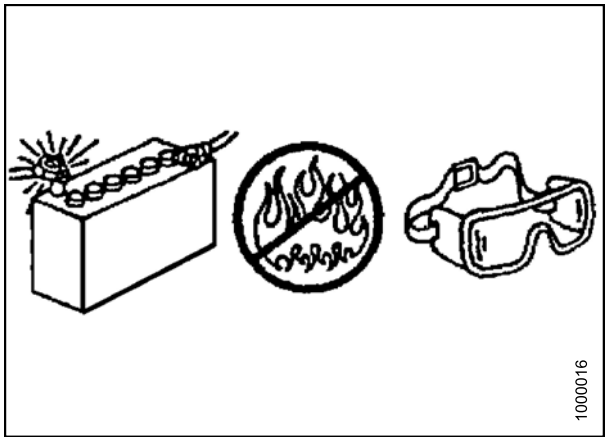


Figure 1.18

WARNING

- **To avoid injury from spark or short circuit, disconnect battery ground cable before servicing and part of electrical system.**
- **Do not operate the engine with alternator or battery disconnected. With battery cables disconnected and engine running, a high voltage can be built up if terminals touch the frame. Anyone touching the frame under these conditions would be severely shocked.**
- **When working around storage batteries, remember that all of the exposed metal parts are live. Never lay a metal object across the terminals because a spark or short circuit will result.**
- **Keep batteries out of reach of children.**

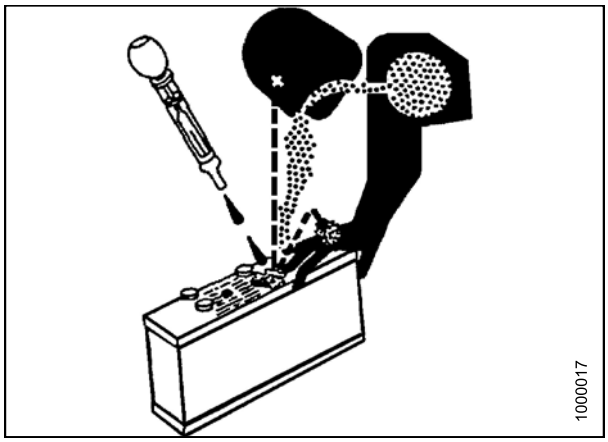


Figure 1.19

1.8 Welding Precaution

High currents and voltage spikes associated with welding can cause damage to electronic components. Before welding on any part of the windrower or an attached header, disconnect all electronic module harness connections as well as the battery cables. Refer to your technical manual or MacDon Dealer for proper procedures.

1.9 Engine Safety

WARNING

Do not use aerosol types of starting aids such as ether. Such use could result in an explosion and personal injury.

CAUTION

- **In the initial start-up of a new, serviced, or repaired engine always make provision to shut the engine off, in order to stop an over-speed. This may be accomplished by shutting off the air and/or fuel supply to the engine. Over-speed shut down should occur automatically for engines that are controlled electronically.**
- **Do not bypass or disable the automatic shutoff circuits. The circuits are provided in order to help prevent personal injury. The circuits are also provided in order to help prevent engine damage. See the technical manual for repairs and adjustments.**
- **Inspect the engine for potential hazards.**
- **Before starting the engine, ensure that no one is on, underneath, or close to the engine. Ensure that the area is free of personnel.**
- **All protective guards and all protective covers must be installed if the engine must be started in order to perform service procedures.**
- **To help prevent an accident that is caused by parts in rotation, work around the parts carefully.**
- **If a warning tag is attached to the engine start switch or to the controls, do NOT start the engine or move the controls. Consult with the person who attached the warning tag before the engine is started.**
- **Start the engine from the operator's compartment. Always start the engine according to the procedure that is described in the Engine Starting section of the operator's manual. Knowing the correct procedure will help to prevent major damage to the engine components and prevent personal injury.**
- **To ensure that the jacket water heater (if equipped) and/or the lube oil heater (if equipped) is working correctly, check the water temperature gauge and/or the oil temperature gauge during the heater operation. Engine exhaust contains products of combustion which can be harmful to your health. Always start the engine and operate the engine in a well ventilated area. If the engine is started in an enclosed area, vent the engine exhaust to the outside.**

NOTE: The engine may be equipped with a device for cold starting. If the engine will be operated in very cold conditions, then an additional cold starting aid may be required. Normally, the engine will be equipped with the correct type of starting aid for your region of operation.

1.9.1 High Pressure Rails

CAUTION

Contact with high pressure fuel may cause fluid penetration and burn hazards. High pressure fuel spray may cause a fire hazard. Failure to follow these inspection, maintenance and service instructions may cause personal injury or death.

1.9.2 Engine Electronics

WARNING

Tampering with the electronic system installation or the Original Equipment Manufacturer (OEM) wiring installation can be dangerous and could result in personal injury or death and/or engine damage.

WARNING

Electrical Shock Hazard. The electronic unit injectors use DC voltage. The Electronic Control Module (ECM) sends this voltage to the electronic unit injectors. Do not come in contact with the harness connector for the electronic unit injectors while the engine is operating. Failure to follow this instruction could result in personal injury or death.

This engine has a comprehensive, programmable engine monitoring system. The ECM has the ability to monitor the engine operating conditions. If any of the engine parameters extend outside an allowable range, the ECM will initiate an immediate action.

The following actions are available for engine monitoring control:

- Warning
- Derate
- Shutdown

The following monitored engine operating conditions have the ability to limit engine speed and/or the engine power:

- Engine Coolant Temperature
- Engine Oil Pressure
- Engine Speed
- Intake Manifold Air Temperature

The engine monitoring package can vary for different engine models and different engine applications. However, the monitoring system and the engine monitoring control will be similar for all engines. Together, the two controls will provide the engine monitoring function for the specific engine application.

1.10 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.

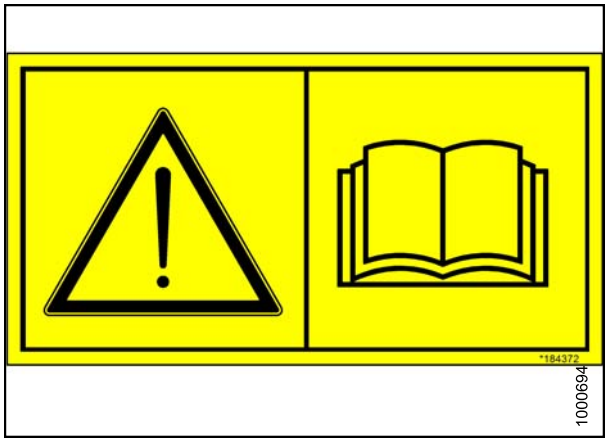


Figure 1.20: Read Operator's Manual before Operating

1.10.1 Installing Safety Decals

To install a safety decal, follow these steps:

1. Be sure the installation area is clean and dry.
2. Decide on the exact location before you remove the decal backing paper.
3. Remove the smaller portion of the split backing paper.
4. Place the sign in position and slowly peel back the remaining paper, smoothing the sign as it is applied.
5. Small air pockets can be smoothed out or pricked with a pin.

2 General Information

2.1 Torque Specifications

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

- Tighten all bolts to the torques specified in chart (unless otherwise noted throughout this manual).
- Replace hardware with the same strength and grade bolt.
- Check tightness of bolts periodically, using the tables below as a guide.
- Torque categories for bolts and cap screws are identified by their head markings.

2.1.1 SAE Bolt Torque Specifications

Torque values shown in this table 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

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

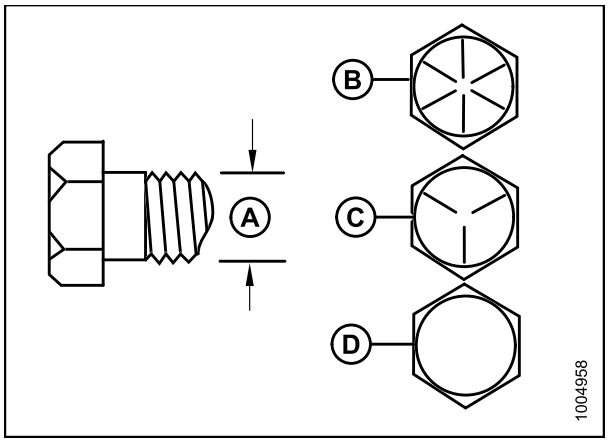


Figure 2.1

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

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

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

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

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

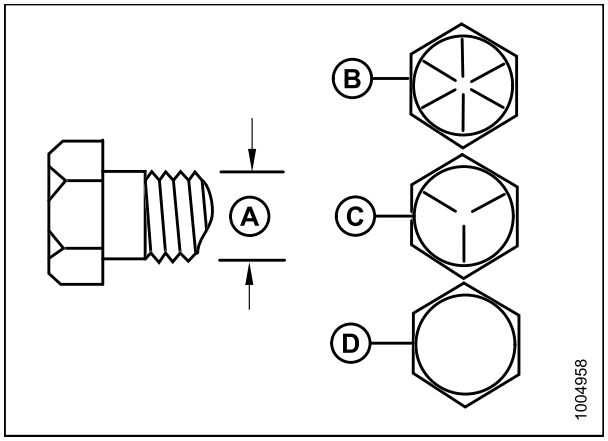


Figure 2.2

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

2.1.2 Metric Bolt Specifications

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

Nominal Size	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

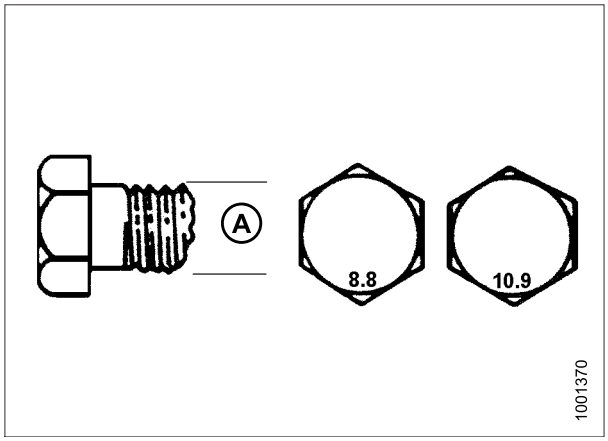


Figure 2.3

A - Nominal Size

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

Nominal Size	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

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

Nominal Size	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

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

Nominal Size	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

2.1.3 Metric Bolt Specifications Bolting into Cast Aluminum

Table 2.9 Metric Bolt Bolting into Cast Aluminum

Nominal Size	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				

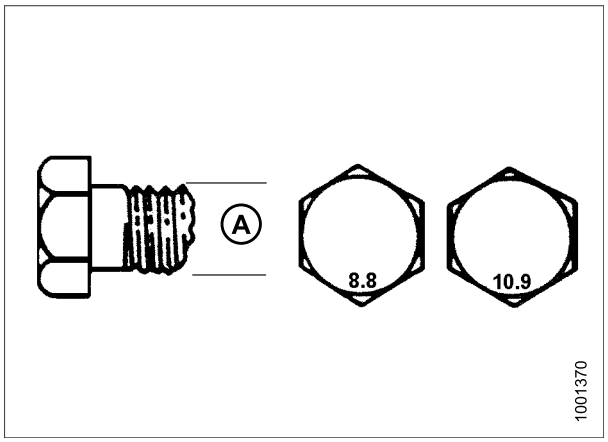


Figure 2.4

A - Nominal Size

2.1.4 Flare-Type Hydraulic Fittings

1. Check flare and flare seat for defects that might cause leakage.
2. Align tube with fitting before tightening.
3. Lubricate connection and hand-tighten swivel nut until snug.
4. To prevent twisting the tube(s), use two wrenches. Place one wrench on the connector body and with the second, tighten the swivel nut to the torque shown.

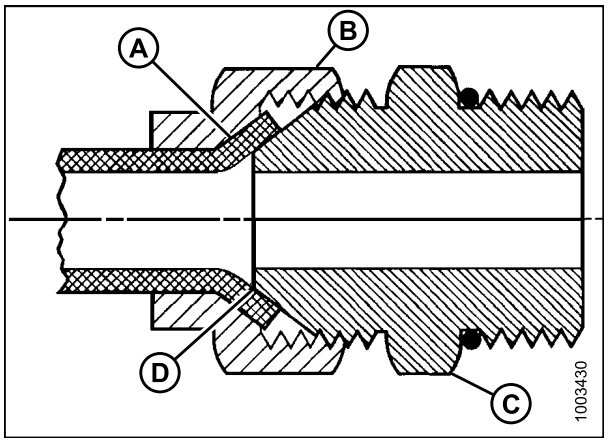


Figure 2.5

A - Flare **B - Nut**
C - Flareseat **D - Body**

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

2.1.5 O-Ring Boss (ORB) Hydraulic Fittings

1. Inspect O-ring (D) and seat (F) for dirt or obvious defects.
2. On angle fittings, back off the lock nut (B) until washer (C) bottoms out at top of groove (E) in fitting (A).
3. Hand-tighten fitting until back up washer (C) or washer face (if straight fitting) bottoms on part face (G) and O-ring is seated.
4. Position angle fittings by unscrewing **NO MORE THAN** one turn.
5. Tighten straight fittings to torque shown.
6. Tighten angle fittings to torque shown in table 2.11 O-Ring Boss (ORB) Hydraulic Fittings (Adjustable), page 22, while holding body of fitting with a wrench.

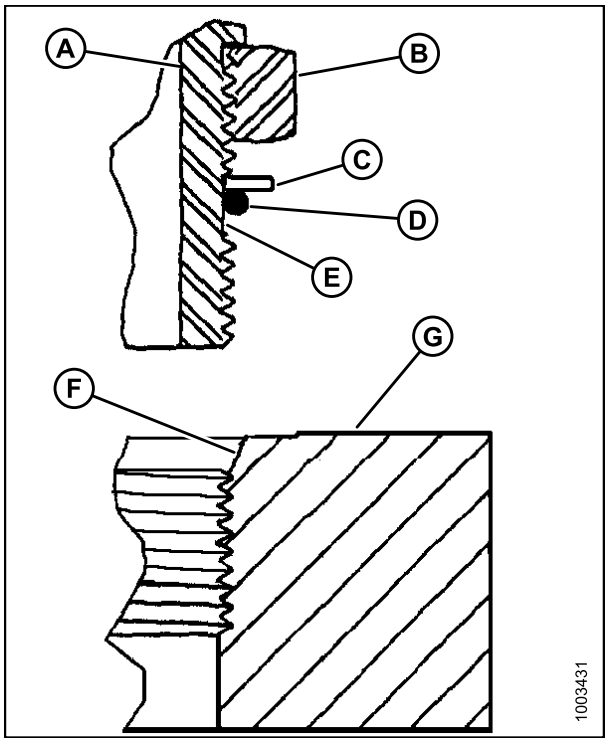


Figure 2.6

A - Fitting **B - Lock Nut** **C - Washer**
D - O-Ring **E - Groove** **F - Seat**

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

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

SAE No.	Thread Size (in.)	Nut Size Across Flats (in.)	Torque Value[2]		Flats From Finger Tight (FFFT)[3]	
			ft·lbf	N·m	Flats	Turns
3	3/8	1/2	6	8	2	1/3
4	7/16	9/16	9	12	2	1/3
5	1/2	5/8	12	16	2	1/3
6	9/16	11/16	18	24	2	1/3
8	3/4	7/8	34	46	2	1/3
10	7/8	1	46	62	1-1/2	1/4
12	1-1/16	1-1/4	75	102	1	1/6
16	1-5/16	1-1/2	105	142	3/4	1/8
20	1-5/8	1-7/8	140	190	3/4	1/8
24	1-7/8	2-1/8	160	217	1/2	1/12

2.1.6 O-Ring Face Seal (ORFS) Hydraulic Fittings

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

Figure 2.7

2. Torque values shown are based on lubricated connections as in reassembly.
3. Always default to the torque value for evaluation of adequate torque.

2. Apply hydraulic system oil to the O-ring.
3. Align the tube or hose assembly. Ensure that flat face of the mating flange comes in full contact with O-ring.
4. Thread tube or hose nut until hand-tight. The nut should turn freely until it is bottomed out.
5. Torque fitting further to a given torque value in table 2.12 O-Ring Face Seal (ORFS) Hydraulic Fittings, page 23.

   NOTE: If applicable, always hold the hex on the fitting body to prevent unwanted rotation of fitting body and hose when tightening the fitting nut.
6. When assembling unions or two hoses together, three wrenches will be required.
7. Check the final condition of the fitting.

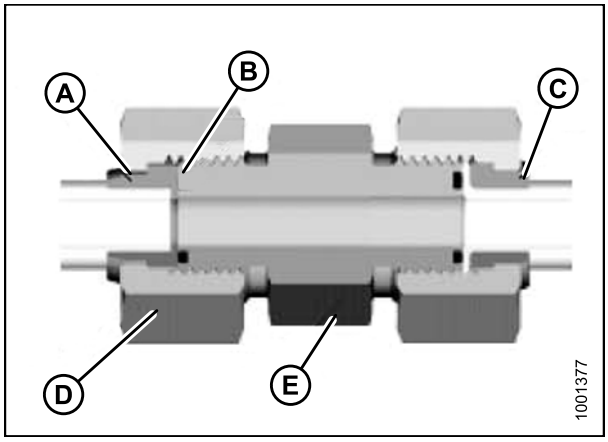


Figure 2.8

A - Brazed Sleeve
B - O-Ring
C - Two Piece Sleeve
D - Nut
E - Fitting Body

Table 2.12 O-Ring Face Seal (ORFS) Hydraulic Fittings

SAE No.	Thread Size (in.)	Tube O.D. (in.)	Torque Value[4]		Flats From Finger Tight (FFFT)[5]	
			ft·lbf	N·m	Tube Nuts	Swivel & Hose
3	[6]	3/16	–	–	–	–
4	9/16	1/4	11–12	14–16	1/4–1/2	1/2–3/4
5	[6]	5/16	–	–	–	–
6	11/16	3/8	18–20	24–27	1/4–1/2	1/2–3/4
8	13/16	1/2	32–35	43–47		
10	1	5/8	45–51	60–68		
12	1-3/16	3/4	67–71	90–95		1/3–1/2
14	1-3/16	7/8	67–71	90–95		
16	1-7/16	1	93–100	125–135		
20	1-11/16	1-1/4	126–141	170–190		
24	2	1-1/2	148–167	200–225		
32	2-1/2	2	–	–	–	–

4. Torque values and angles shown are based on lubricated connection, as in reassembly.
5. Always default to the torque value for evaluation of adequate torque.
6. O-ring face seal type end not defined for this tube size.

2.2 Specifications

NOTE: Specifications and design are subject to change without notice or obligation to revise previously sold units.

Item		Specification			
Frame & Structure					
Total Weight (estimated)		1700 lb (770 kg)			
Carrier		MacDon M150, M155, and M200 Self-Propelled Windrowers			
Manual Storage		In Windrower Cab			
Drives					
Main Conditioner		3.16 cu in. (51.83 cc) Hydraulic Motor with 1.29 cu in. (21.14 cc) Flow Divider			
Feed Deck		4.0 cu in. (65 cc) Hydraulic Motor with 921 psi Relief			
Connections		Flat Faced Quick Attach Couplers – Connect Under Pressure			
Normal Operating Pressure	Conditioner	2500-3000 psi (17.0–20.7 MPa)			
	Feed Deck	600 psi (4.1 MPa)			
Conditioner					
Drive		Hydraulic Motor To Belt Driven Roll To Open Timing Gear System			
Roll Type		Intermeshing Steel Bars			
Roll Diameter		9.17 in. (233 mm)/6.63 in. (168.4 mm) OD Tube			
Roll Length		72 in. (1830 mm)			
Header Size		15 ft	20 ft & 25 ft	30 ft	35 ft
Roll Speed		772–977 rpm	720–874 rpm	695–927 rpm	695–868 rpm
Feed Draper Speed		437–553 fpm	407–495 fpm	393–525 fpm	393–491 fpm
Swath Width		36-102 in. (915-2,540 mm)			
Forming Shields		Header Mounted Tractor Supported Adjustable Forming Shield System			

NOTE: To avoid excessive vibration and poor performance, the HC10 Hay Conditioner should not be attached to single-knife drive headers.

2.3 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

2.4 Component Identification

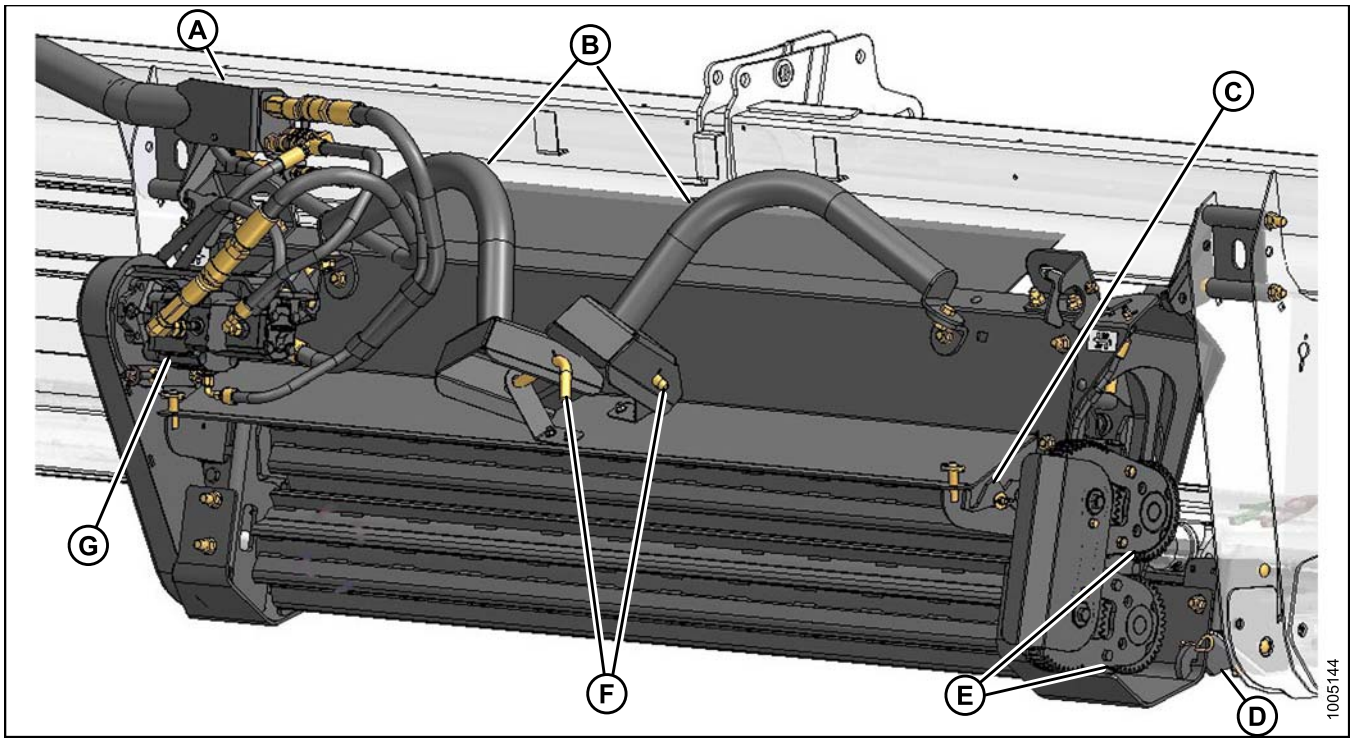


Figure 2.9: Back View of Hay Conditioner Installed in Header

A - Hydraulics To Header **B - Lift Arms** **C - Roll Timing Tool** **D - Stand**
E - Timing Gears **F - L-Pins** **G - Hydraulic Motor**

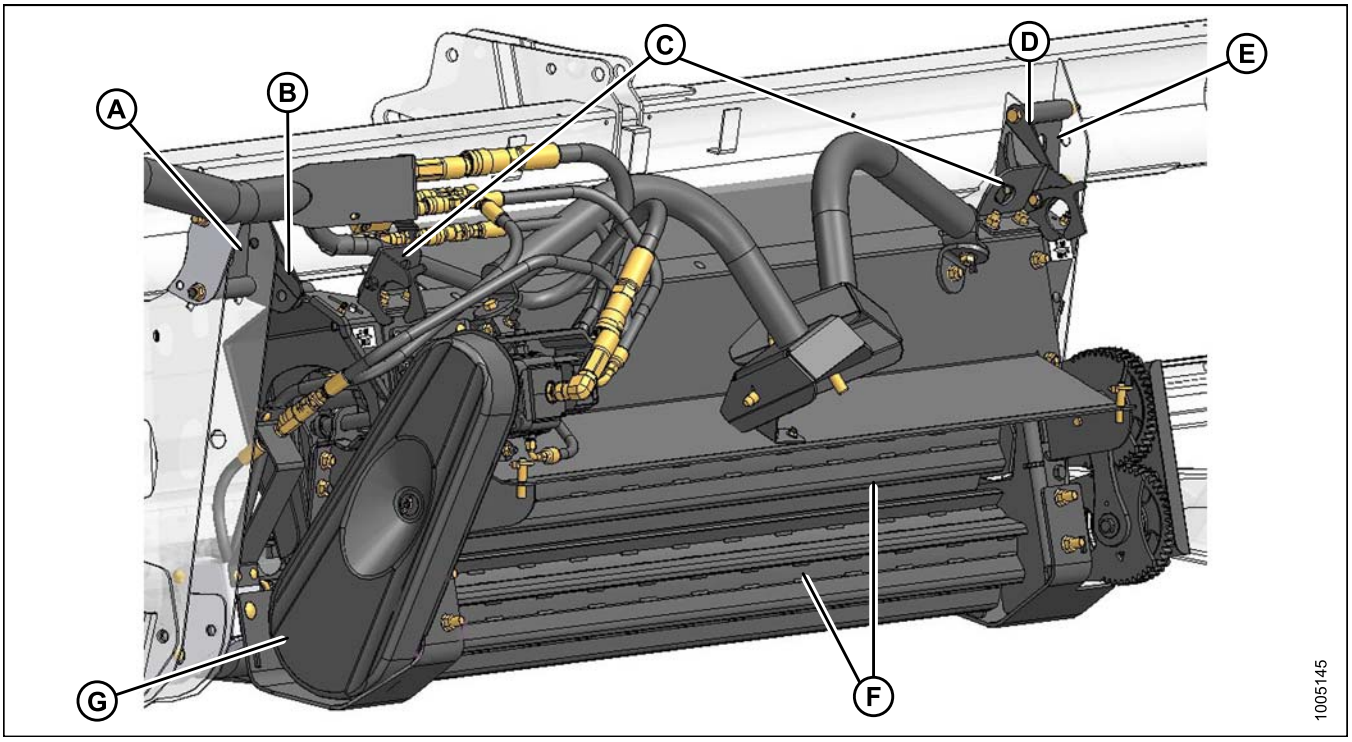


Figure 2.10: Back View of Hay Conditioner Installed in Header

A - Spacer
B - Mounting Bracket
C - Lifting Lugs
D - Mounting Bracket
E - Spacer
F - Rolls
G - Drive Belt Shield

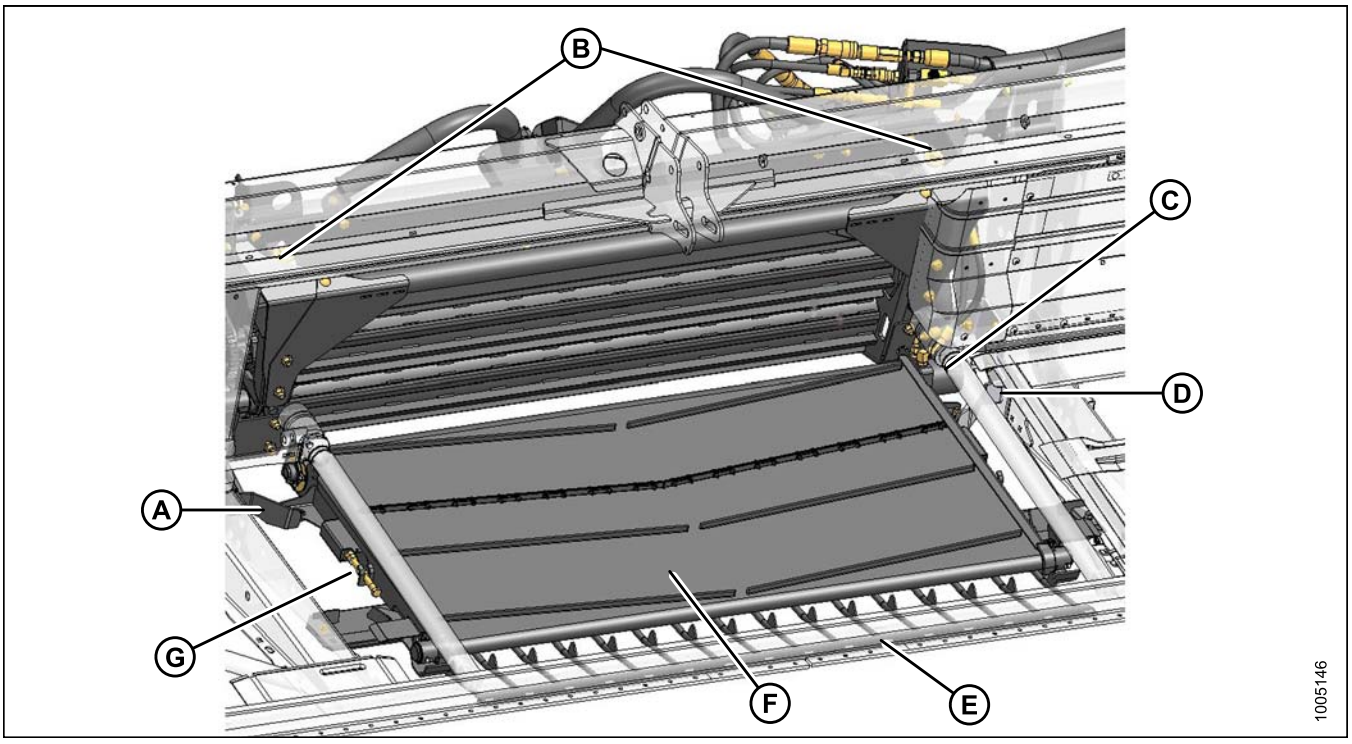


Figure 2.11: Front View of Hay Conditioner Installed in Header

A - Mounting Bracket
B - Roll Gap Adjusters
C - Feed Deck Motor
D - Mounting Bracket
E - Rock Grate
F - Feed Deck
G - Draper Tension Adjusters (2)

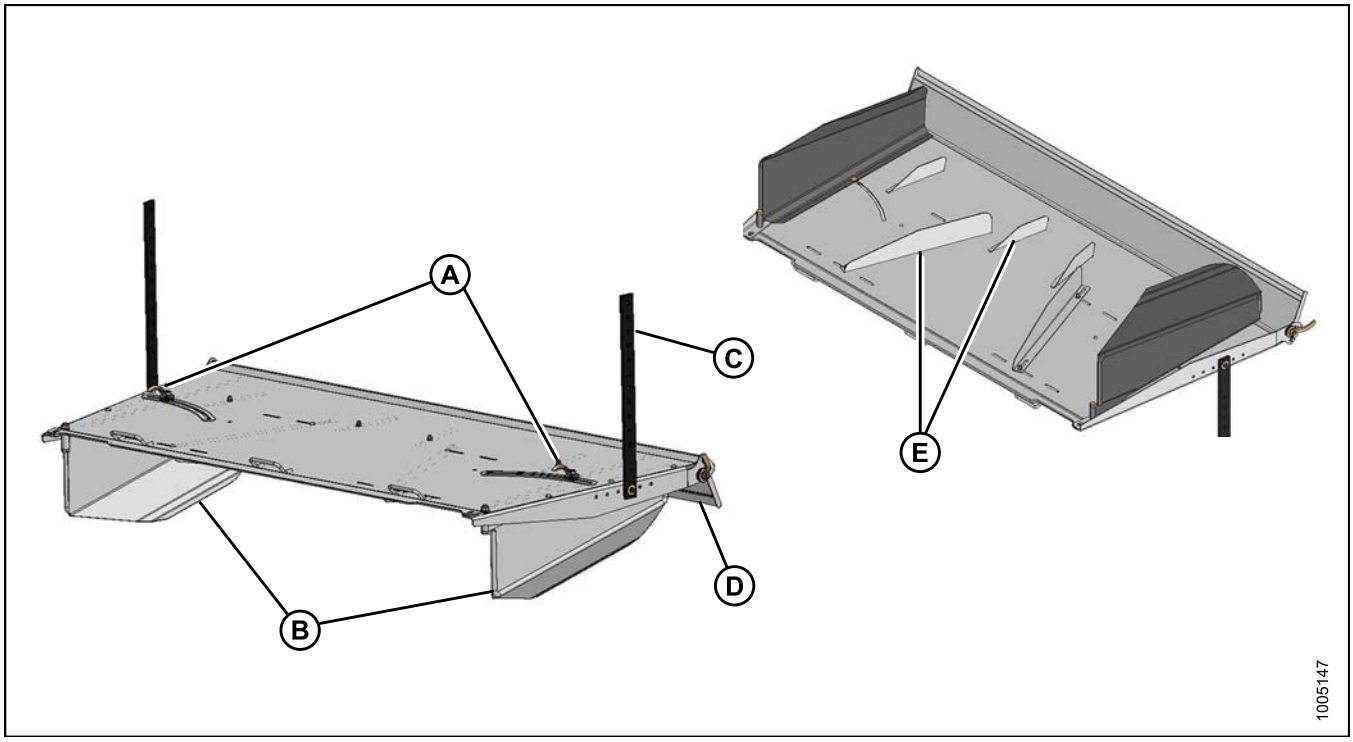


Figure 2.12: Swath Forming Shield

A - Side Deflector Adjusters **B - Side Deflectors** **C - Height Adjust Strap** **D - Fluffer Shield**
E - Deflector Fins

3 Unloading and Assembly

To unload and assemble an HC10 Hay Conditioner, follow each of the procedures in this chapter in order.

3.1 Unloading the Hay Conditioner

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 vehicle tipping or machine damage.

Lifting Vehicle	
Minimum Lifting Capacity[7]	2000 lb (908 kg)
Minimum Fork Length	60 inches (1524 mm)

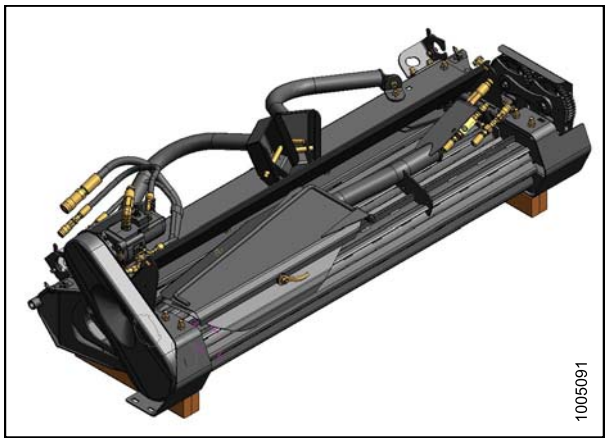


Figure 3.1: Hay Conditioner Bundle #4798

IMPORTANT

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

WARNING

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

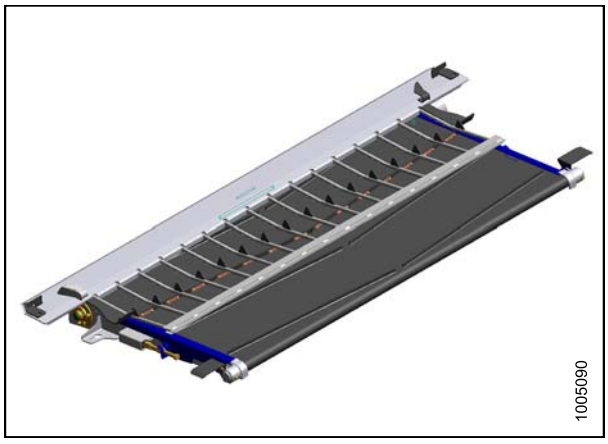


Figure 3.2: Feed Deck Bundle #4799

7. At 48 inches (1220 mm) from back end of forks.

To unload the hay conditioner, follow these steps:

1. Remove hauler's tie down straps and chains.
2. Use forklift to lift each of the three pallets of hay conditioner components off of the trailer deck.
3. Back up until unit clears trailer and slowly lower to 6 inches (150 mm) from ground.
4. Take to storage or set-up area.
5. Set pallet down securely on level ground.
6. Check for shipping damage and missing parts.

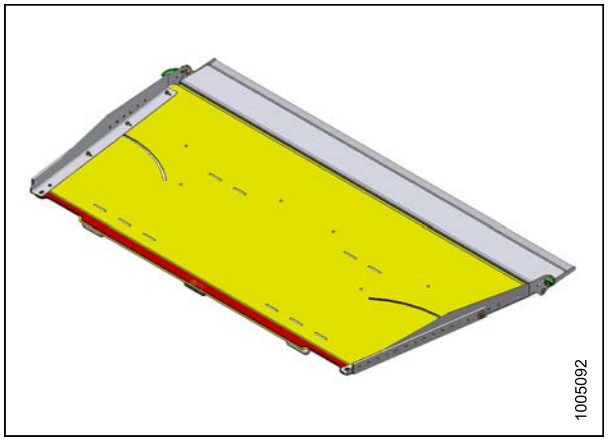


Figure 3.3: Forming Shield Bundle #4800

3.2 Preparing the Header

To prepare the draper header for installation of the hay conditioner, follow these steps:

1. Adjust the header stand (A) to mid-position.

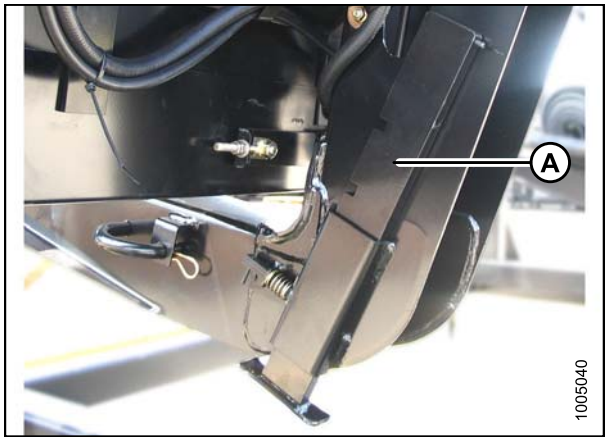


Figure 3.4

2. Trim poly deflector along creased line (A) on back of poly for proper fit up to conditioner.

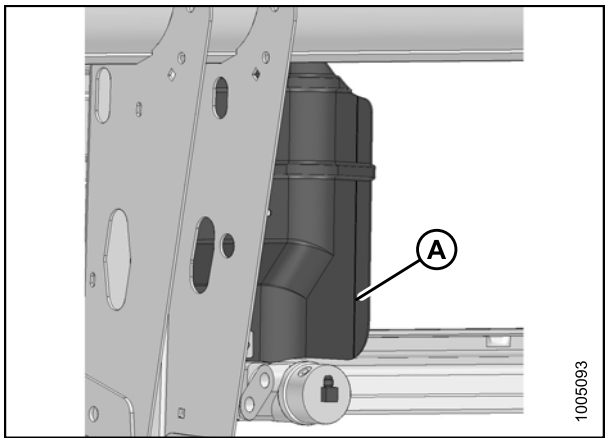


Figure 3.5

3.3 Installing the Rock Grate

To install the rock grate, follow these steps:

1. Unpack feed deck / rock grate bundle.
2. Position rock grate into center area of header.
3. Lift rock grate (A), and position the rear tabs (C) so they slide over the header leg flanges.
4. Position the front lip (B) of rock grate (A) in front of the bottom edge of the cutterbar, and slide forward so it engages the cutterbar.
5. If the header is equipped with cutterbar poly, set the rock grate on top of the poly in front of the cutterbar, then push down, and forward to seat the rock grate onto the cutterbar.

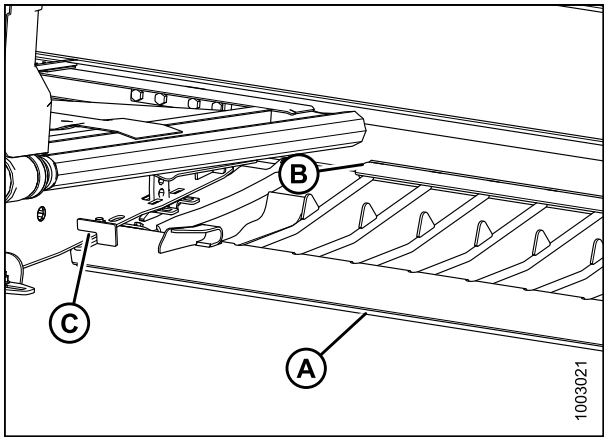


Figure 3.6

6. Ensure rock grate is pushed fully forward, and secure with two bolts installed from underside. Tighten bolts.

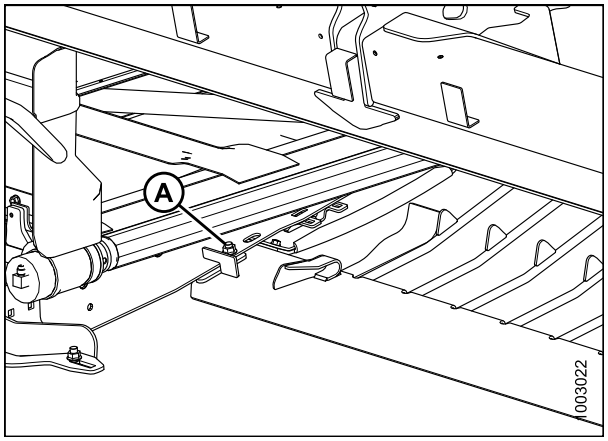


Figure 3.7

3.4 Installing Deck Brackets

To install the deck brackets onto the header, follow these steps:

1. Install the two lower brackets (A) onto the inside of both center header legs with two bolts and nuts (B) in each bracket.

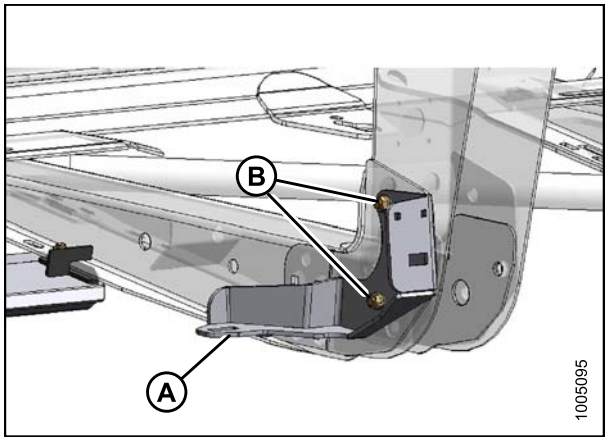


Figure 3.8

2. Install right-hand upper bracket (A) and spacer (B) on the right-hand center leg as shown and install nut (C).

   NOTE: For headers with a sheet metal hose cover, install bolts from the outboard side.

3. Install the other bolt through the bracket and spacer and secure with a nut (D).
4. Tighten both bolts.

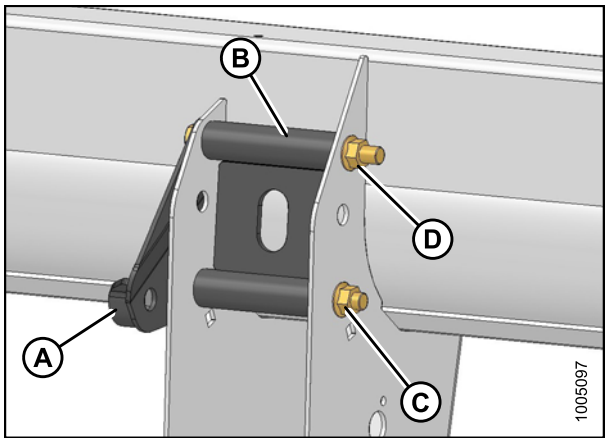


Figure 3.9: 15 ft Header Shown

5. Install the left-hand upper bracket (A) and spacer (B) onto the inboard side of left-hand center leg as shown.

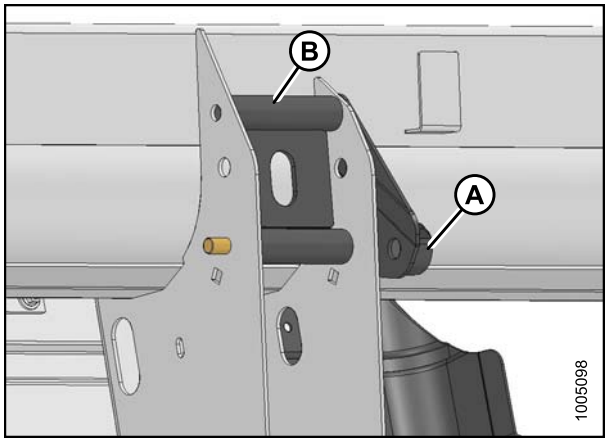


Figure 3.10

6. Remove the hose guide (A) located near the left-hand center leg. (For 20 ft. and larger headers, remove this support from its mounting position on sheet metal hose cover.)

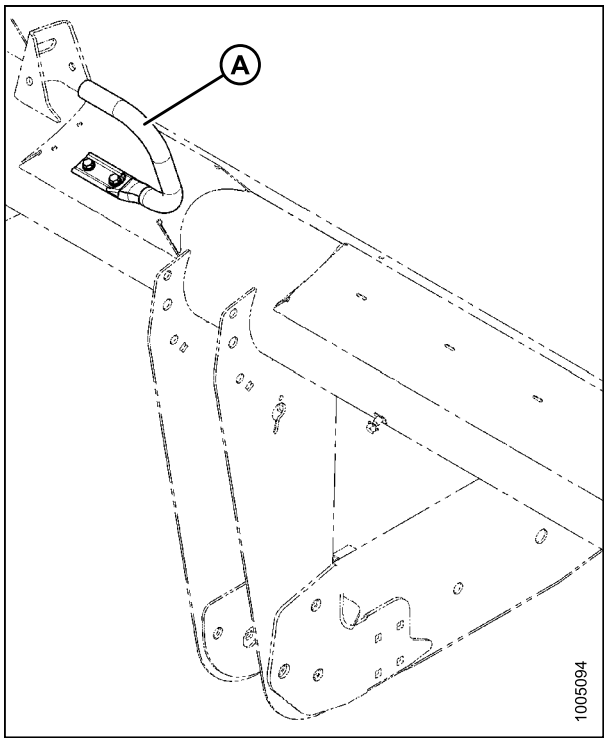


Figure 3.11: 15 ft Header Shown

7. Attach hose assembly (A) onto the left-hand center leg and install nut on lower bolt (C). Ensure correct hole is used when attaching hose assembly (use hole (D) for 15-foot headers).

   NOTE: For headers with a sheet metal hose cover, install bolts from the outboard side.

8. Install other bolt (B) through bracket, spacer, and hose assembly and secure with a nut.

9. Tighten both bolts.

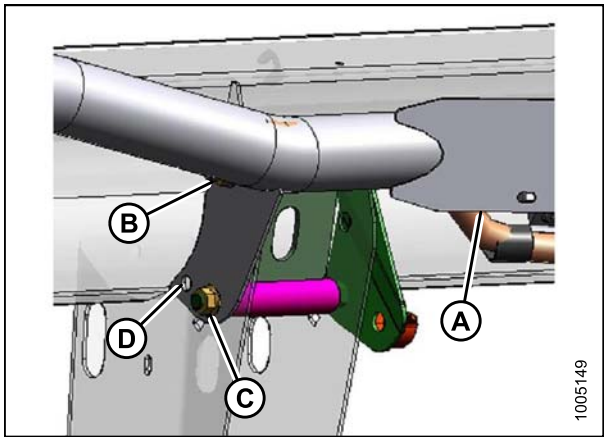


Figure 3.12: 20–35 ft Header Shown

A - Hose Assembly **B - Bolt**
C - Mounting Position for 20–35-Foot Headers
D - Mounting Position for 15-Foot Headers

3.5 Installing the Feed Deck

To install the feed deck, follow these steps:

1. Slide feed deck (A) under header opening from the rear. Deck drive motor faces aft.

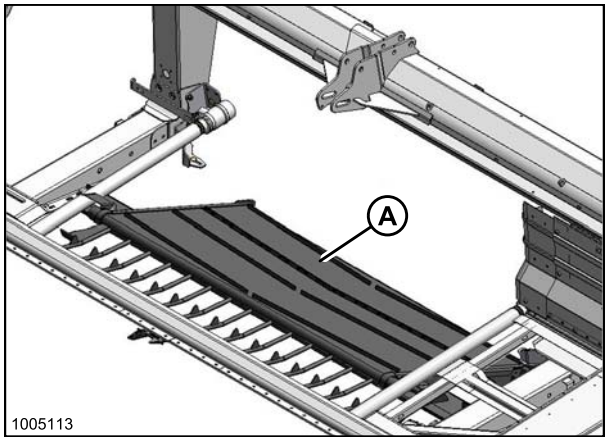


Figure 3.13

2. Set front of deck (A) onto the rock grate and slide the feed deck forward until the locating pins (B) reach the pockets on the rock grate.
3. Lift the rear of the feed deck so the mounts on the deck clear the brackets on the leg and slide deck forward until mounting pins are fully positioned inside the pockets.

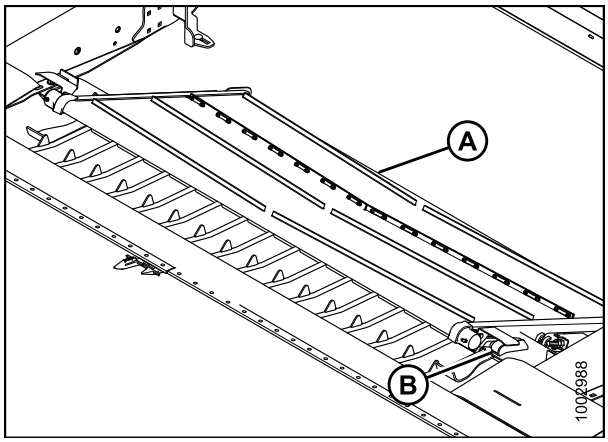


Figure 3.14

4. Install two 1/2 x 1.25 in. long carriage bolts at rear mounting brackets.

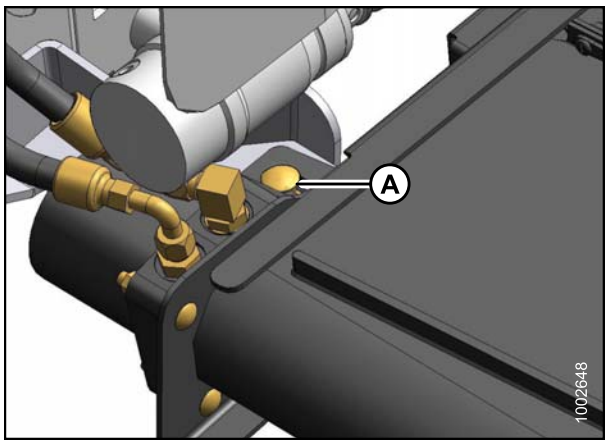


Figure 3.15: LH Side Shown

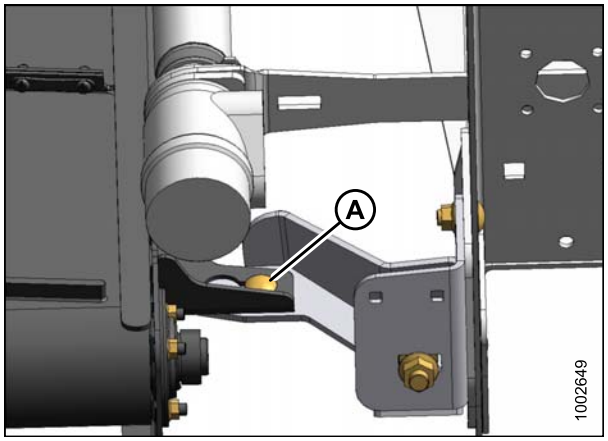


Figure 3.16: RH Side Shown

5. Attach the hose bracket (A) to the mounting bracket with two 3/8 x 1.0 in. long carriage bolts (B).
6. Adjust header side drapers to overlap feed deck by 2-1/2 to 3 inches (65 to 75 mm). See header operator's manual for procedure.

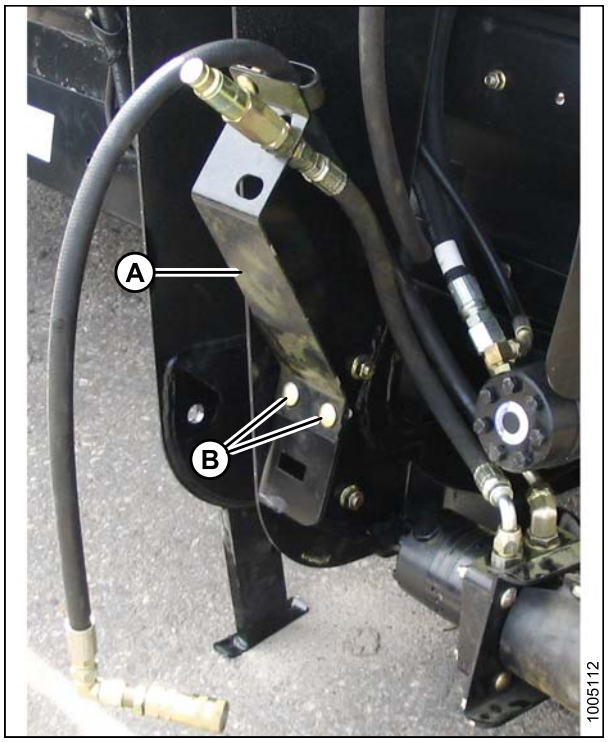


Figure 3.17

3.6 Installing the Conditioner

There are two methods for installing the conditioner:

- The lifting method
- The tractor method

3.6.1 Installing Conditioner: Lifting Method

CAUTION

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

Lifting Vehicle	
Minimum Lifting Capacity[8]	2000 lb (908 kg)
Minimum Fork Length	60 inches (1524 mm)

IMPORTANT

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

Chain Type	Overhead Lifting Quality (1/2 inch)
Minimum Working Load	5000 lb (2270 kg)

To install the conditioner using the lifting method, follow these steps:

1. Attach chain to lifting brackets (A) on conditioner, and secure chain to lifting device (B).
2. Lift conditioner to upright position.
3. Remove shipping blocks if present.
4. Position conditioner into header opening from the rear.

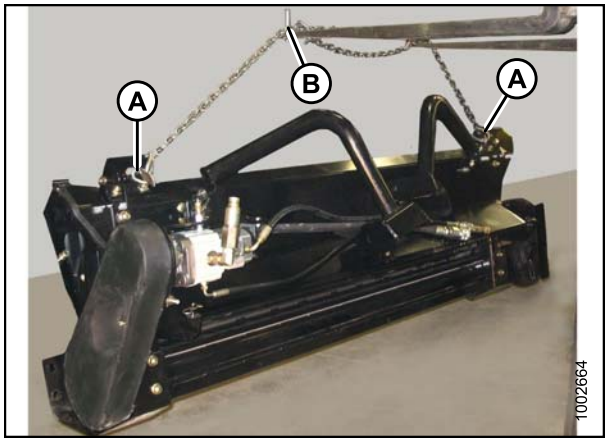


Figure 3.18

8. At 48 inches (1220 mm) from back end of forks.

5. Carefully lower the windrower lift legs until lugs (A) on conditioner are seated in the U-shaped brackets (B) on header.
6. Ensure the conditioner is seated properly in the brackets, and then remove the chains.

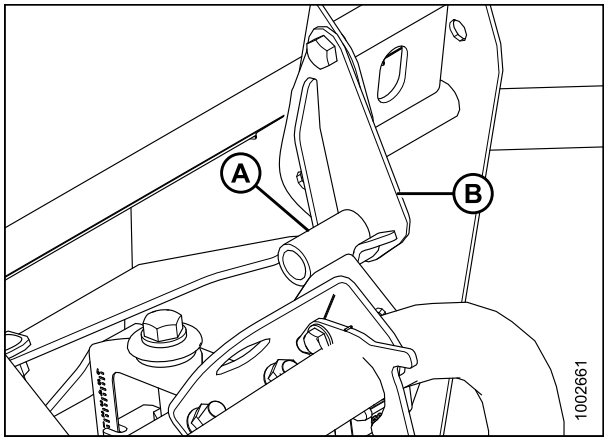


Figure 3.19

7. Install 5/8 in. x 1-1/2 in. carriage bolt (A) in the right-hand lower attachment location.

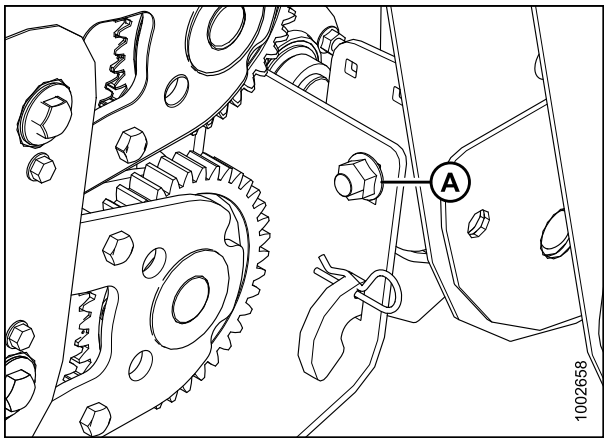


Figure 3.20: RH Side Shown

8. Install 5/8 in. x 1-1/2 in. carriage bolt (A) in the left-hand lower attachment location.

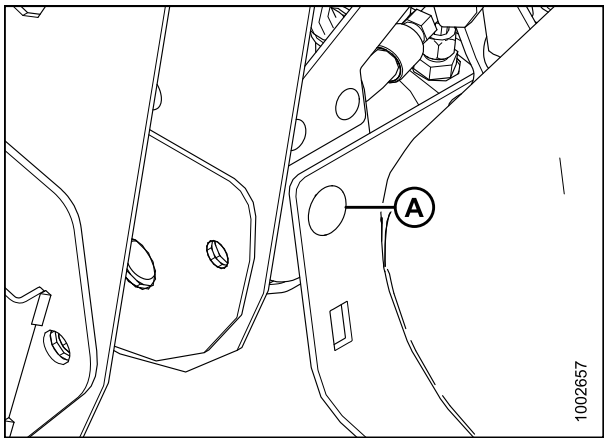


Figure 3.21: LH Side Shown

9. Reconnect the five hydraulic hoses between the conditioner and the header as follows:
   - Small male quick-disconnect from motor to header (A)
   - Large female quick-disconnect from motor to header (B)
   - Small female quick-disconnect from deck to header (C)
   - Small female quick-disconnect from motor to deck (D)
   - Large female quick-disconnect from header to motor (E)

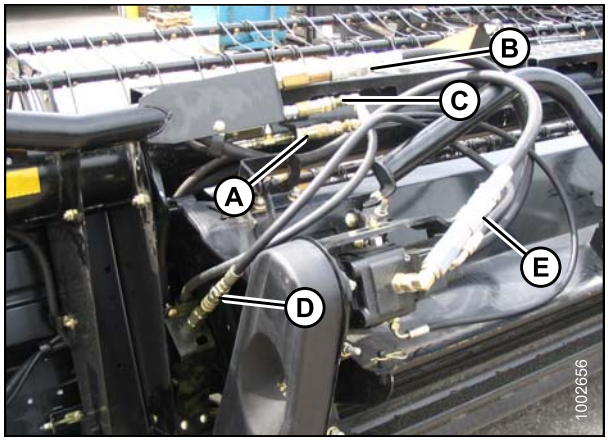


Figure 3.22

A - Case Drain
B - Conditioner Motor Pressure
C - Deck Motor Return
D - Deck Motor Pressure
E - Conditioner Motor Return

3.6.2 Installing Conditioner: Windrower Method

To install the conditioner using the windrower method, follow these steps:

1. Lower header stand to mid-position (A).

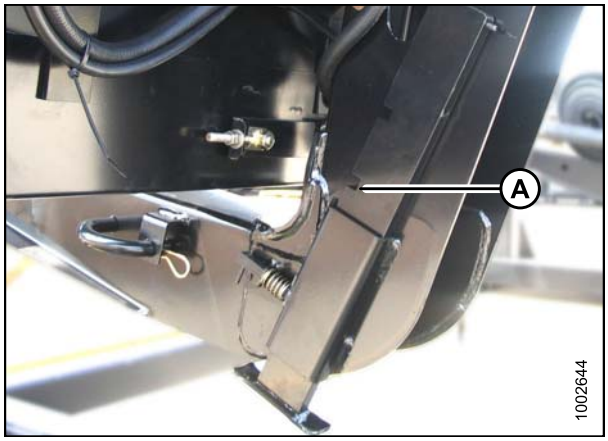


Figure 3.23

2. Attach chain (A) to lifting brackets (B) on conditioner and secure chain to lifting device.
3. Lift off of shipping pallet and set conditioner on ground in upright position.

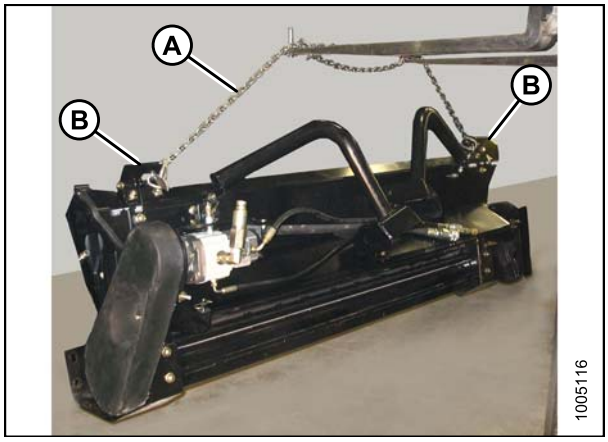


Figure 3.24

4. Retrieve stand (A) and hairpin (B) from conditioner bundle #4798 and install stand in slot in base at lower right-hand end of conditioner. Secure stand with hairpin.
5. Remove shipping blocks if present.

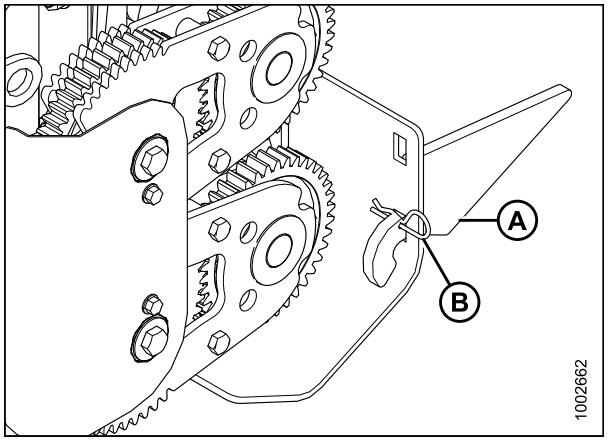


Figure 3.25

6. Hardware at lifting arms has been tightened for shipping. Loosen two bolts (A) per side just enough to allow arms (B) to swing out.

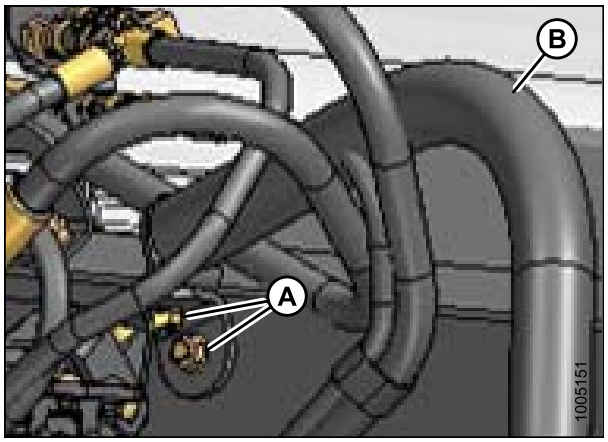


Figure 3.26: LH Shown

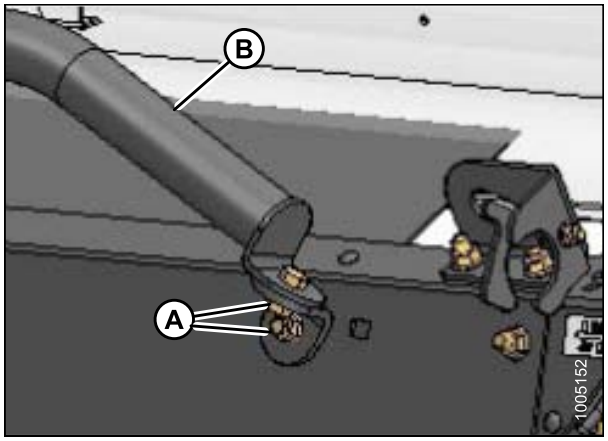


Figure 3.27: RH Shown

7. Remove L-pins securing lifting arms to conditioner. (Rotate pins to align key-hole slot.)

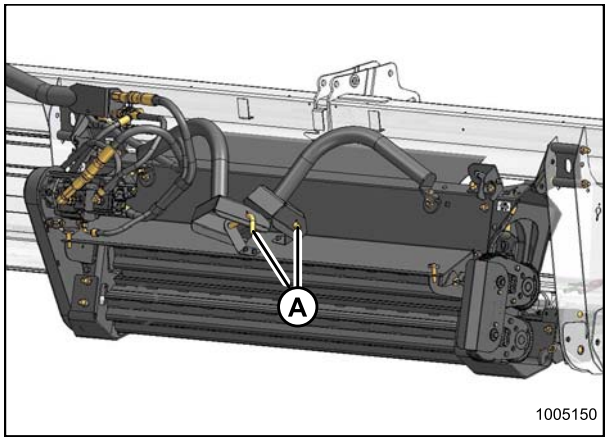


Figure 3.28

8. Swing out lift arms and secure latches.

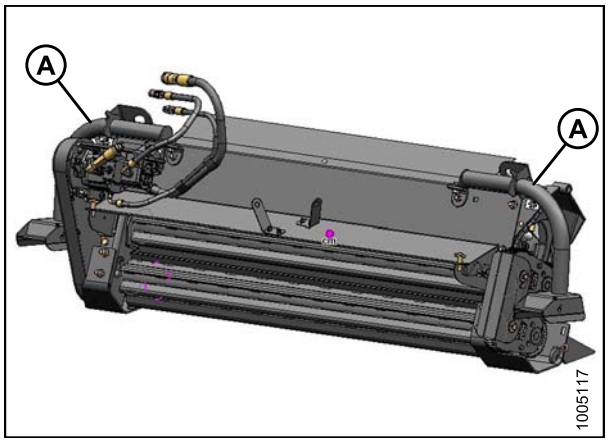


Figure 3.29

9. Position the tractor arms in the lift arm pockets, and insert the L-pins (A) for safety.

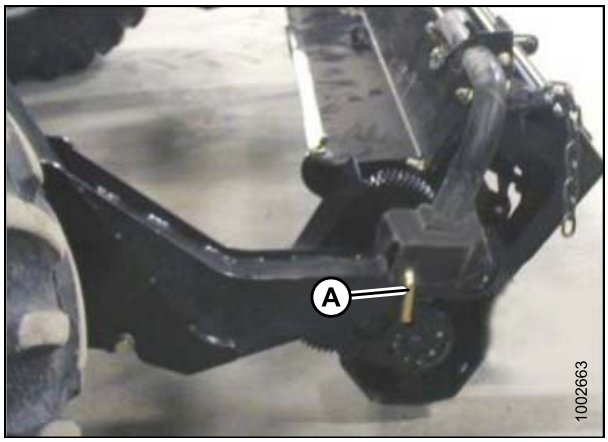


Figure 3.30

10. Remove the stand (A), and store with hairpin (B) in toolbox.
11. Lift the conditioner, and position into the header opening from the rear.

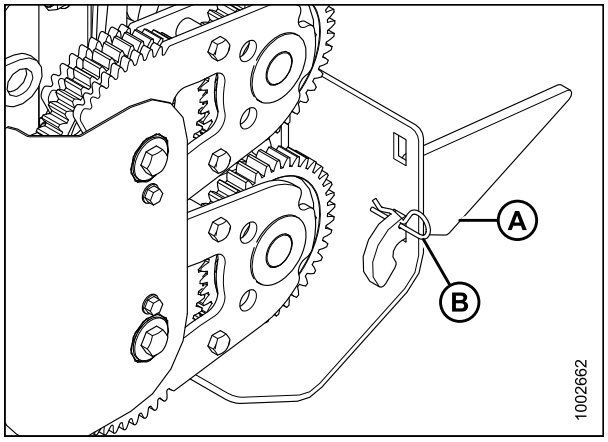


Figure 3.31

12. Carefully lower the windrower lift legs until lugs (A) on conditioner are seated in the U-shaped brackets (B) on header.
13. Ensure the conditioner is seated properly in the brackets before you disconnect from windrower.

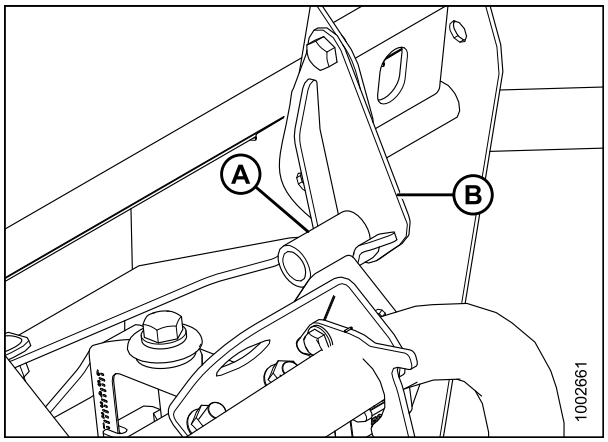


Figure 3.32

14. Lift latch (B) to release conditioner lift arm (A), and fold up to storage position on conditioner.

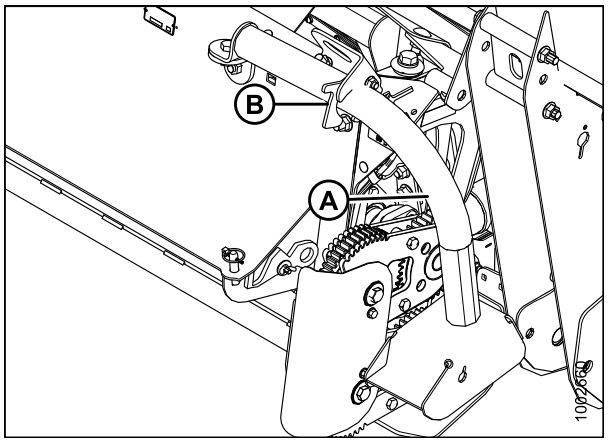


Figure 3.33

15. Install L-pin (A) through arm and bracket on conditioner and lock into place. (Rotate pins to align key-hole slot). Repeat for other arm.

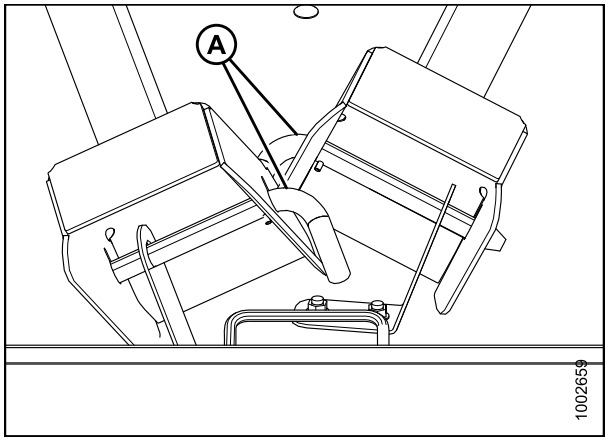


Figure 3.34

16. Install 5/8 in. x 1-1/2 in. carriage bolt (A) in the right-hand lower attachment location.

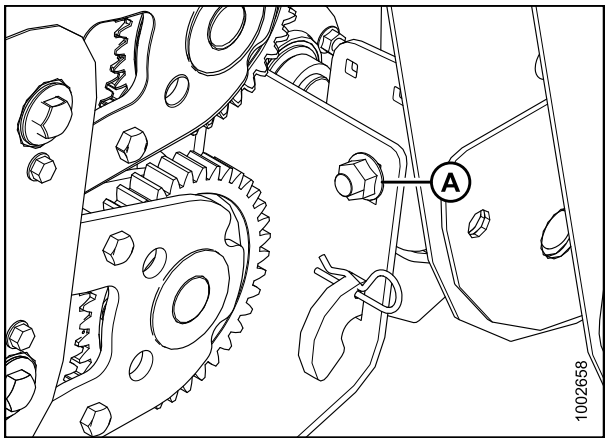


Figure 3.35: RH Side Shown

17. Install 5/8 in. x 1-1/2 in. carriage bolt (A) in the left-hand lower attachment location.

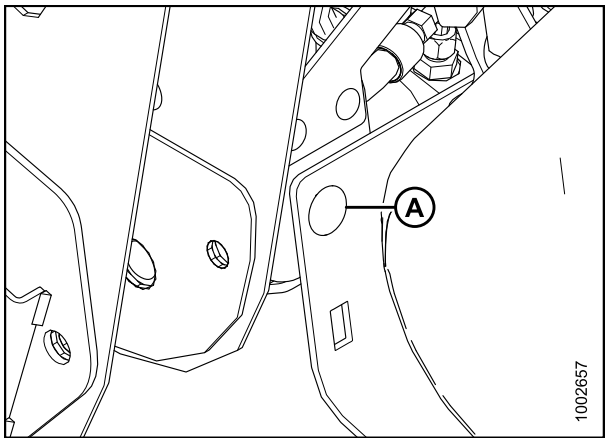


Figure 3.36: LH Side Shown

18. Connect the five hydraulic hoses between the conditioner and the header as follows:
    - Small male quick-disconnect from motor to header (A)
    - Large female quick-disconnect from motor to header (B)
    - Small female quick-disconnect from deck to header (C)
    - Small female quick-disconnect from motor to deck (D)
    - Large female quick-disconnect from header to motor (E)

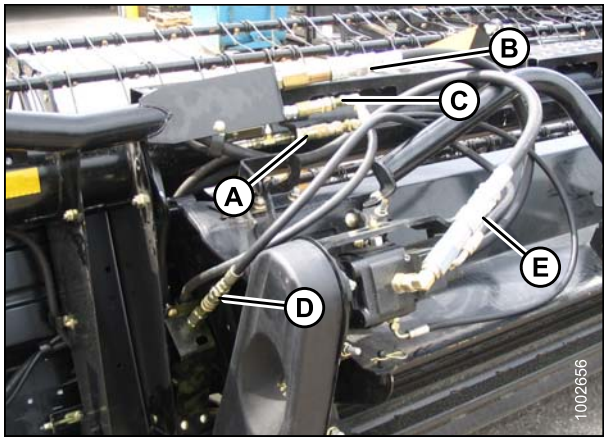


Figure 3.37

A - Case Drain
B - Conditioner Motor Pressure
C - Deck Motor Return
D - Deck Motor Pressure
E - Conditioner Motor Return

3.7 Attaching Hydraulics

The procedure for attaching hydraulics is different for 15-ft Draper Headers.

- If attaching a 15-ft. header, refer to section 3.7.1 Attaching Hydraulics: 15-Foot Headers, page 45
- When attaching any other size header, refer to section 3.7.2 Attaching Hydraulics: All Headers Except 15-Foot, page 47

3.7.1 Attaching Hydraulics: 15-Foot Headers

To attach hydraulics to a 15-foot draper header, follow these steps:

1. Disconnect return hose (A) at elbow on motor.

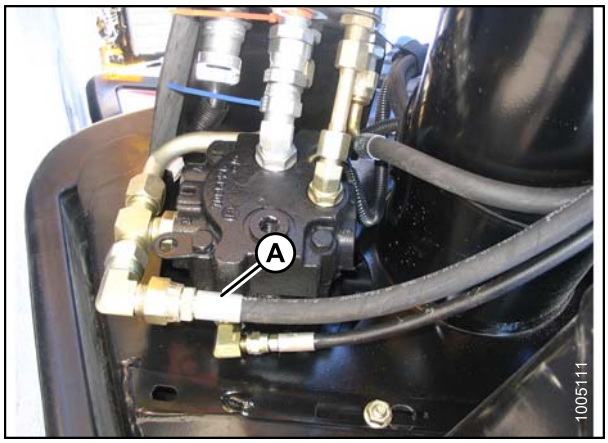


Figure 3.38

2. Install check valve tee (A) on elbow and reconnect return hose (B) to tee (A).
3. Connect feed draper return line (C) from the conditioner hose package onto the check valve.

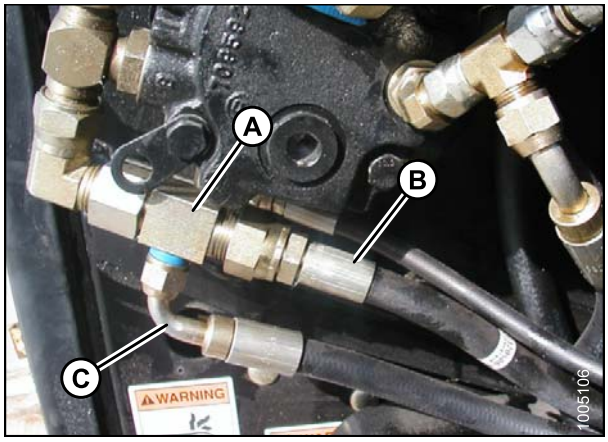


Figure 3.39

4. Remove the knife drive coupler (A), draper drive coupler (B), the case drain coupler (C) and its extension tube (D).

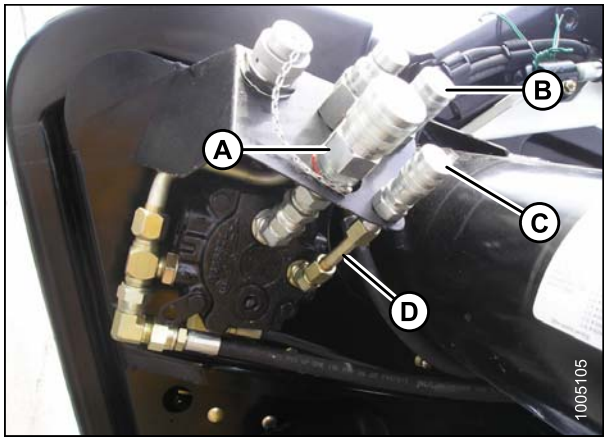


Figure 3.40

5. Retrieve coupler bracket (A) from bundle and position the coupler bracket (A) onto housing.
6. Reinstall the draper drive coupler (B) in original location and install the knife drive coupler (C) onto the end of the new bracket (A).

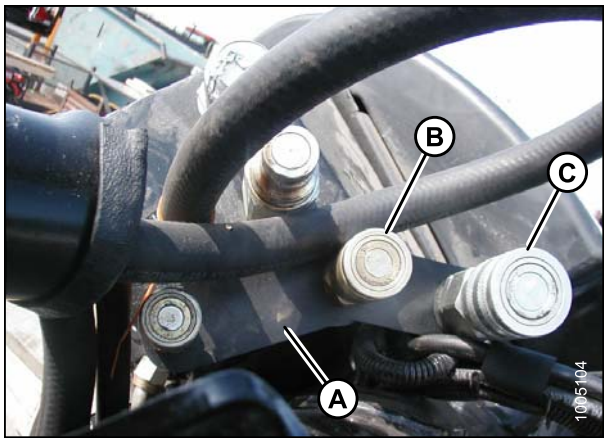


Figure 3.41

7. Install the tee-fitting (A) and union (B) onto motor case drain.
8. Reinstall the case drain coupler (C).
9. Route the conditioner case drain hose (D) (45° bent tube) behind the motor and connect to the tee fitting (A).

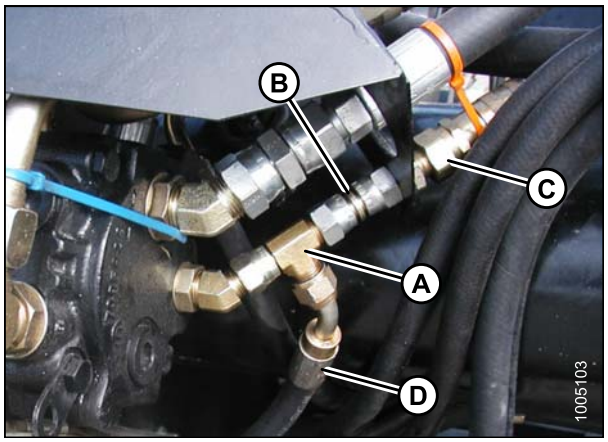


Figure 3.42

10. Route the conditioner pressure hose (A) (orange cable tie) behind the motor and attach it to the coupler (B).

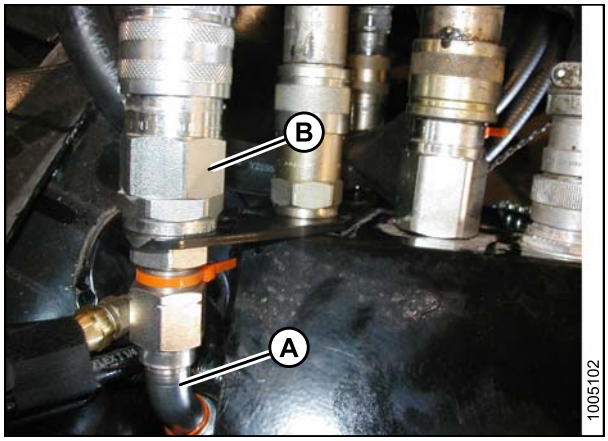


Figure 3.43

11. Loop the conditioner return line (A) up over top of the couplers and connect to the pressure port (B) on the motor. Ensure all hoses will be clear of tractor tires.

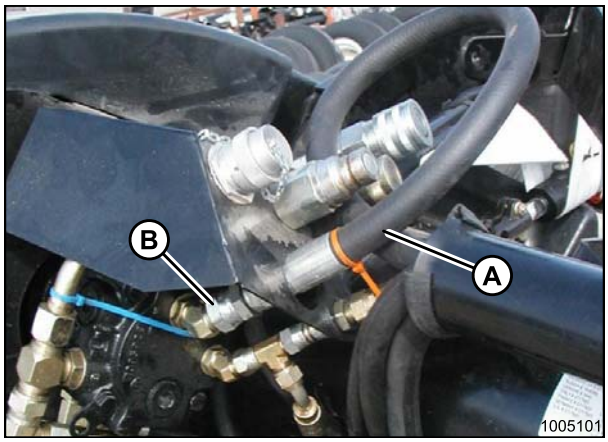


Figure 3.44

3.7.2 Attaching Hydraulics: All Headers Except 15-Foot

To attach hydraulics to all headers (not including 15-foot), follow these steps:

1. Identify the hydraulic coupler components shown in illustration at right.
2. Remove hose cover (A) from left-hand coupler mount.
3. Disconnect the side draper return hose (C).at the main return tee (see item [E] in illustration at right).

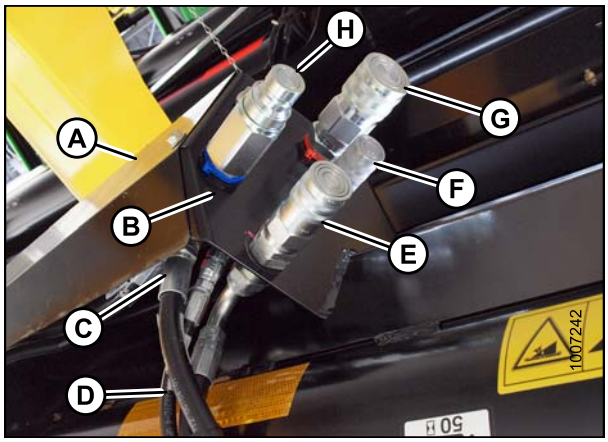


Figure 3.45

A -Hose Cover
B - Coupler Mount
C -Side Draper Return
D - LH Draper Case Drain
E - To Side Drapers (Pressure)
F - Case Drain Coupler
G - Knife/Conditioner Pressure
H - Header Return

4. Detach knife motor case drain line (D) from bulk head fitting at coupler mount (A).
5. Install conditioner case Tee fitting (B) and conditioner case drain line (C).
6. Remove knife drive hose (G).

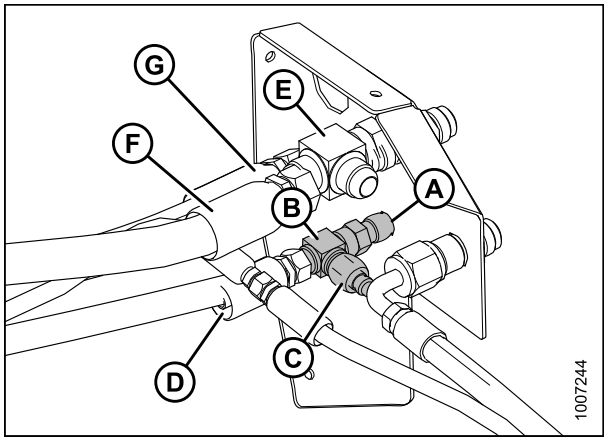


Figure 3.46

A - Coupler Mount
B - Conditioner Case Tee
C - Conditioner Case Drain
D - Knife Motor Case Return
E - Header Return Tee
F - Knife Return
G - Knife Drive Hose

7. Install check valve tee (A) on the main return tee (E).

   NOTE: Arrow on check valve tee fitting should face up.

8. Install the feed draper return hose (C) with the blue tie to the check valve tee (A).
9. Reinstall the side draper return hose (B) that was removed in step 3., Attaching Hydraulics: All Headers Except 15-Foot, page 47 to the new check valve tee (A).
10. Connect conditioner return hose (D) with union to Knife drive hose (F) removed in step 6., Attaching Hydraulics: All Headers Except 15-Foot, page 48.
11. Attach Conditioner drive hose (G) with orange tie to the coupler where knife drive hose was removed in step 6., Attaching Hydraulics: All Headers Except 15-Foot, page 48.
12. Bundle the hoses with cable ties as required. Ensure hoses do not contact sharp edges.
13. Replace hose cover.

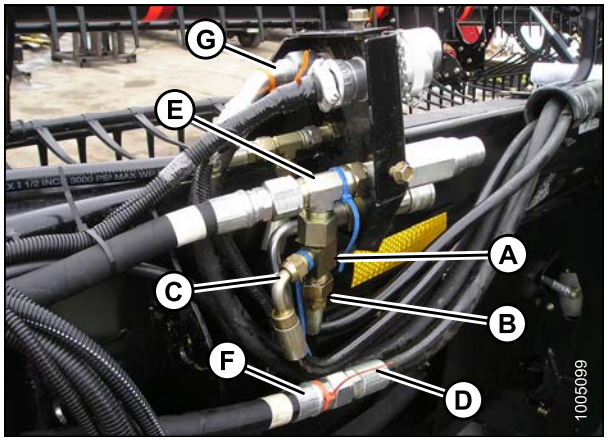


Figure 3.47

A - Check Valve Tee
B - Side Draper Motor Return
C - Feed Draper Return
D - Conditioner Return
E - Header Return Tee
F - Knife Drive Hose
G - Conditioner Drive

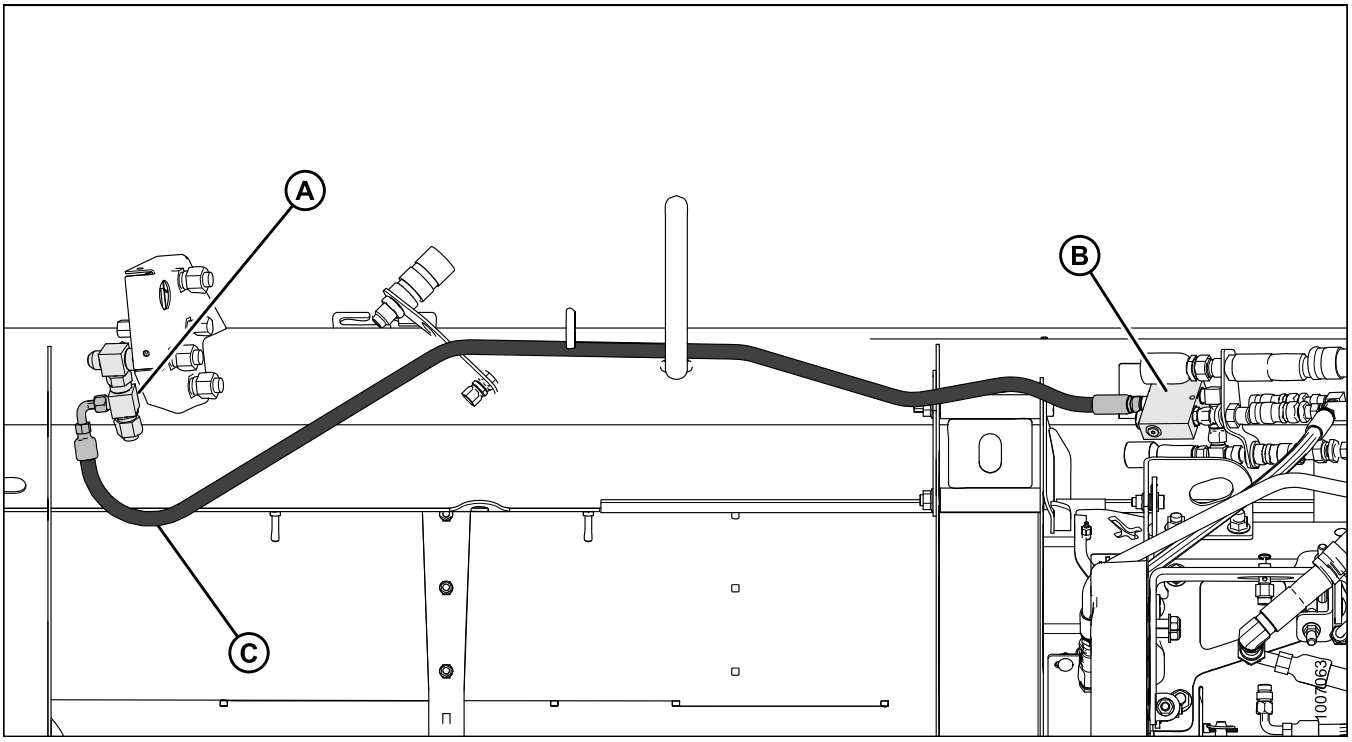


Figure 3.48

Shields removed to expose the feed draper return hose connection
A - Check Valve Tee **B - Pressure Reducing Valve** **C - Feed Draper Return Hose**

3.8 Assembling the Forming Shield

To assemble forming shield, follow these steps:

1. Unpack the forming shield cover (A), and deflectors and fins bundle (B).

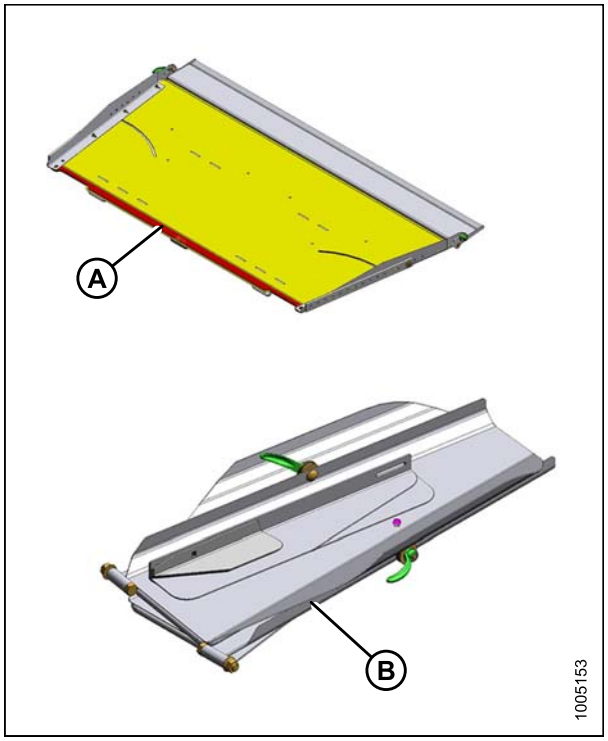


Figure 3.49

2. Lay cover (A) upside down (flanges of side supports facing up) on a flat surface.

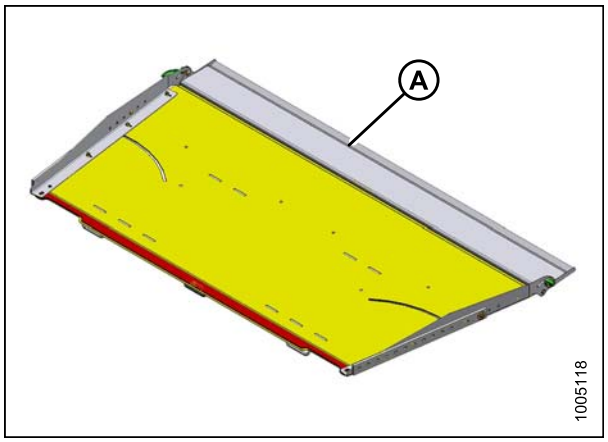


Figure 3.50

3. Assemble fins (A) to bottom of shield as shown using hardware provided. The two long fins (B) are handed and should be installed with bolts on outboard side of the fin. Bolts should be installed with nuts against the fins.

   NOTE: Fins are only effective for windrows greater than 70 inches (1778 mm) or if satisfactory formation is not achieved. Store for future use if not installed.

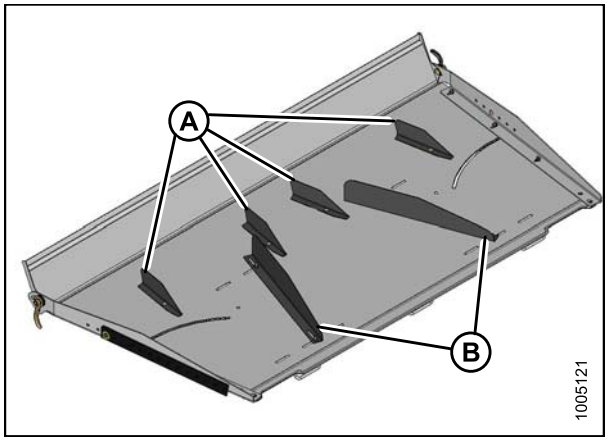


Figure 3.51

4. Position fins approximately as shown and tighten hardware.

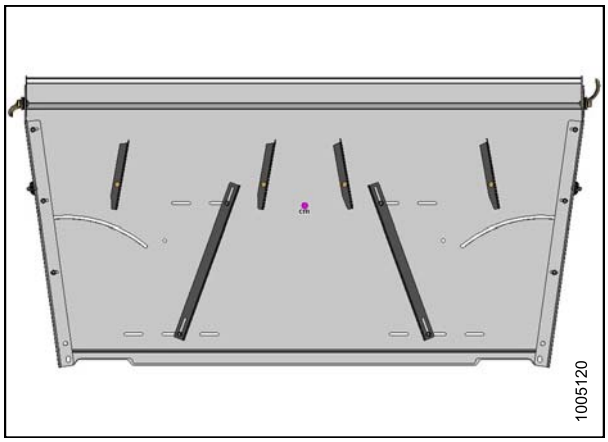


Figure 3.52

5. Remove hardware (A) from side deflectors (B).

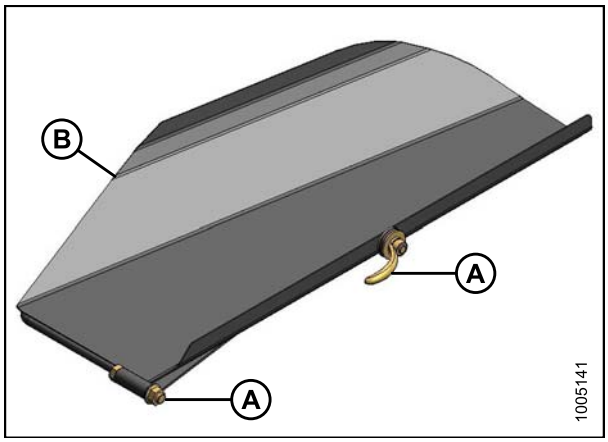


Figure 3.53

6. Position deflector (A) on cover as shown and install with hex bolt (B) and flange nut removed in previous step.
7. Tighten flange nut enough to hold deflector (A) in position, but still allow deflector to move.

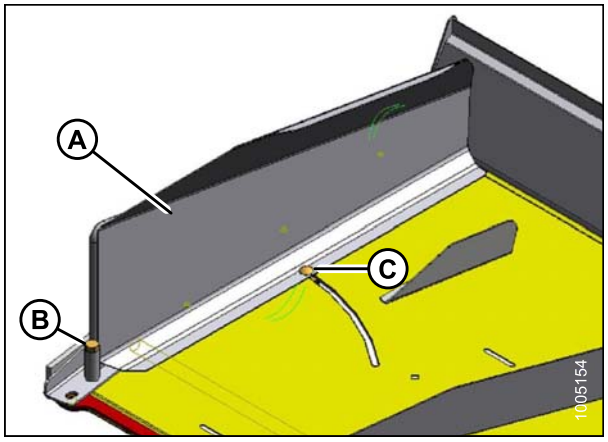


Figure 3.54

A - Side Deflector **B - Hex Bolt**
C - Bolt (referred to in next step)

8. Install bolt, washers, and handle nut (A) as shown. Rubber washer (B) must be positioned between metal washers (C).
9. Tighten handle nut (A) against cover to lock deflector in desired position.
10. Repeat for the other deflector.

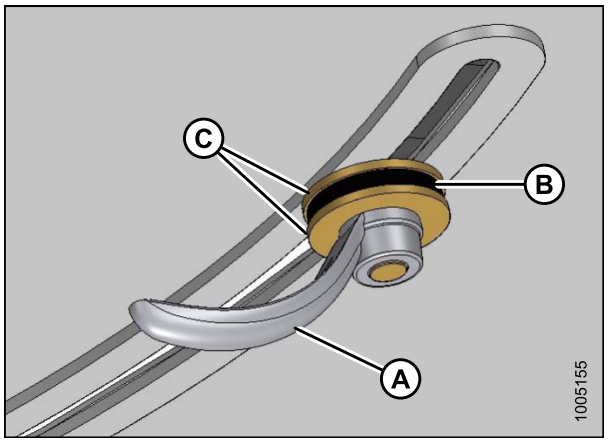


Figure 3.55

11. Invert forming shield to installation position as shown.

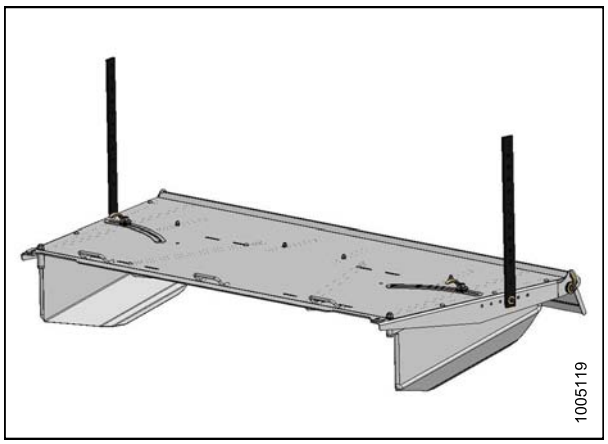


Figure 3.56

3.9 Installing the Forming Shield

To install the forming shield, follow these steps:

1. Position the forward end of the forming shield (A) onto the two pins (B) located on the rear cover of the conditioner.

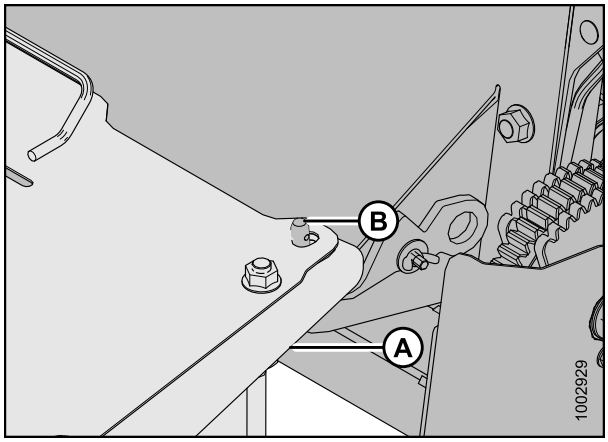


Figure 3.57

2. Insert lynch pins (A) to secure forming shield to conditioner.

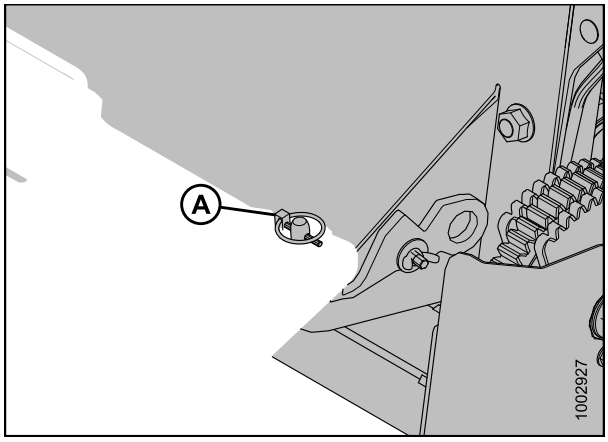


Figure 3.58

3. Set forming shield side deflectors to desired width by loosening handle (A) and moving deflector (B). Tighten handle. Set both deflectors to approximately the same position.
4. Loosen handles (C) and adjust fluffer shield (D) to middle position. Tighten handles (C).

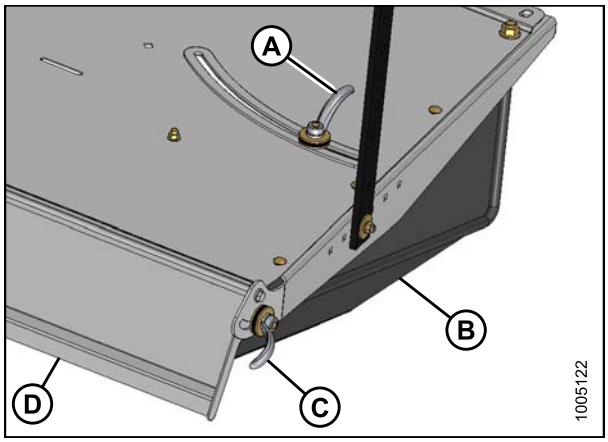


Figure 3.59

5. Install shield transport support (A) on windrower frame with two 3/8 x 1.0 carriage bolts and nuts (B).

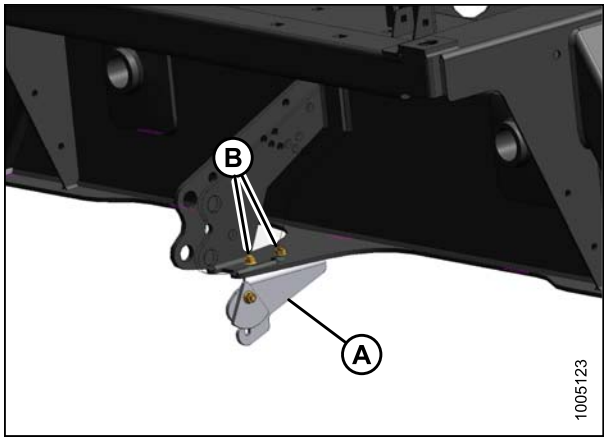


Figure 3.60

3.10 Attaching to a Windrower

Refer to the windrower unloading and assembly instructions or operator's manual for instructions on attaching the header to an M-Series Self-Propelled Windrower.

Once the header and windrower are attached, follow these steps:

1. Lift the aft end of the forming shield and attach straps (B) to pins (A) on windrower frame.
2. Retrieve washers and hairpins from shipping bundle and install to secure strap. Use the middle hole and adjust height to suit the crop.

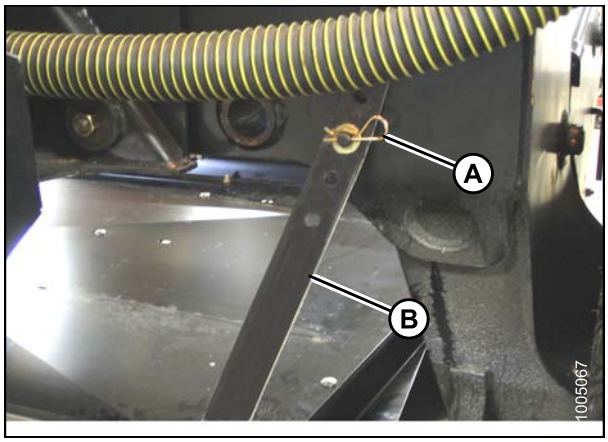


Figure 3.61

3.11 Lubricating the Conditioner

3.11.1 Greasing Procedure

CAUTION

To avoid personal injury, before servicing header or opening drive covers, follow procedures in 5.1 Preparation for Servicing, page 87.

1. To avoid injecting dirt and grit, wipe grease fitting with a clean cloth before greasing.
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.

3.11.2 Lubrication Points

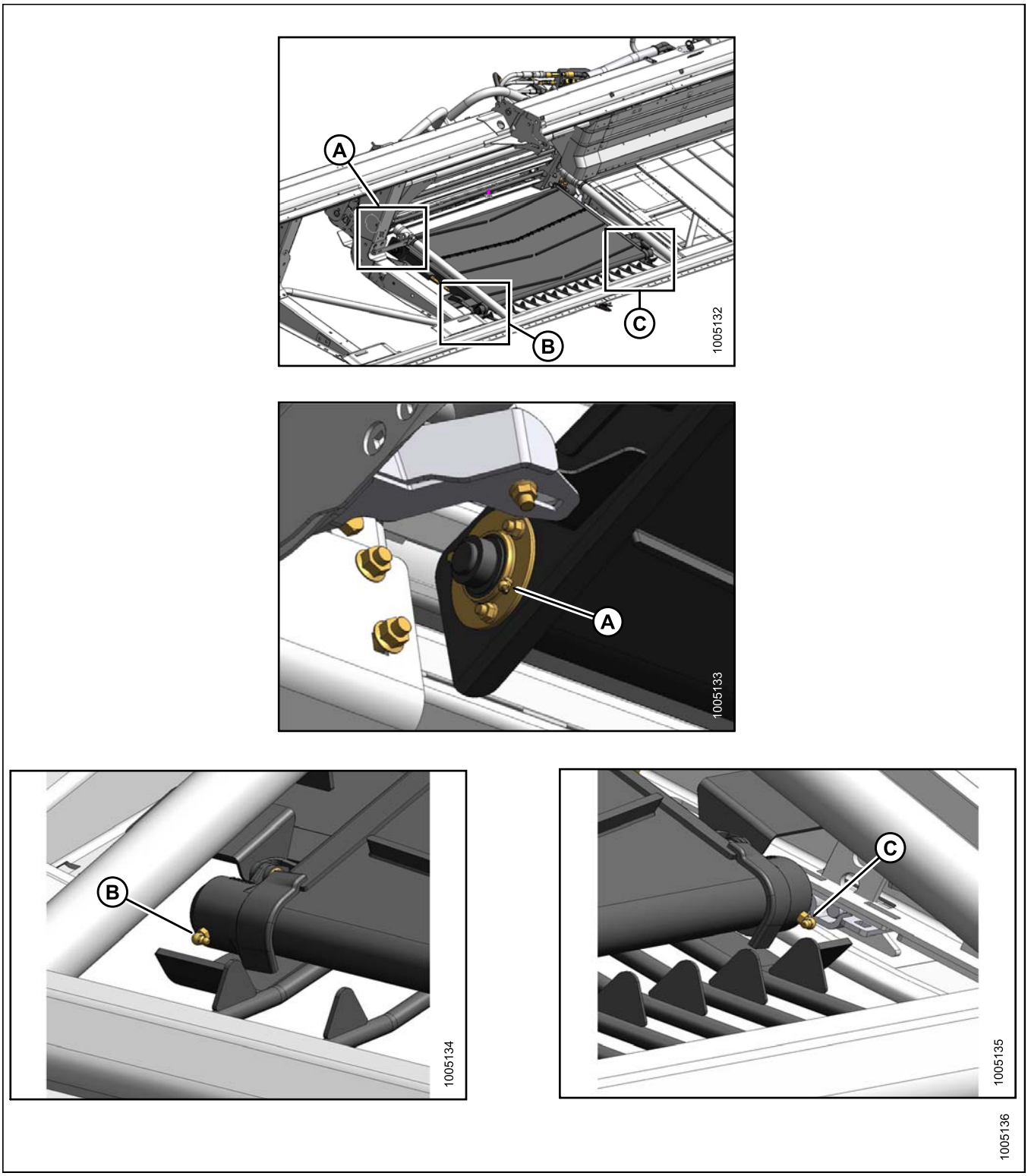


Figure 3.62: Every 50 Hours - Use High Temperature Extreme Pressure (EP2) Performance With 1% Max Molybdenum Disulphide (NLGI Grade 2) Lithium Base

A - Drive Roller Bearing Lubrication Point **B - Idler Roller Bearing Lubrication Point** **C - Idler Roller Bearing Lubrication Point**

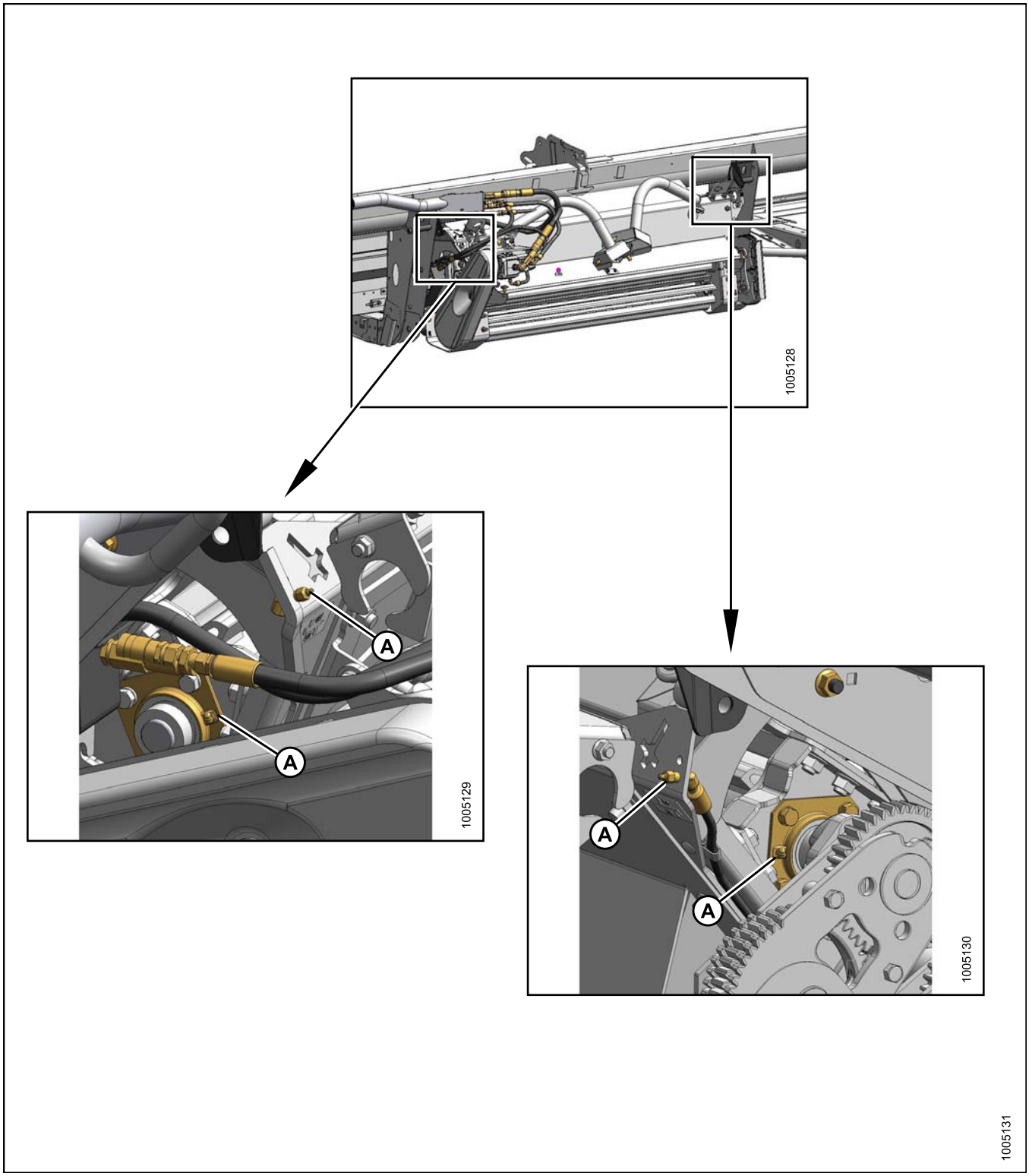


Figure 3.63: Every 50 Hours - Use High Temperature Extreme Pressure (EP2) Performance With 1% Max Molybdenum Disulphide (NLGI Grade 2) Lithium Base

A - Roll Shaft Bearing Lubrication Points (Four Places)

3.12 Performing Predelivery Checks

WARNING

Stop engine, and remove key before making adjustments to machine. A child or even a pet could engage the drive.

Perform the final checks and adjustments as listed on the "Pre-Delivery Checklist" (yellow sheet) along with the header final checks and adjustments to ensure the machine is field ready. Refer to the following pages for detailed instructions as indicated on the checklist.

The completed checklists should be retained either by the Operator or the Dealer.

3.12.1 Checking Roll Drive Belt Tension

To check the roll drive belt tension, follow these steps:

1. Remove wing-nut and washer and remove drive cover.

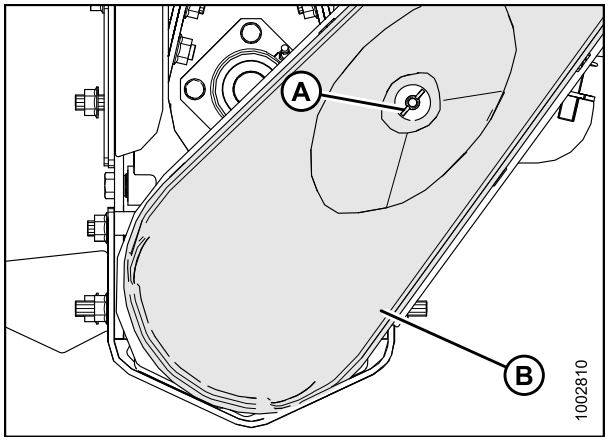


Figure 3.64

2. Belt should deflect 1/4 inch (7 mm) when a force of 8–16 lbf (36–72 N) is applied at the center of the span. If belt tension requires adjusting, see section 5.7.1 Adjusting Drive Belt Tension, page 96.
3. Replace cover and secure with washer and wing-nut.

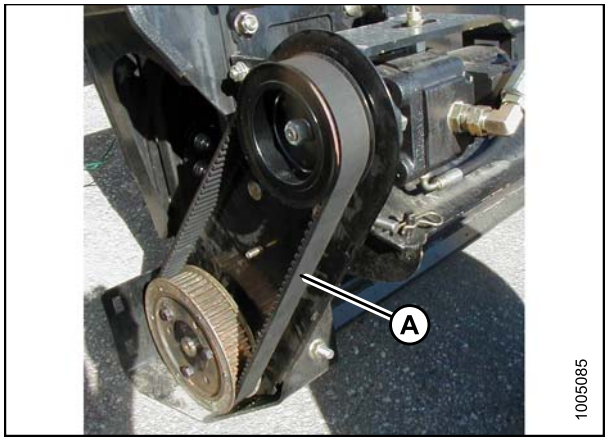


Figure 3.65

3.12.2 Checking Roll Gap

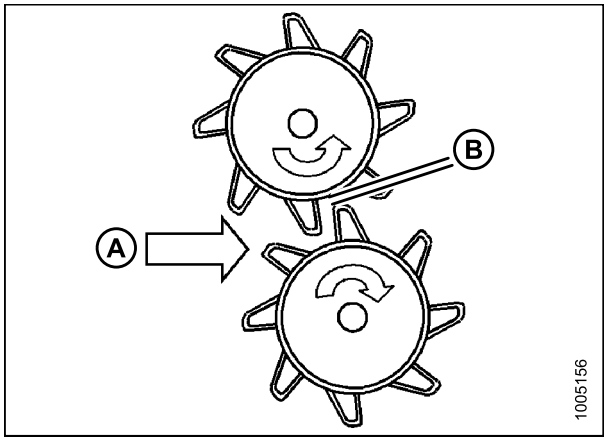


Figure 3.66

A - Crop direction **B - Roll gap**

Factory setting should be 0.75 in. (20 mm) or at 1.5 line on gauge (A). Gauge readings should be the same at both ends of the roll. If roll gap requires adjusting, refer to section 4.9.2 Adjusting Roll Gap, page 80.

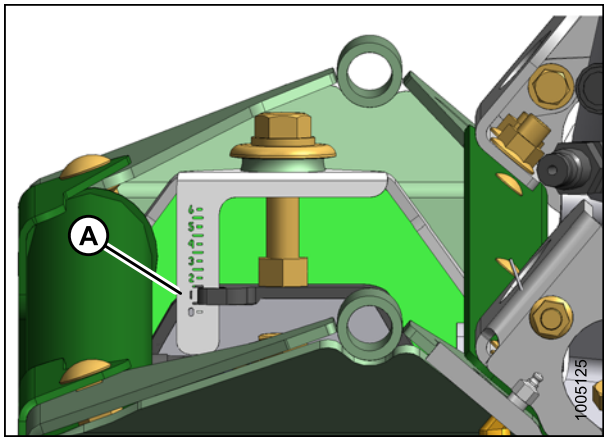


Figure 3.67

3.12.3 Checking Roll Timing

CAUTION

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.

To check the roll timing, follow these steps:

1. Lower header to ground, shut down windrower, and remove key.
2. Remove wing-nut and remove tool from panel at right-hand end of conditioner.

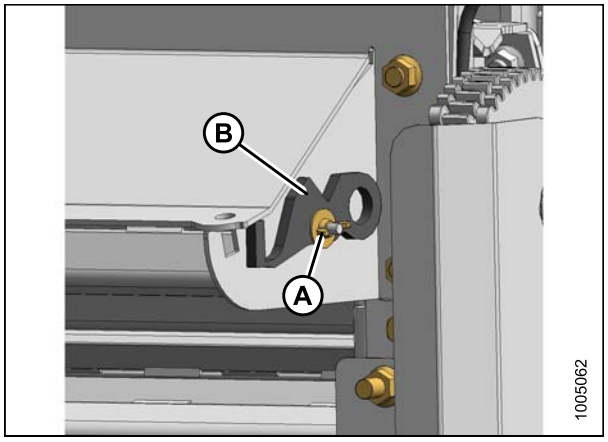


Figure 3.68

3. From the rear of the conditioner, locate tool at centre of rolls as shown and manually turn rolls to limits of tool. Rolls will engage the tool if timing is correct.
4. Manually turn rolls to release tool.

WARNING

Remove tool from rolls and return it to storage location before starting machine.

5. Replace tool on conditioner with washer and wing nut.
6. If roll timing requires adjusting, refer to section 4.9.3 Checking and Adjusting Roll Timing, page 81.

Figure 3.69

A - Start position **B - Gauge position**

3.12.4 Running Up the Conditioner

CAUTION

Never start or move the machine until you are sure all bystanders have cleared the area.

CAUTION

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.

CAUTION

Before investigating an unusual sound or attempting to correct a problem, shut off engine, engage parking brake and remove key.

Refer to the windrower unloading and assembly instructions or operator's manual for windrower operating instructions.

To run up the conditioner, follow these steps:

1. Start windrower and run the machine. Operate the conditioner slowly for 5 minutes, watching and listening FROM THE OPERATOR'S SEAT for binding or interfering parts.
2. Run machine for 15 minutes.
3. Perform the run-up check as listed on the "Predelivery Checklist", (yellow sheet attached to this instruction), and the header run-up check to ensure the machine is field-ready.

3.12.5 Storing Manuals

Place this manual (MD #169524) in the storage case (A) in the windrower. The yellow checklist should be retained by either the Dealer or the Operator.

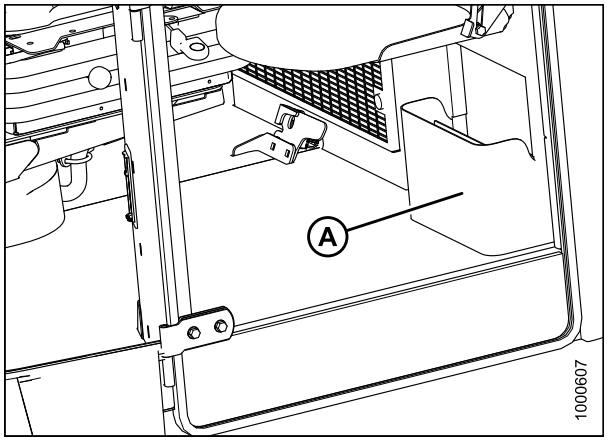


Figure 3.70: Manual Storage Case on an M155 Self-Propelled Windrower

4 Operation

4.1 Owner/Operator Responsibilities

CAUTION

- **It is your responsibility to read and understand this manual completely before operating the header. Contact your MacDon Dealer if an instruction is not clear to you.**
- **Follow all safety messages in the manual and on safety decals on the machine.**
- **Remember that YOU are the key to safety. Good safety practices protect you and the people around you.**
- **Before allowing anyone to operate the header, for however short a time or distance, make sure they have been instructed in its safe and proper use.**
- **Review the manual and all safety related items with all Operators annually.**
- **Be alert for other Operators not using recommended procedures or not following safety precautions. Correct these mistakes immediately, before an accident occurs.**
- **Do NOT modify the machine. Unauthorized modifications may impair the function and/or safety and affect machine life.**
- **The safety information given in this manual does not replace safety codes, insurance needs, or laws governing your area. Be sure your machine meets the standards set by these regulations.**

4.2 Operational Safety

CAUTION

Follow these safety precautions:

- **Follow all safety and operational instructions given in your windrower operator's manuals. If you do not have a windrower manual, get one from your Dealer and read it thoroughly.**
- **Never start or move the machine until you are sure all bystanders have cleared the area.**
- **Stop engine and remove key before adjusting or removing plugged material from the machine. A child or even a pet could engage the drive.**
- **Check for excessive vibration and unusual noises. If there is any indication of trouble, shut down and inspect the machine. Follow proper shutdown procedure. Refer to section 4.2.1 Shutting Down the Machine, page 64.**
- **Operate only in daylight or good artificial light.**

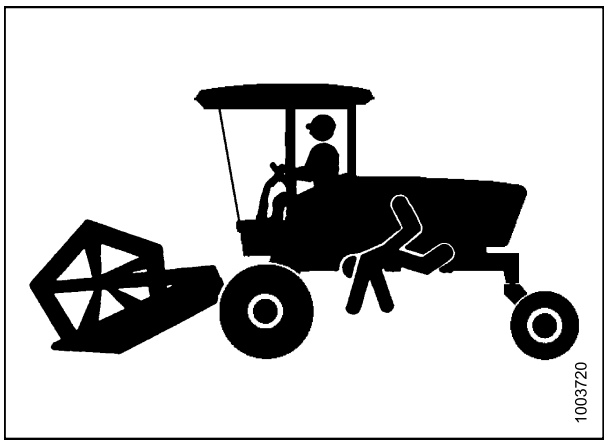


Figure 4.1

4.2.1 Shutting Down the Machine

Before inspecting the machine, follow these steps to shut it off:

1. Engage windrower brake.
2. Disengage PTO.
3. Turn off engine and remove key.
4. Wait for all movement to stop.
5. Dismount and close lift cylinder valves before inspecting raised machine.

4.3 Attaching Hay Conditioner to Header

Refer to the following sections (in order) for instructions on installing the HC10 Hay Conditioner and forming shield on your D-Series draper header.

- 3.3 Installing the Rock Grate, page 32
- 3.4 Installing Deck Brackets, page 33
- 3.7 Attaching Hydraulics, page 45
- 3.5 Installing the Feed Deck, page 35
- 3.6 Installing the Conditioner, page 37
- 3.8 Assembling the Forming Shield, page 50
- 3.9 Installing the Forming Shield, page 53

4.4 Detaching Hay Conditioner from Header

There are two methods for detaching the hay conditioner from the header:

- The tractor method
- The lifting method

4.4.1 Detaching Hay Conditioner: Windrower Method

CAUTION

To prevent accidental movement of windrower, shut off engine, engage parking brake, and remove key.

To detach the hay conditioner from the header using the windrower method, follow these steps:

1. Disconnect straps (A) from tractor frame.

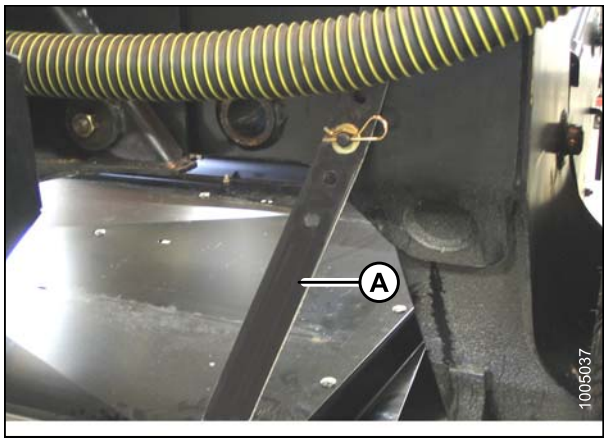


Figure 4.2

2. Lower header stand (A) to mid-position.
3. Detach header from windrower. Refer to windrower operator's manual for instructions.

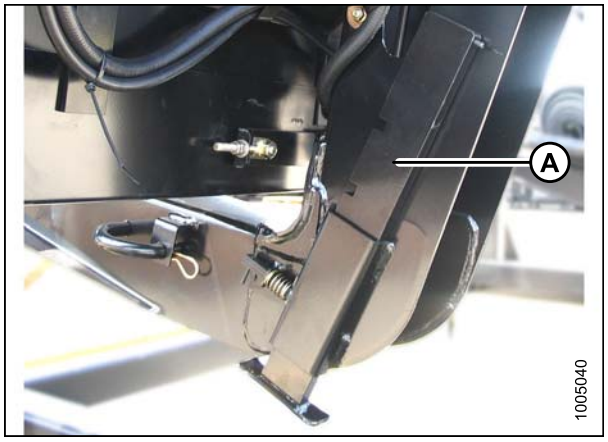


Figure 4.3

4. Remove the two lynch pins (A) securing forming shield to header pins and remove the forming shield.

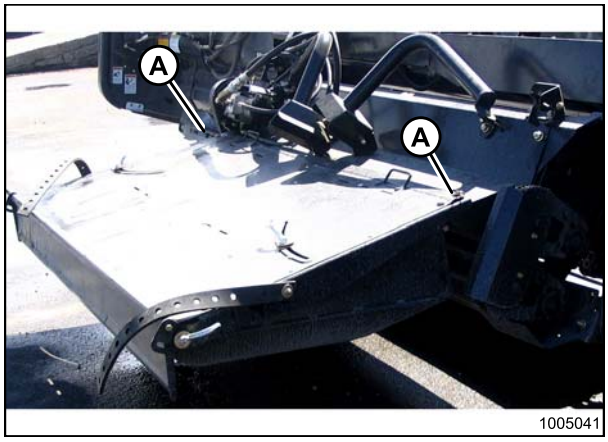


Figure 4.4

5. Disconnect the five hydraulic hoses between the conditioner and the header.

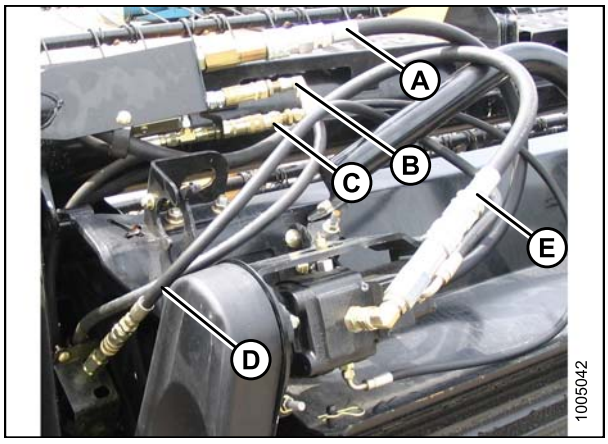


Figure 4.5

A - Conditioner Motor Pressure Hose
B - Deck Motor Return Hose
C - Case Drain Hose
D - Deck Motor Pressure Hose
E - Conditioner Motor Return Hose

6. Remove the two carriage bolts (A) that attach conditioner to header.

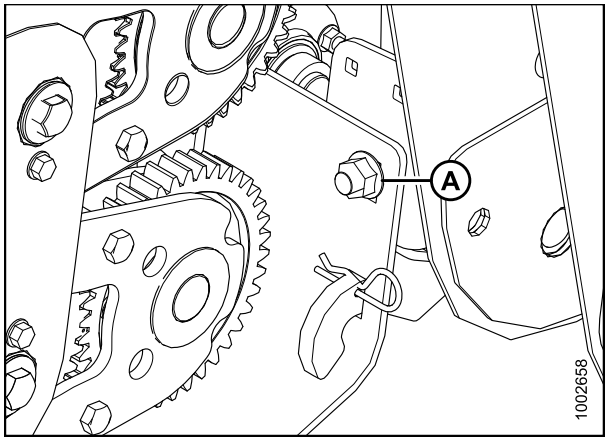


Figure 4.6: RH Side Shown

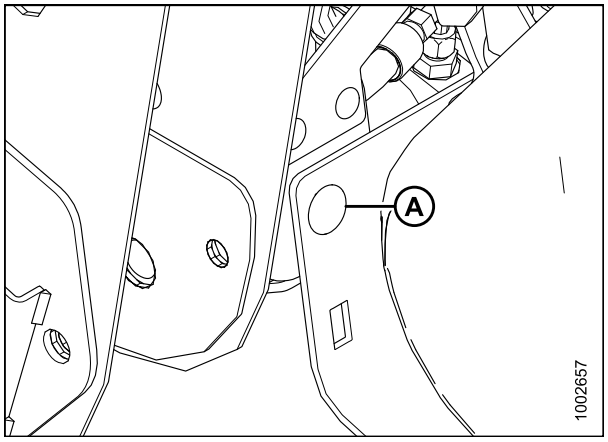


Figure 4.7: LH Side Shown

7. Hardware at lifting arms has been tightened for shipping. If not done previously, loosen two bolts per side just enough to allow arms to swing out.
8. Remove L-pins (A) securing lifting arms to conditioner. (Rotate pins to align key-hole slot.)

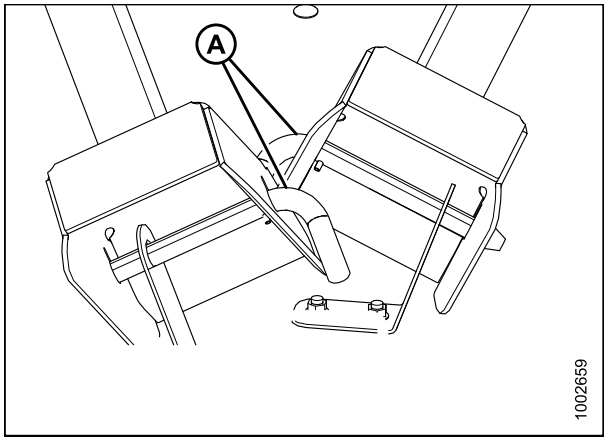


Figure 4.8

9. Swing out lift arms (A) and secure in latches (B).

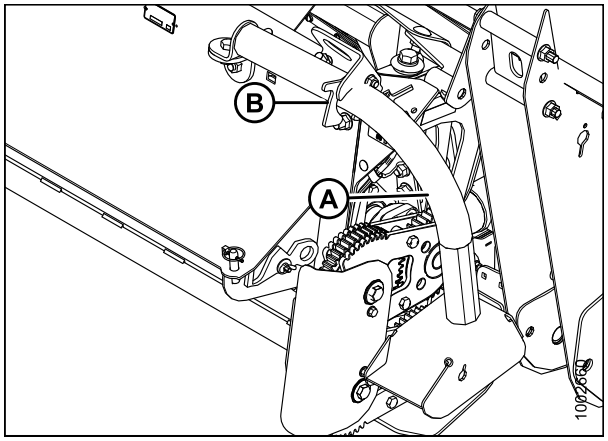


Figure 4.9

10. Position the tractor arms in the lift arm pockets and insert the L-pins for safety.

Figure 4.10

11. Carefully raise the windrower lift legs until lugs (A) on conditioner clear the U-shaped brackets (B) on header.
12. Slowly back windrower away from header.

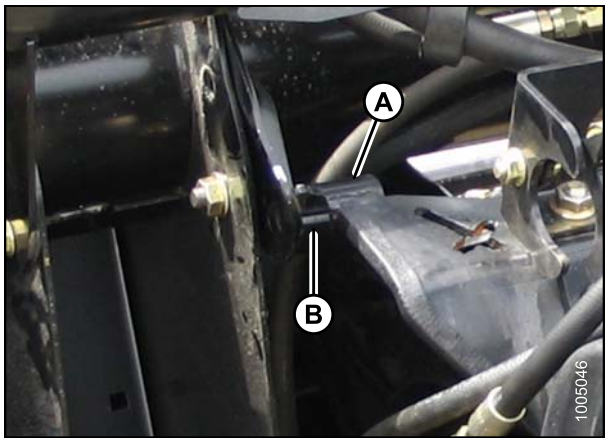


Figure 4.11

13. Retrieve stand (A) from toolbox and install in slot at bottom of conditioner base. Secure with hairpin (B).
14. Lower conditioner to ground.

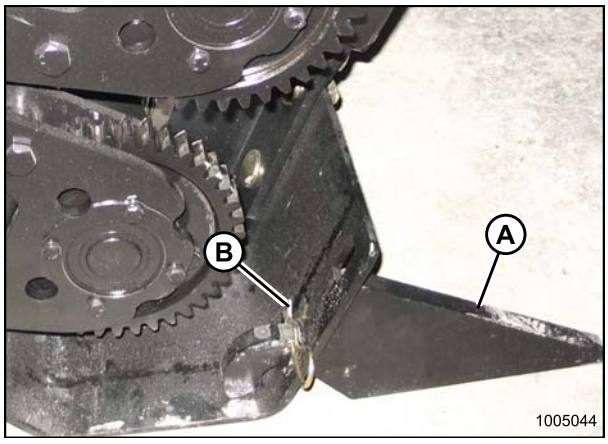


Figure 4.12

15. Remove L-pins (A) from lift arms and back tractor away from conditioner.
16. Replace L-pins in conditioner lift arms.

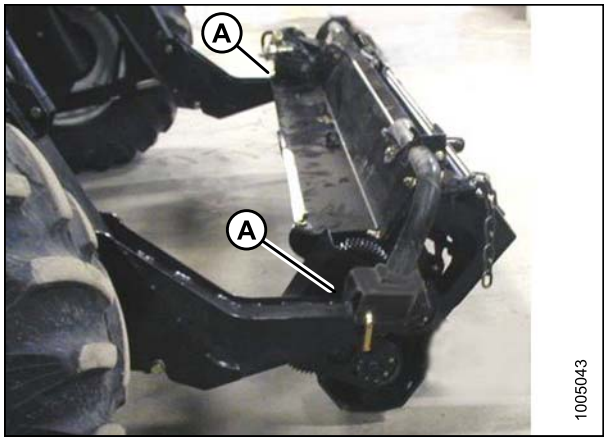


Figure 4.13

4.4.2 Detaching Hay Conditioner: Lifting Method

CAUTION

To prevent accidental movement of windrower, shut off engine, engage parking brake, and remove key.

To detach the hay conditioner from the header using the lifting method, follow these steps:

1. Disconnect straps (A) from tractor frame.

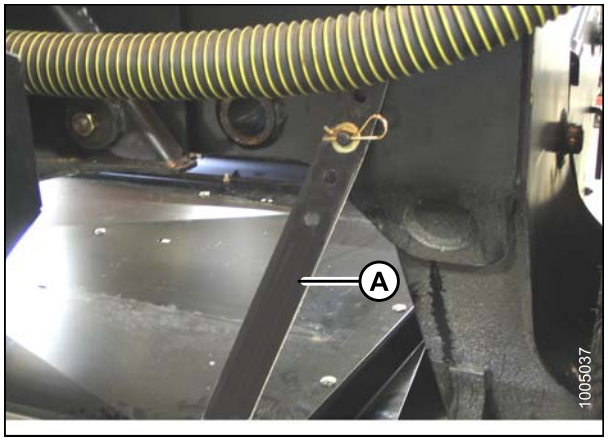


Figure 4.14

2. Lower header stand (A) to mid-position.
3. Detach header from windrower. Refer to windrower operator's manual for instructions.

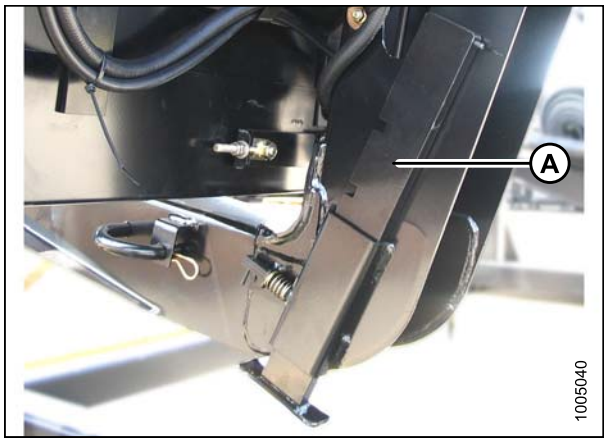


Figure 4.15

4. Remove the two lynch pins (A) securing forming shield to header pins and remove the forming

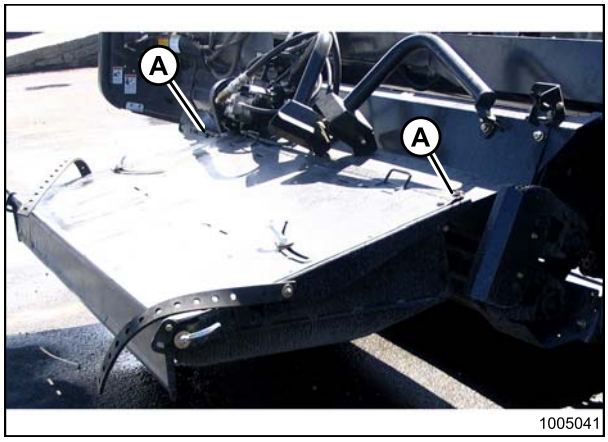


Figure 4.16

5. Disconnect the five hydraulic hoses between the conditioner and the header.

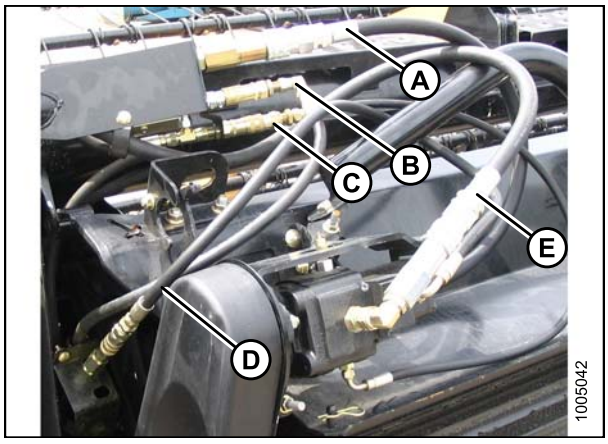


Figure 4.17

A - Conditioner Motor Pressure Hose
B - Deck Motor Return Hose
C - Case Drain Hose
D - Deck Motor Pressure Hose
E - Conditioner Motor Return Hose

6. Remove the two carriage bolts (A) that attach conditioner to header.

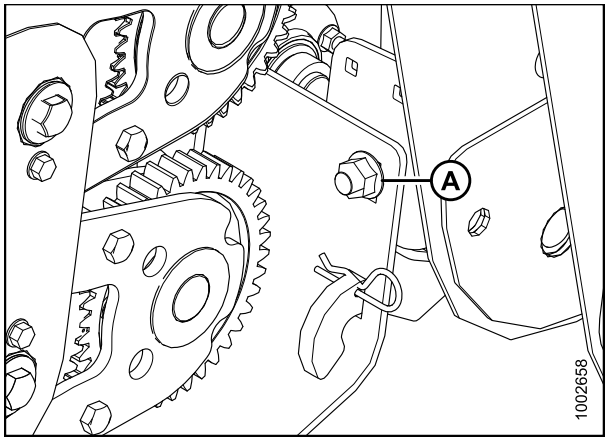


Figure 4.18: RH Side Shown

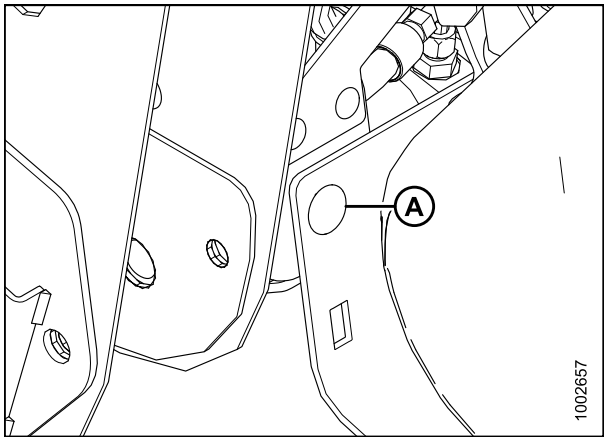


Figure 4.19: LH Side Shown

7. Attach chain to lifting brackets on conditioner and secure chain to lifting device.

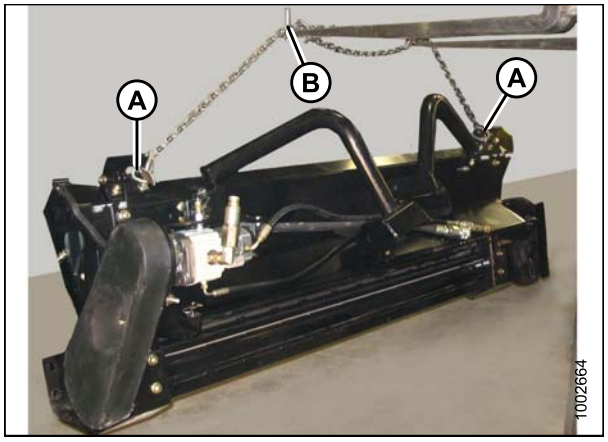


Figure 4.20

8. Carefully raise the lifting device until lugs on conditioner clear the U-shaped brackets on header.
9. Slowly back windrower away from header.

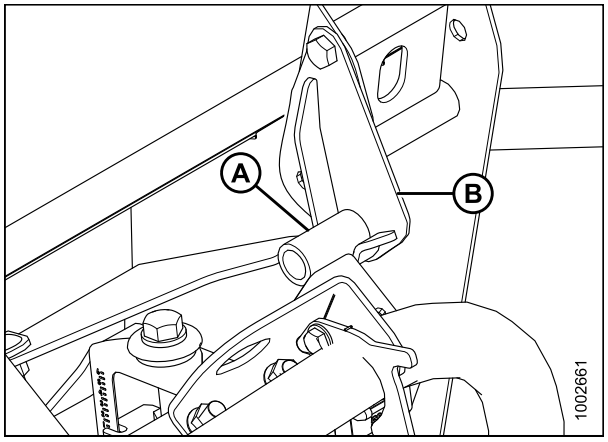


Figure 4.21

10. Retrieve stand (A) from tool-box and install in slot at bottom of conditioner base. Secure with hairpin (B).
11. Lower conditioner to ground.
12. Unhook chains.

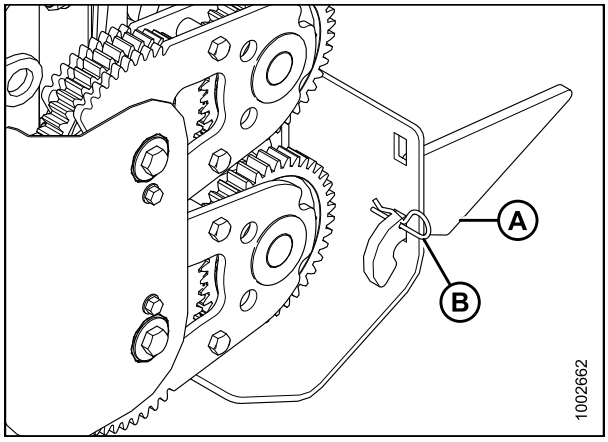


Figure 4.22

4.5 Detaching Feed Deck and Rock Grate

To detach the feed deck and rock grate from the hay conditioner, follow these steps:

1. Remove the two carriage bolts (A) that attach the hose brace to the header and lay hoses on deck.

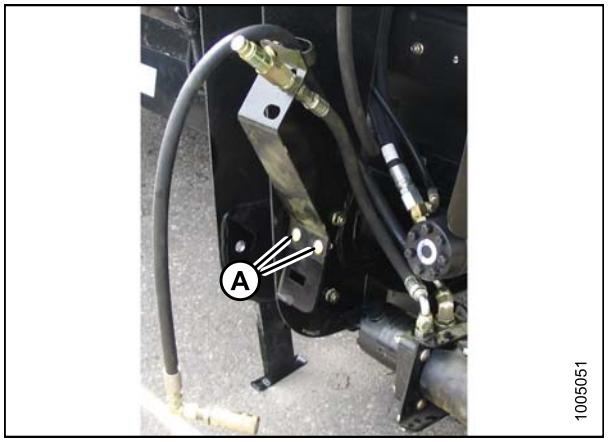


Figure 4.23

2. Remove the two bolts (A) at the rear of the deck that secure the deck to the header.

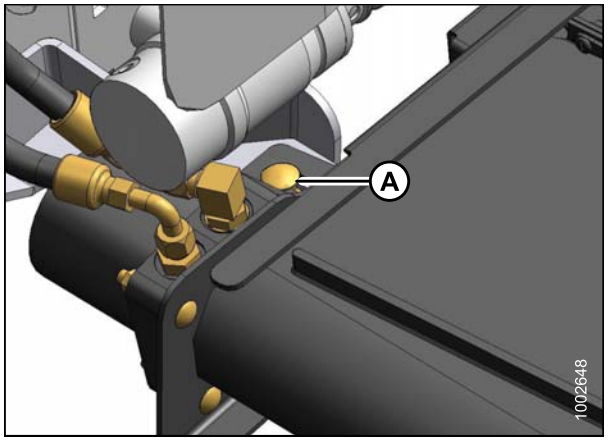


Figure 4.24: LH Side Shown

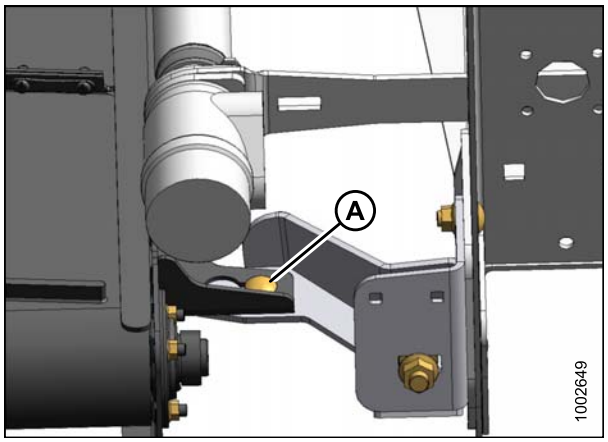


Figure 4.25: RH Side Shown

3. Slide deck (A) back slightly until deck mounts clear the header brackets. Lower aft of deck to ground.
4. Continue sliding deck back until deck drops free of rock grate. Move deck to storage.

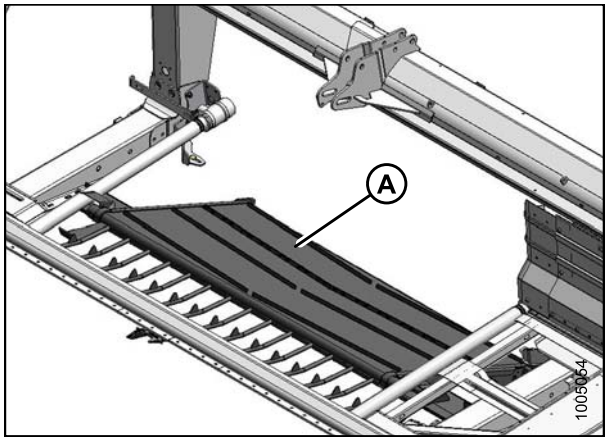


Figure 4.26

5. Remove the two bolts (A) attaching rock grate to header legs.

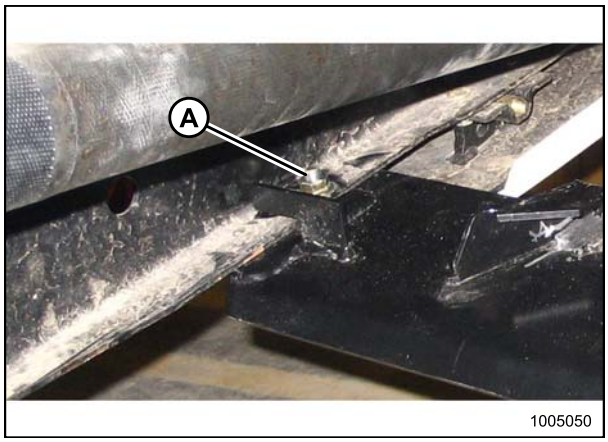


Figure 4.27

6. Pull rock grate (A) off cutterbar and header legs. Move rock grate to storage.

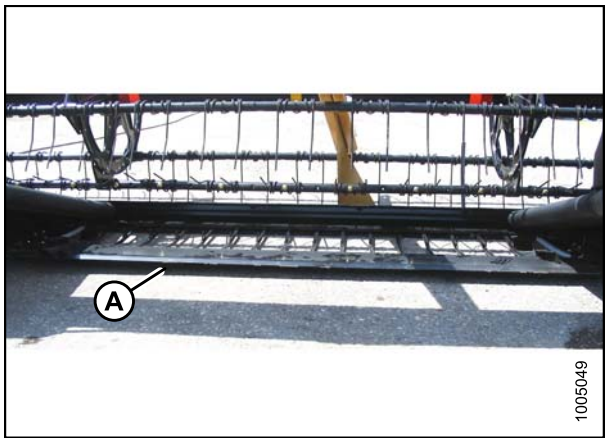


Figure 4.28

7. If necessary, remove the conditioner attachment brackets (A) and spacers (B) from the header legs and store with the feed deck.

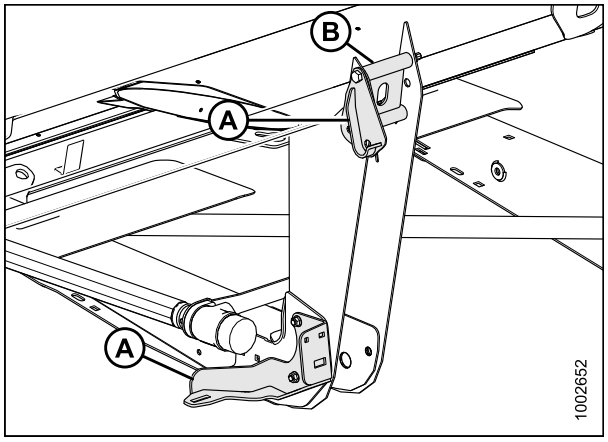


Figure 4.29

4.6 Break-in Period

When operating the hay conditioner for the first time, operate the conditioner slowly for five minutes, watching and listening FROM THE OPERATOR'S SEAT for binding or interfering parts.

CAUTION

Before investigating an unusual sound or attempting to correct a problem, shut off engine, engage parking brake and remove key.

NOTE: Conditioner will not operate until oil flow fills the lines.

NOTE: Until you become familiar with the sound and feel of your new hay conditioner, be extra alert and attentive.

After First Five Hours of Operation:

- Adjust the tension of roll drive belt. Refer to section 5.7 Drive Belt, page 96. Continue to check the belt tension periodically for the first 50 hours.
- Tighten any loose hardware. Refer to section Torque Specifications.

4.7 Preseason Check

CAUTION

- **Review the operator's manual to refresh your memory on safety and operating recommendations.**
- **Review all safety signs and other decals on the header and note hazard areas.**
- **Be sure all shields and guards are properly installed and secured. Never alter or remove safety equipment.**
- **Be sure you understand and have practiced safe use of all controls. Know the capacity and operating characteristics of the machine.**
- **Check the first aid kit and fire extinguisher. Know where they are and how to use them.**

Perform the following tasks at the beginning of each operating season:

- Adjust tension on drive belt. Refer to section 5.7 Drive Belt, page 96.
- Perform all annual maintenance. See section 5.8 Maintenance Schedule, page 102.

4.8 Daily Startup Check

CAUTION

- **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.**
- **Wear close-fitting clothing and protective shoes with slip-resistant soles.**
- **Remove foreign objects from the machine and surrounding area.**
- **As well, carry with you any protective clothing and personal safety devices that COULD be necessary through the day. Don't take chances. You may need a hard hat, protective glasses or goggles, heavy gloves, a respirator or filter mask, or wet weather gear.**
- **Protect against noise. Wear a suitable hearing protective device such as ear muffs or ear plugs to protect against objectionable or uncomfortable loud noises.**

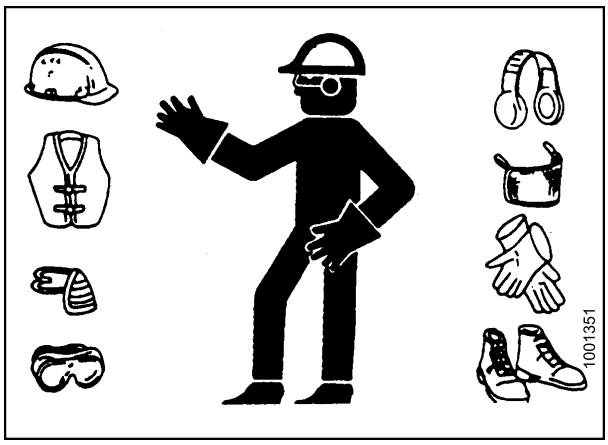


Figure 4.30: Use protective clothing and personal safety devices

Complete the following tasks each day before start-up:

1. Check the machine for leaks or any parts that are missing, broken, or not working correctly.

   NOTE: Use proper procedure when searching for pressurized fluid leaks. Refer to section 5.5 Hydraulics, page 94.

2. Clean all lights and reflective surfaces on the machine.
3. Perform all daily maintenance. Refer to section 5.8 Maintenance Schedule, page 102.

4.9 Conditioner Operation

WARNING

Keep hands and feet away from discharge opening. Keep everyone several hundred feet away from your operation. Never direct the discharge toward anyone. Stones or other foreign objects can be ejected with force.

WARNING

To avoid bodily injury or death from unexpected startup of machine, stop engine and remove key before adjusting rolls.

4.9.1 Roll and Feed Draper Speed

The roll and feed draper speeds change whenever the header knife speed is changed since the drives use the same hydraulic circuit. They cannot be independently adjusted.

4.9.2 Adjusting Roll Gap

Steel rolls condition the crop by crimping and crushing the stem in several places. This allows moisture release for quicker drying. The degree to which the crop is conditioned as it passes through the rolls is controlled by roll gap. See illustration. The gap is factory set at 0.75 in. (20 mm) or at 1.5 line on gauge. Gauge readings should be the same at both ends of the roll.

Correct conditioning of alfalfa, clover and other legumes is usually indicated when 90% of the stems show cracking, but no more than 5% of the leaves are damaged. Use only enough roll gap to achieve this result.

A larger gap (up to 1 inch [25 mm]) may be desirable in thick-stemmed cane-type crops; however, too large a gap may cause feeding problems.

Grass type crops may require less gap for proper feeding and conditioning. The intermeshing steel rolls of the hay conditioner crimp the plant stems in several places, allowing moisture release and quicker drying.

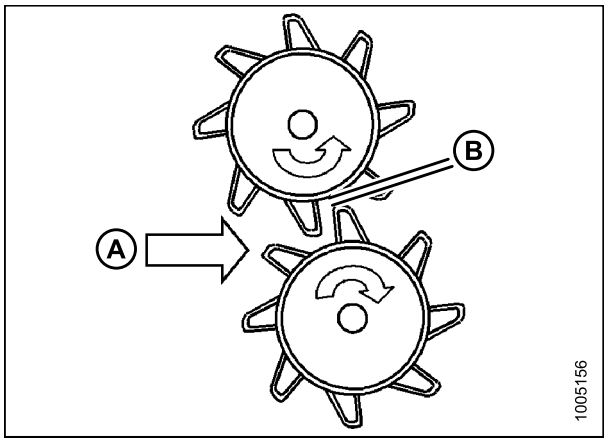


Figure 4.31

A - Crop Direction **B - Roll Gap**

If required, you can adjust the roll gap by loosening nut (A) and turning adjuster (B). Retighten nut (A) after adjusting.

IMPORTANT

When adjusting roll gap, be sure that the gauge (C) reading is the same on both sides of the conditioner roll to achieve consistent intermesh across the rolls.

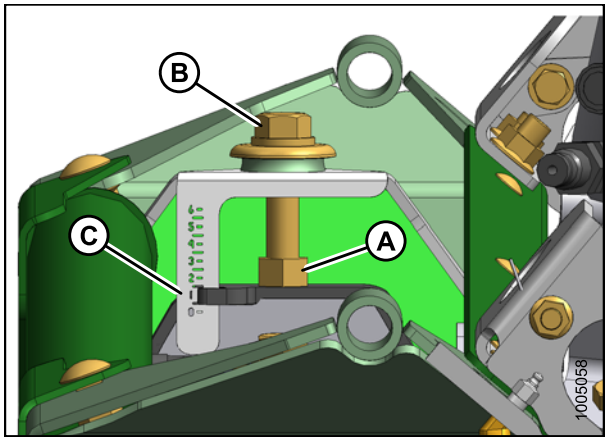


Figure 4.32

4.9.3 Checking and Adjusting Roll Timing

For proper conditioning, the rolls must be properly timed and aligned with each steel bar on one roll centered between two bars of the other roll as shown. The factory setting should be suitable for most crop conditions.

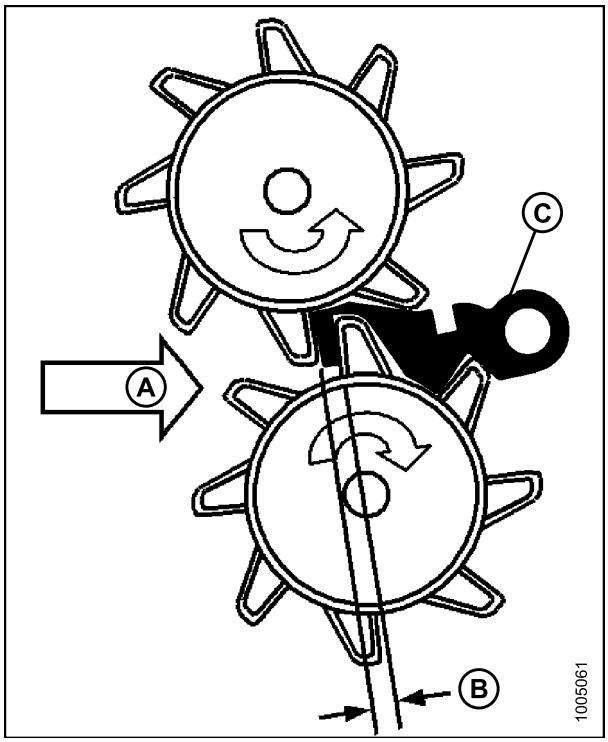


Figure 4.33

A - Crop Direction
B - Timing Gap
C - Roll Timing Tool

To check roll timing, follow these steps:

1. Lower header to ground, shut down windrower and remove key.
2. Remove wing-nut (A), and remove tool (B) from panel at right-hand end of conditioner.

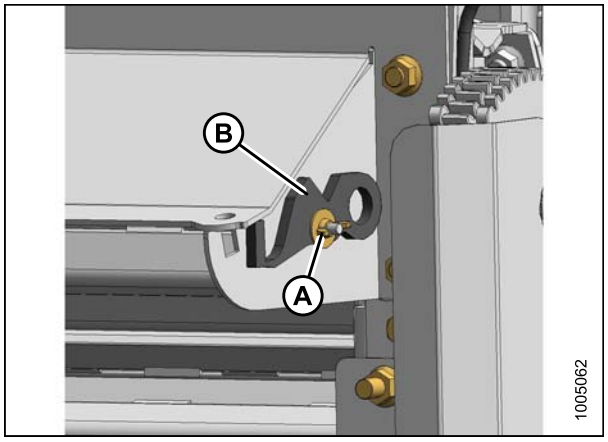


Figure 4.34

3. From the rear of the conditioner, position tool at centre of rolls as shown above right and manually turn rolls to limits of tool. Rolls will engage the tool if timing is correct.
4. Manually turn rolls to release tool.

WARNING

Remove tool from rolls and return it to storage location before starting machine.

5. Replace tool on conditioner with washer and wing-nut.
6. If roll timing is correct, skip remaining steps. If roll timing needs adjusting, continue to the next step.

Figure 4.35

A - Start Position **B - Gauge Position**

7. Loosen the four bolts (A) on one of the small timing gears.
8. Insert tool as described above and allow rolls to adjust to tool.
9. Tighten bolts on timing gear.
10. Return tool to storage position.

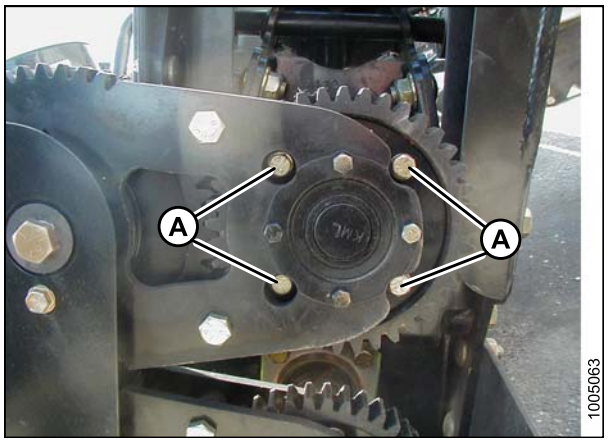


Figure 4.36

4.9.4 Adjusting Conditioner Roll Tension

The conditioner roll tension is maintained by two tension springs to provide adequate pressure for correct conditioning of the crop. These springs also allow the rolls to open to allow passage of small solid objects without damage to the rolls.

1. Locate the adjustment nuts on top of the conditioner channel.
2. Loosen jam nuts (A).
3. Turn adjusting nut (B) clockwise to increase tension, and counterclockwise to decrease tension.
4. Adjust nuts (B) on both sides equal amounts.
5. Tighten jam nut (A).

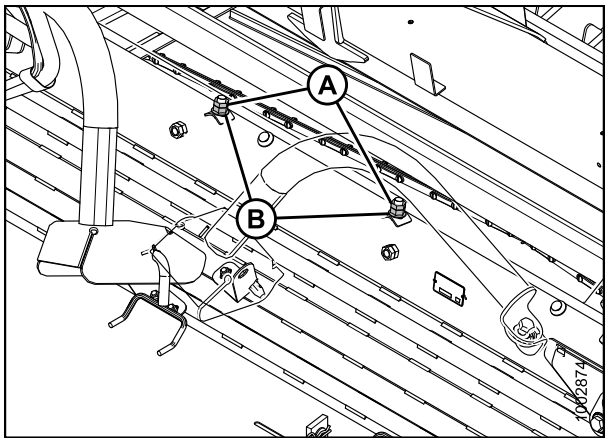


Figure 4.37

4.9.5 Forming Shields

The position of the forming shields controls the width and placement of the windrow. The decision on forming shield position (settings between 36 and 92 inches [915 and 2346 mm]) should be based on the following factors:

- Weather conditions (rain, sun, humidity, wind)
- Type and yield of crop
- Drying time available
- Method of processing (bales, silage, “green-feed”)

A wider windrow will generally dry faster and more evenly, resulting in less protein loss. Fast drying is especially important in areas where the weather allows only a few days to cut and bale.

Where weather conditions permit or when drying is not critical, for example, when cutting for silage or "green-feed", a narrower windrow may be preferred for ease of pickup.

Adjusting Forming Shield Height

WARNING

Stop engine, and remove key before making adjustments to machine. A child or even a pet could engage the drive.

The height of the forming shield affects the shape and consistency of the windrow. A heavy crop will require the forming shield to be set near the highest position and a lighter crop needs the forming shield to be lower. Adjust the forming shield height as follows:

1. Remove hairpins (A) securing straps (B) to pins on windrower frame.
2. Support aft end of forming shield and relocate straps to the desired hole.
3. Secure straps with hairpins.

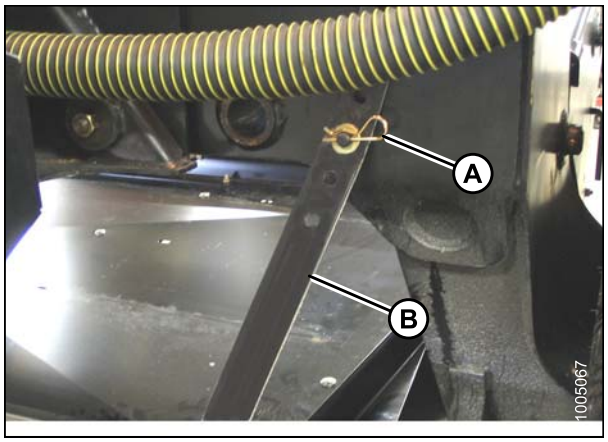


Figure 4.38

Adjusting Side Deflectors

WARNING

Stop engine, and remove key before making adjustments to machine. A child or even a pet could engage the drive.

The position of the side deflectors controls the width and placement of the windrow. To adjust the position, follow these steps:

1. Set side deflectors (A) to desired width by loosening handle (B) and moving deflector (A). Tighten handle. Set both deflectors to approximately the same position.

IMPORTANT

To ensure windrow placement is centered with respect to windrower wheels, adjust both side deflectors to the same position. To achieve this setting, adjuster handles must be in the same location on both sides.

2. If side deflector attachment is too tight or too loose, tighten or loosen nut (C) as required.

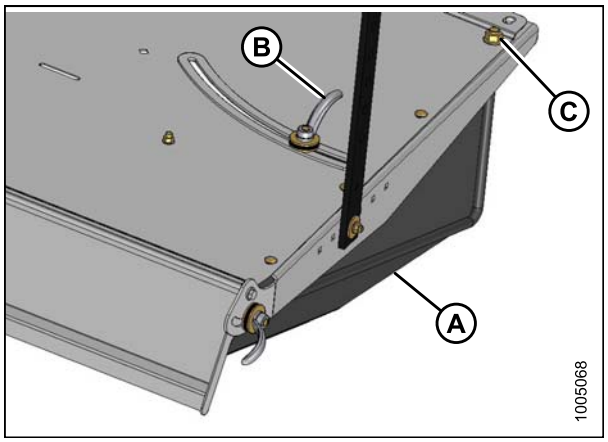


Figure 4.39

Adjusting Rear Deflector (Fluffer Shield)

WARNING

Stop engine, and remove key before making adjustments to machine. A child or even a pet could engage the drive.

The rear deflector (A) slows the crop exiting the conditioner rolls, directs the flow downward, and "fluffs" the material. To adjust the rear deflector, follow these steps:

1. For more crop control in light material, lower the deflector by pushing down on one side of the deflector and then on the other side. Locking bolts (B) are located at either end of the deflector and may be loosened slightly.
2. For heavier crops, raise the deflector by pulling up on one side and then on the other side.

   NOTE: For even windrow formation, be sure the deflector is not twisted.

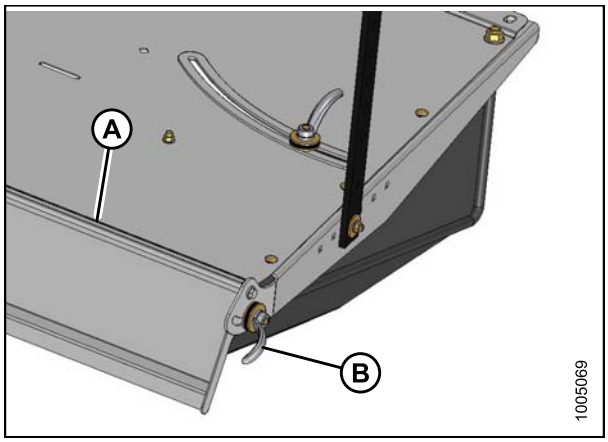


Figure 4.40

Adjusting Deflector Fins

WARNING

Stop engine, and remove key before making adjustments to machine. A child or even a pet could engage the drive.

Adjustable deflector fins help to provide different swath widths and distribution of crop across the windrow.

Angles for the short fins (A) can be adjusted by loosening mounting bolt(s) and rotating as required. The long fins (B) can be adjusted using the slots in the cover.

Set fins approximately parallel to side deflectors for wide swath and adjust as required for even distribution of crop across full width. For narrow windrow less than 70 inches (1780 mm), remove fins.

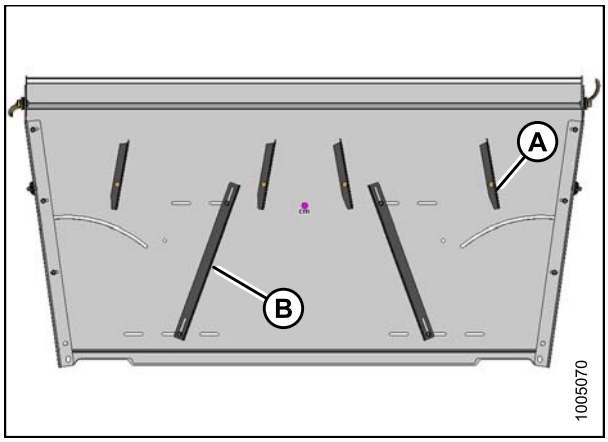


Figure 4.41

4.9.6 Unplugging the Conditioner

To unplug the conditioner, reverse the header drive. Refer to the windrower operator's manual for procedures on reversing the header drive.

4.10 Storage

At the end of each operating season, follow these steps:

1. Clean the conditioner thoroughly.

CAUTION

Never use gasoline, naphtha, or any volatile material for cleaning purposes. These materials may be toxic and/or flammable.

2. Store in a dry, protected place if possible. If stored outside, always cover conditioner with a waterproof canvas or other protective material.
3. Repaint all worn or chipped painted surfaces to prevent rust.
4. Loosen drive belt.
5. Lubricate the conditioner thoroughly, leaving excess grease on fittings to keep moisture out of bearings. Apply grease to exposed threads, and sliding surfaces of components.
6. Check for worn components and repair.
7. Check for broken components and order replacement from your dealer. Attention to these items right away will save time and effort at beginning of next season.
8. Replace or tighten any missing or loose hardware. Refer to section Torque Specifications.

5 Maintenance

5.1 Preparation for Servicing

The following instructions are provided to help you use the hay conditioner.

Detailed maintenance and service information is contained in the technical manual available from your MacDon Dealer.

CAUTION

To avoid personal injury, before servicing hay conditioner or opening header drive covers:

1. **Fully lower the header. If necessary to service in the raised position, always engage safety props.**
2. **Stop engine, and remove key.**
3. **Engage park brake.**
4. **Wait for all moving parts to stop.**

5.2 Recommended Safety Procedures

Park on level surface when possible. Block wheels securely if windrower is parked on an incline.

Follow all recommendations in your windrower operator's manual.

Follow all safety sections in 1 Safety, page 1.

5.3 Drive Shields

CAUTION

- **Keep all shields in place. Never alter or remove safety equipment.**
- **Do not operate machine with shield removed.**

To remove shield, undo wing nut (B) and remove washer. Pull shield (A) off conditioner.

To install shield, position shield (A) over drive pulleys, and then secure with washer and wing nut (B).

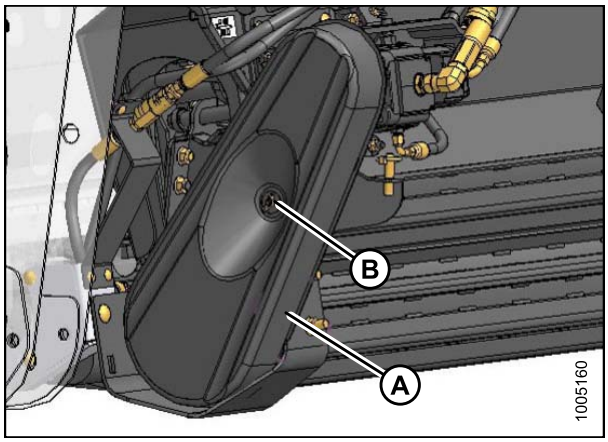


Figure 5.1

5.4 Lubrication

5.4.1 Lubricants

Your machine can operate at top efficiency only if clean lubricants are used.

Use clean containers to handle all lubricants.

Store in an area protected from dust, moisture, and other contaminants.

Lubricant	Spec.	Description	Use
Grease	SAE Multi-Purpose	High temperature, extreme pressure (EP). 0-1% Max Molybdenum Disulphide (NLGI Grade 2). Lithium Complex Base. Base Oil Viscosity of 190-250 CST @ 40C.	As required unless otherwise specified.

5.4.2 Greasing Procedure

CAUTION

To avoid personal injury, before servicing header or opening drive covers, follow procedures in 5.1 Preparation for Servicing, page 87.

1. To avoid injecting dirt and grit, wipe grease fitting with a clean cloth before greasing.
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.

5.4.3 Lubrication Points

Greasing points that have greasing intervals of 50 hours or less are marked on the machine by decals showing a grease gun (A) and grease interval (B) in hours of operation.

Log hours of operation and use the Maintenance Checklist provided to keep a record of scheduled maintenance. Refer to section 5.8 Maintenance Schedule, page 102.

The following illustrations identify the various locations that require lubrication.

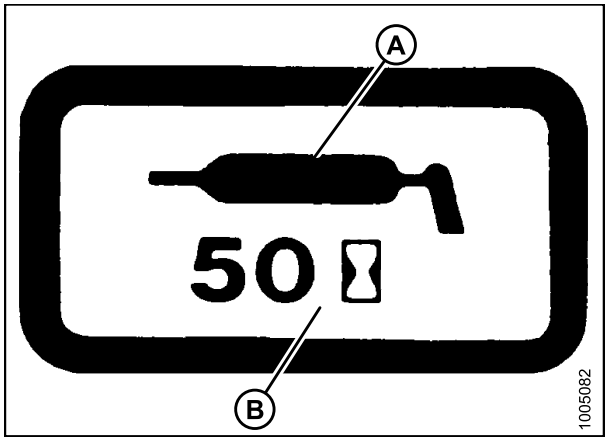


Figure 5.2

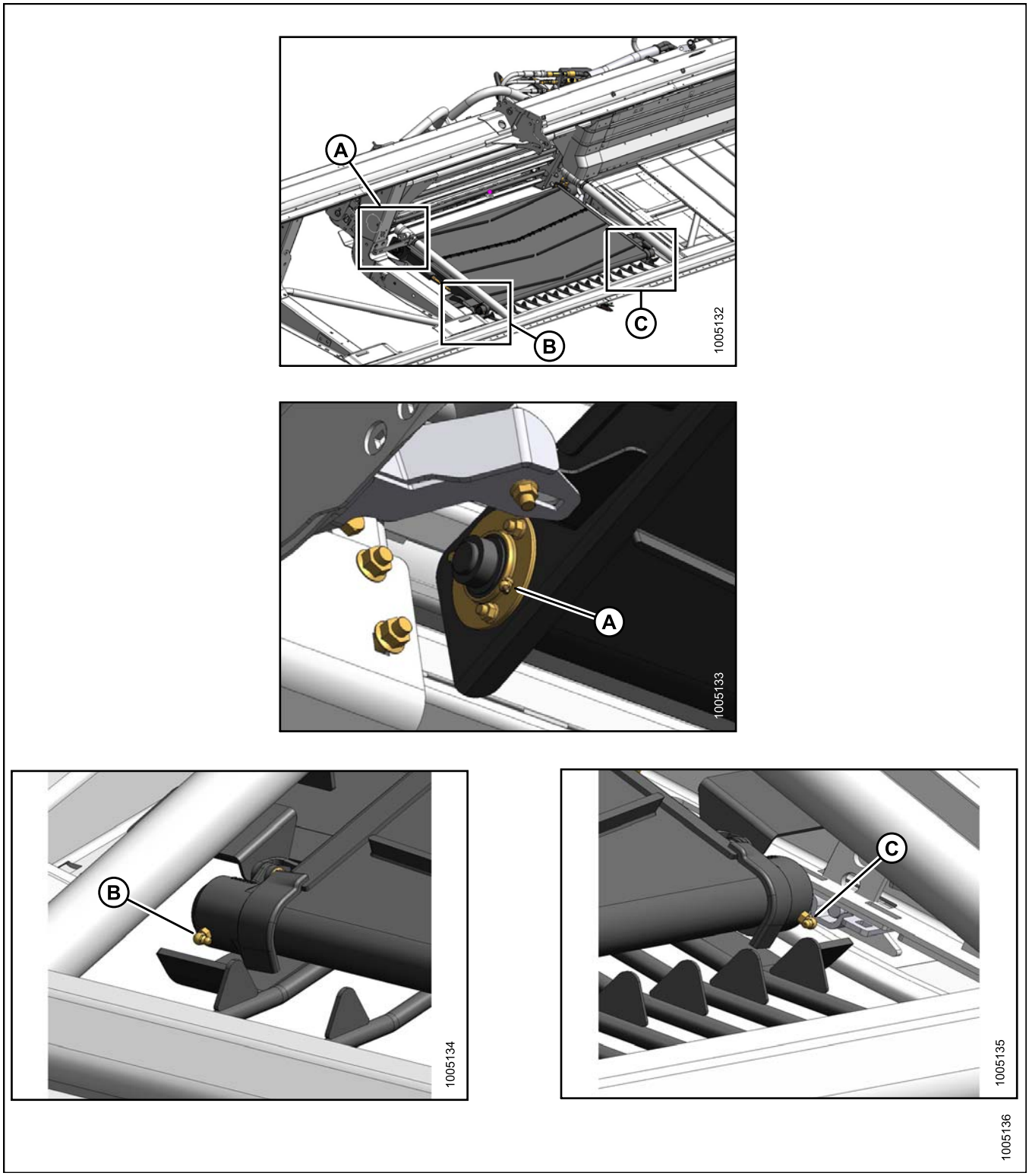


Figure 5.3: Every 50 Hours - Use High Temperature Extreme Pressure (EP2) Performance With 1% Max Molybdenum Disulphide (NLGI Grade 2) Lithium Base

A - Drive Roller Bearing Lubrication Point **B - Idler Roller Bearing Lubrication Point** **C - Idler Roller Bearing Lubrication Point**

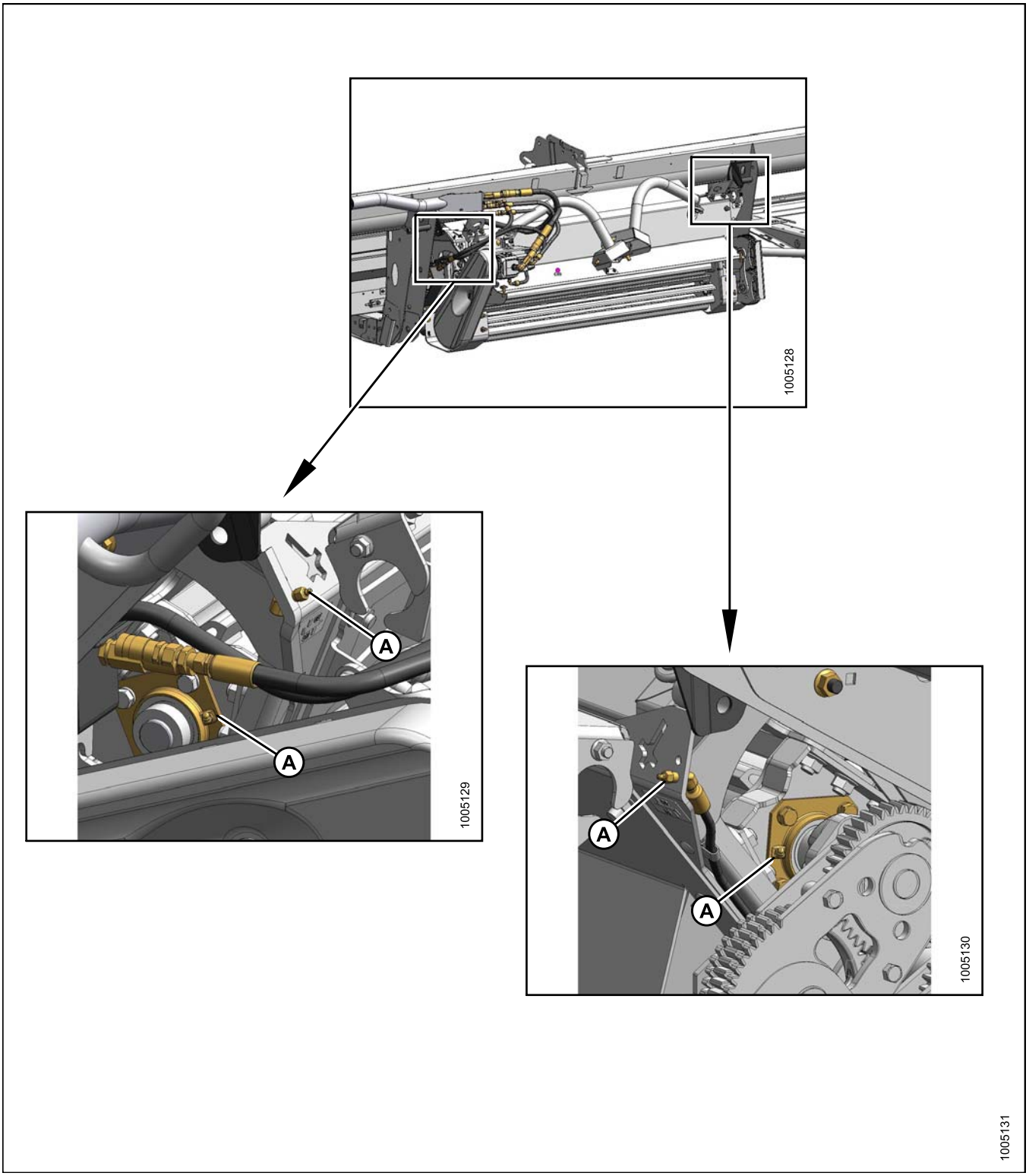


Figure 5.4: Every 50 Hours - Use High Temperature Extreme Pressure (EP2) Performance With 1% Max Molybdenum Disulphide (NLGI Grade 2) Lithium Base

A - Roll Shaft Bearing Lubrication Points (Four Places)

5.5 Hydraulics

5.5.1 Hydraulic Hoses and Lines

Check hydraulic hoses and lines daily for signs of leaks.

WARNING

- **Avoid high-pressure fluids. Escaping fluid can penetrate the skin causing serious injury. Relieve pressure before disconnecting hydraulic lines. Tighten all connections before applying pressure. Keep hands and body away from pin holes and nozzles which eject fluids under high pressure.**
- **If ANY fluid is injected into the skin, it must be surgically removed within a few hours by a doctor familiar with this type of injury or gangrene may result.**
- **Use a piece of cardboard or paper to search for leaks.**

IMPORTANT

Keep hydraulic coupler tips and connectors clean. Dust, dirt, water, and foreign material are the major causes of hydraulic system damage. DO NOT attempt to service hydraulic system in the field. Precision fits require WHITE ROOM CARE during overhaul.

Figure 5.5

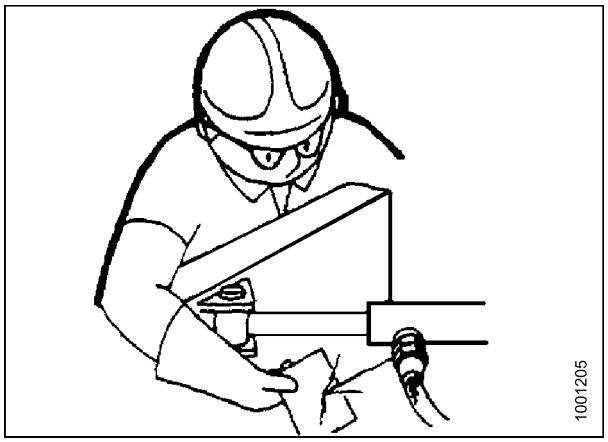


Figure 5.6

5.6 Feed Draper

5.6.1 Adjusting Feed Draper Tension

DANGER

To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage lift cylinder stops before going under header for any reason. See your windrower operator's manual for instructions for use and storage of header lift cylinder stops.

CAUTION

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.

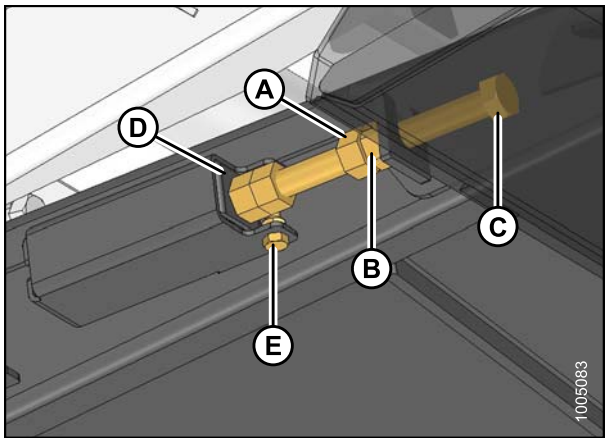


Figure 5.7

Feed draper tension should be just enough to prevent slipping and keep draper from sagging below cutterbar. Set draper tension as follows:

1. Raise header fully, stop engine, and remove key. Engage header lift cylinder stops.
2. Check that draper guide (rubber track on underside of draper) is properly engaged in groove of drive roller and that idler roller is between the guides.
3. Loosen jam nut (A).
4. Hold nut (B) with a wrench and turn bolt (C) clockwise to increase tension and counterclockwise to decrease tension.
5. Correct tension is when retainer (D) is flush with spring holder, and bolt (E) is free.
6. Tighten jam nut (A).
7. Perform equal adjustment on both sides of draper.

5.7 Drive Belt

5.7.1 Adjusting Drive Belt Tension

1. Remove wing nut and washer (A), and remove drive cover (B).

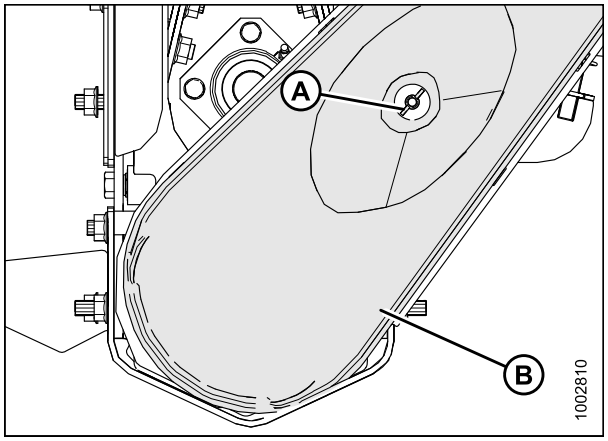


Figure 5.8

2. Belt (A) should deflect 1/4 in. (7 mm) when a force of 8–16 ft·lbf (36–72 N·m) is applied at the center of the span.

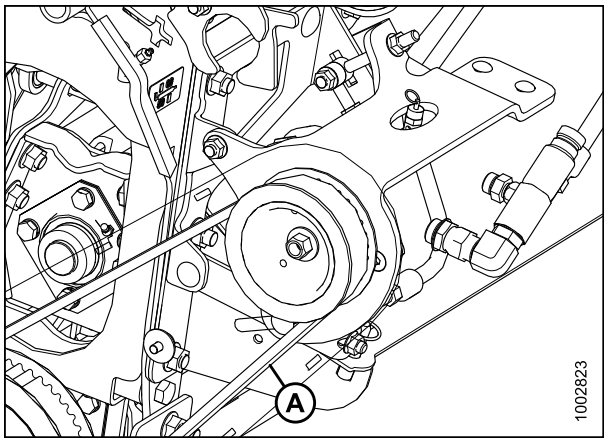


Figure 5.9

3. Loosen three motor mount bolts (A).
4. Turn tensioning nut (B) clockwise to tighten belt, and counterclockwise to loosen.
5. Tighten the three motor mount bolts (A).
6. Recheck the belt (C) tension.

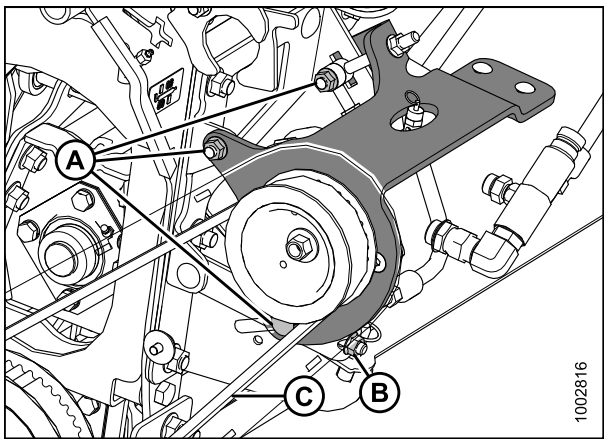


Figure 5.10

7. Replace cover (B), and secure with washer and wing nut (A).
8. Readjust tension of a new belt after a short run-in period (about 5 hours).

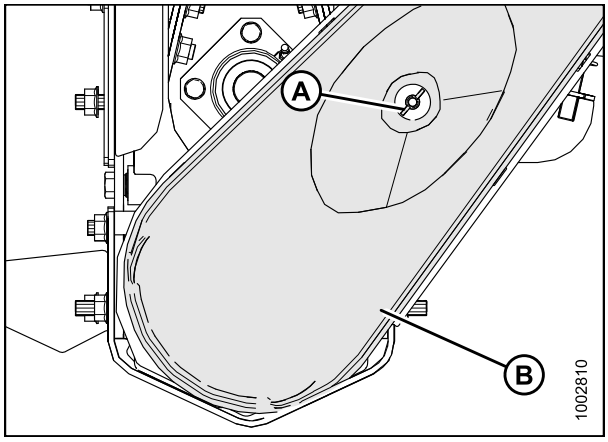


Figure 5.11

5.7.2 Adjusting Drive Belt Pulley Alignment

Pulleys should be aligned so that the belt tracks properly. If necessary, adjust as follows:

1. Remove wing-nut (A) and washer and remove drive cover (B).

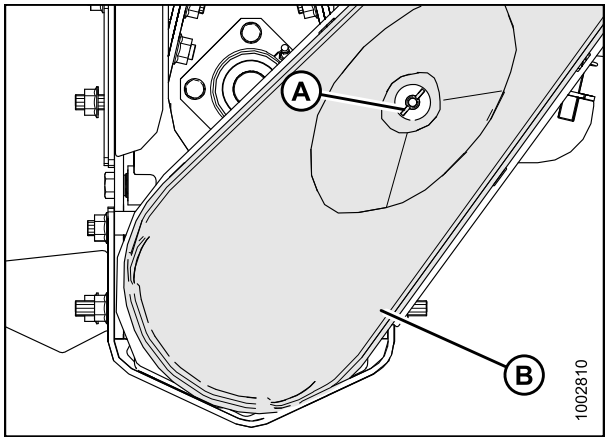


Figure 5.12

2. Loosen nut (A).
3. Adjust nuts (B) to align the drive pulley horizontally.
4. Adjust nuts (C) to align the drive pulley vertically.
5. Tighten nut (A).

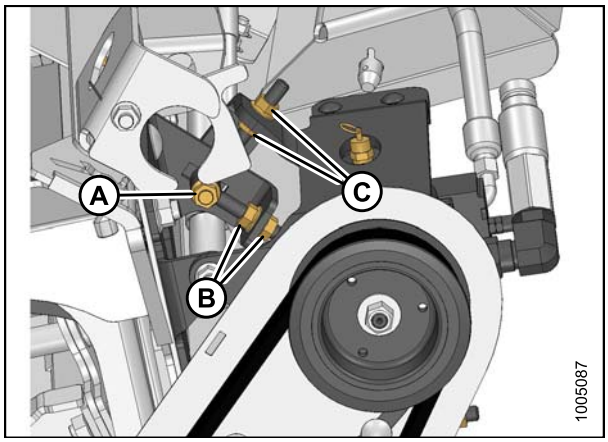


Figure 5.13

6. Replace cover and secure with washer and wing-nut.

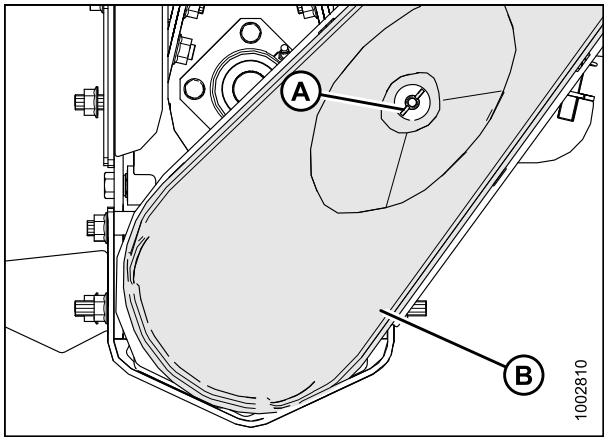


Figure 5.14

5.7.3 Checking and Adjusting Drive Belt Tracking

Proper tracking of the belt ensures there is no rubbing of the belt on either pulley.

1. Remove wing nut (A) and washer, and remove drive cover (B).

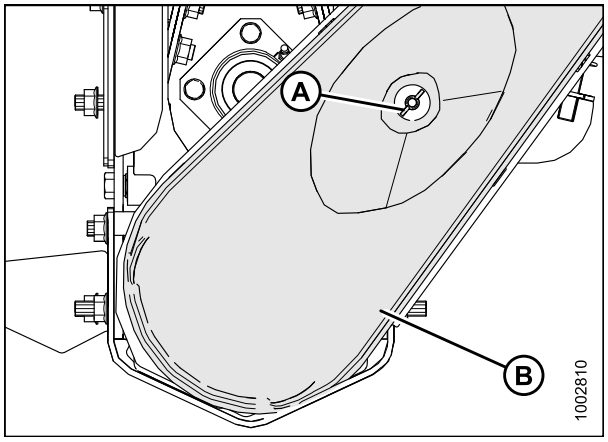


Figure 5.15

2. Check the belt and both pulleys (A) for evidence of belt rubbing.

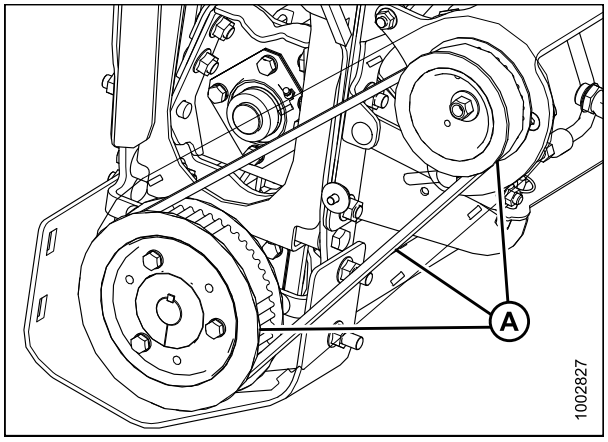


Figure 5.16

3. Using a straight edge (A), place it across the face of the driving and driven pulley. Check that the pulleys are aligned.

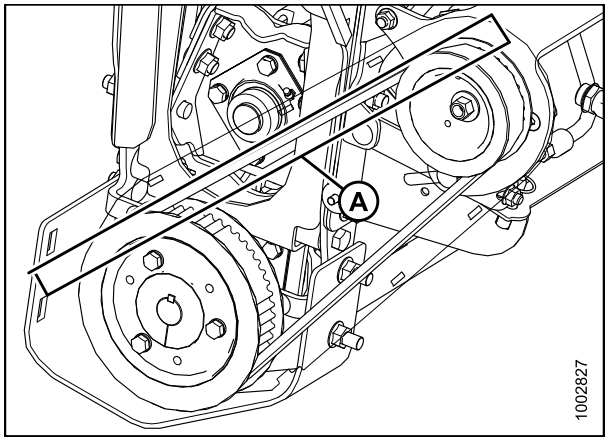


Figure 5.17

4. Adjust the driving pulley by loosening nut (A).
5. Adjust nuts (B) to align the drive pulley horizontally. If belt is tracking to the outside of the pulley, turn jam nuts (B) clockwise.
6. Adjust nuts (C) to align the drive pulley vertically. If belt is tracking to the inside of the pulley, turn jam nuts (C) counterclockwise.
7. Tighten nut (A).

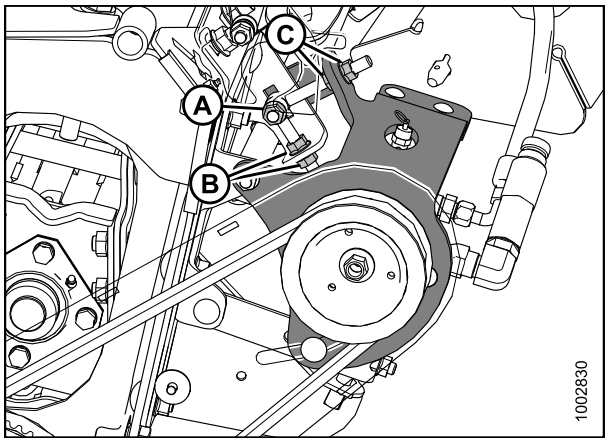


Figure 5.18

8. Run the conditioner to verify the belt is now tracking correctly.
9. Replace cover (B), and secure with washer and wing nut (A).

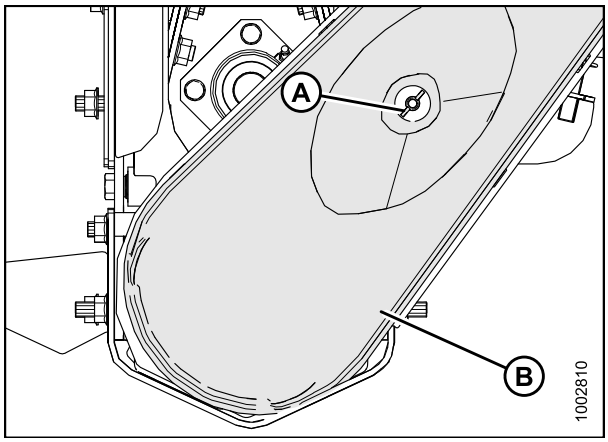


Figure 5.19

5.7.4 Removing Drive Belt

1. On the LH side, remove the wing nut and washer (A), then remove drive cover (B).

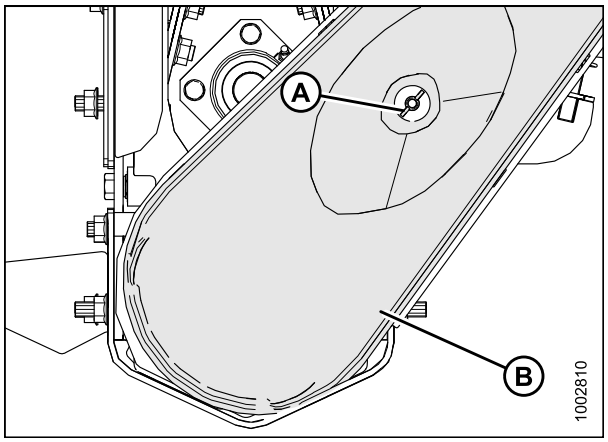


Figure 5.20

2. Loosen three motor mount bolts (A).
3. Turn tensioning nut (B) counterclockwise to loosen.
4. Remove the belt (C).

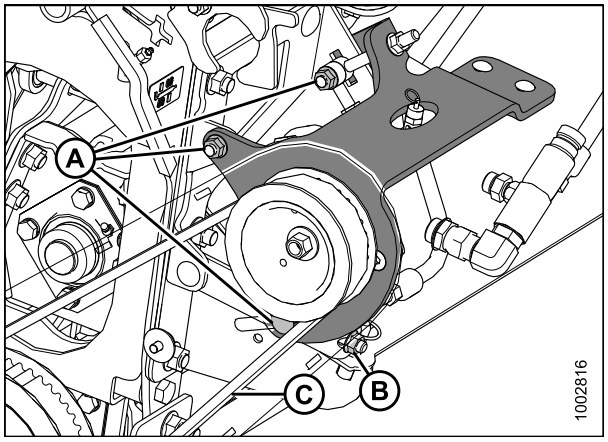


Figure 5.21

5.7.5 Installing Drive Belt

NOTE: Depending on belt failure you want to see5.7.3 Checking and Adjusting Drive Belt Tracking, page 98 before installing a new belt.

1. Install belt (A) onto pulleys.

NOTE: When installing new belt, never pry belt over pulley. Be sure adjusting device is fully loosened, then tension belt.

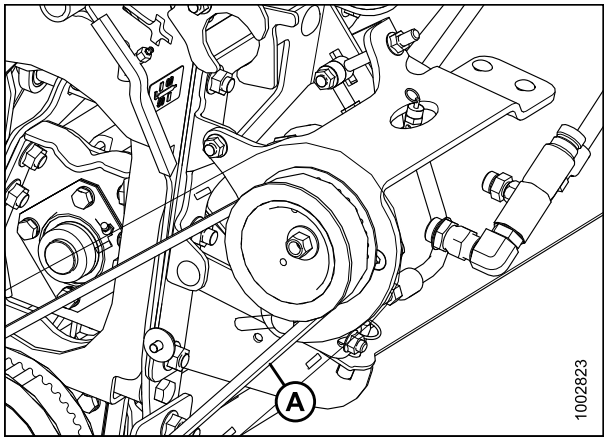


Figure 5.22

2. Loosen three motor mount bolts (A).
3. Turn tensioning nut (B) clockwise to tighten belt, and counterclockwise to loosen.
4. Tighten the three motor mount bolts (A).
5. Recheck the belt (C) tension.

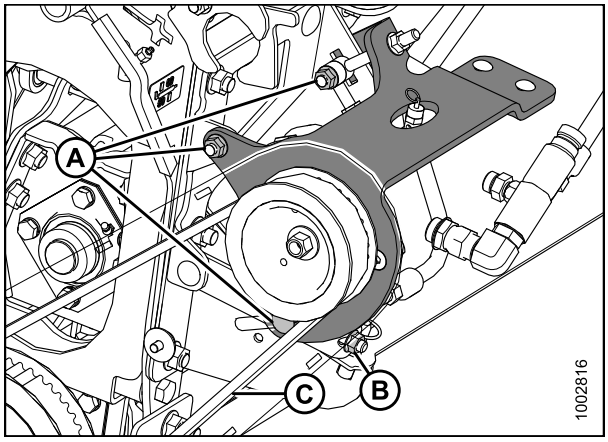


Figure 5.23

6. Replace cover (B), and secure with washer and wing nut (A).
7. Readjust tension of a new belt after a short run-in period (about 5 hours).

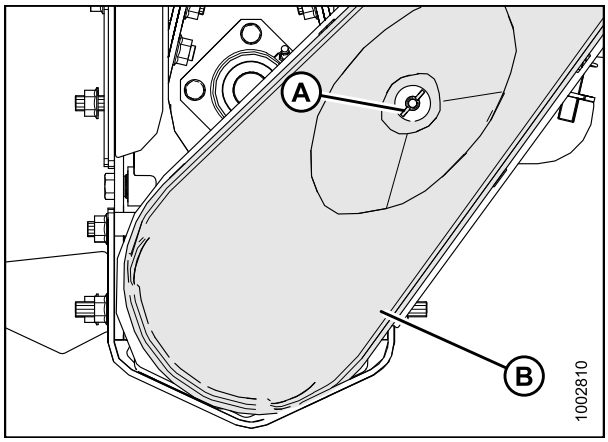


Figure 5.24

5.8 Maintenance Schedule

The following maintenance schedule is a listing of periodic maintenance procedures, organized by service intervals. Regular maintenance is the best insurance against early wear and untimely breakdowns. Following this schedule will increase machine life. For detailed instructions, refer to the specific headings in this manual. Use the lubricant specified in section 5.4.1 Lubricants, page 90.

Service Intervals: The recommended service intervals are in hours of operation. Where a service interval is given in more than one time frame, e.g., "100 hours or Annually", service the machine at whichever interval is reached first.

IMPORTANT

Recommended intervals are for average conditions. Service the machine more often if operated under adverse conditions (severe dust, extra heavy loads, etc.).

CAUTION

Carefully follow safety messages given under section 5.1 Preparation for Servicing, page 87 and section 5.2 Recommended Safety Procedures, page 88.

Table 5.1 Service Intervals

Interval	Service
First use	Refer to section 4.6 Break-in Period, page 77.
10 hours or daily	Check hydraulic hoses and lines.
50 hours	Grease roll shaft bearings. Grease feed deck drive and idler roller bearings.
100 hours or annually[9]	Check roll drive belt tension.
End of season	Refer to section 4.10 Storage, page 86.

9. It is recommended that annual maintenance be done prior to the start of the operating season.

Table 5.2 Maintenance Record

	Action:	✓ – Check										♦ – Lubricate										
	Hour Meter Reading																					
	Date																					
	Serviced By																					
	First Use	Refer to 4.6 Break-in Period, page 77 for a checklist.																				
	10 Hours or Daily																					
✓	Hydraulic Hoses & Lines	**NOTE:** A record of daily maintenance is not normally required, but is at the Owner/Operator's discretion.																				
	50 Hours																					
♦	Roll Shaft Bearings																					
♦	Feed Deck Roller Bearings																					
	100 Hours or Annually																					
✓	Roll Drive Belt Tension																					

5.9 Troubleshooting

Symptom	Problem	Solution	Reference
Hay conditioner rolls will not turn.	There is an obstruction or wad in the conditioner rolls.	Turn mechanism in reverse and remove wad.	See Section 4.9.6 Unplugging the Conditioner, page 85.
	Drive belt is broken.	Replace drive belt.	See Sections 5.7.4 Removing Drive Belt , page 100 and 5.7.5 Installing Drive Belt , page 100.
	Drive belt is too loose.	Tighten or replace conditioner drive belt.	See Sections 5.7.4 Removing Drive Belt , page 100 and 5.7.5 Installing Drive Belt , page 100.
Crop is over-conditioned.	Roll gap is too small.	Increase roll gap.	See Section 4.9.2 Adjusting Roll Gap, page 80.
	Roll timing is off.	Adjust roll timing.	See Section 4.9.3 Checking and Adjusting Roll Timing, page 81.
Crop is under-conditioned.	Roll gap is too large.	Reduce roll gap.	See Section 4.9.2 Adjusting Roll Gap, page 80.
	Roll timing is off.	Adjust roll timing.	See Section 4.9.3 Checking and Adjusting Roll Timing, page 81.
Windrow is too wide.	Forming shield side deflectors are too far apart.	Position deflectors closer together.	See Adjusting Side Deflectors, page 84.
Windrow is too narrow.	Forming shield side deflectors are too close together.	Position deflectors farther apart.	See Adjusting Side Deflectors, page 84.
	Deflector fins inside forming shield are improperly adjusted.	Adjust fins.	See Adjusting Deflector Fins, page 85.
Windrow is uneven.	Forming shield is too low.	Raise forming shield.	See Adjusting Forming Shield Height, page 84.
	Deflector fins inside forming shield are improperly adjusted.	Adjust fins.	See Adjusting Deflector Fins, page 85.
	Overlap of side drapers and feed deck is inadequate.	Adjust overlap.	See Section 3.5 Installing the Feed Deck, page 35.

Symptom	Problem	Solution	Reference
Windrow lacks shape.	Forming shield is too high.	Lower forming shield.	See Adjusting Forming Shield Height, page 84.
	Deflector fins inside forming shield are improperly adjusted.	Adjust fins.	See Adjusting Deflector Fins, page 85.
Feed draper is not tracking properly.	Feed draper tensioners are improperly adjusted.	Check feed draper tension and adjust accordingly.	See Section 5.6.1 Adjusting Feed Draper Tension, page 95.
Side draper is backfeeding.	Overlap of side drapers and feed deck is inadequate.	Adjust overlap.	See Section 3.5 Installing the Feed Deck, page 35.

6 Repair Parts

This chapter lists all the replacement parts that can be ordered for a MacDon HC10 Hay Conditioner.

In this catalog, right-hand and left-hand are determined from the Operator’s position, facing forward. An arrow is sometimes used in illustrations to indicate cab forward position.

Bold text is used to indicate updates made at the current revision level. With each new revision of the catalog, previous revisions are returned to regular text.

6.1 Abbreviations

The following abbreviations are used in this catalog.

A/R – as required (quantity varies)
C/W – complete with
CSK – countersink
DK – double knife
DT – distorted thread
FLG – flange
I.D. – inside diameter
LH – left hand (Determined from Operator's position, facing forward.)
NC – national coarse thread
NF – national fine thread
NSS – not serviced separately
O.D. – outside diameter
OPT – optional
REF – reference, part number called up elsewhere in catalog
RH – right hand
RHSN – round head, square neck or square neck carriage bolt
RHSSN – round head, short, square neck
SMV – slow moving vehicle
SP – self-propelled header
PT – pull-type header

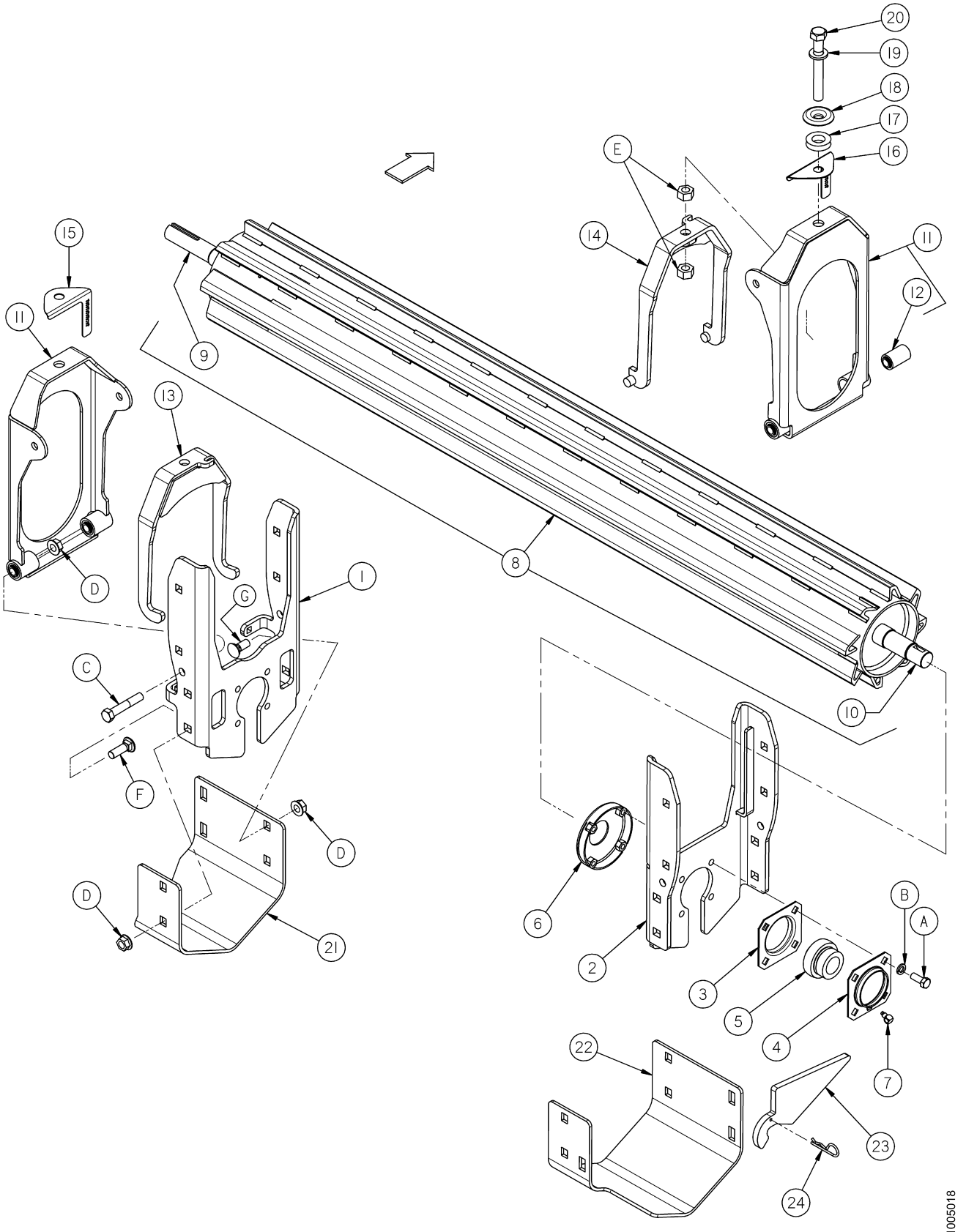
6.1.1 Serial Number Breaks

The side of the serial number on which the dash (–) appears determines whether the part is used "up to" or "after" the serial number given.

Example:

- –162249 Used on machines up to and including serial number 166249.
- 166250– Used on machines including and after serial number 166250.

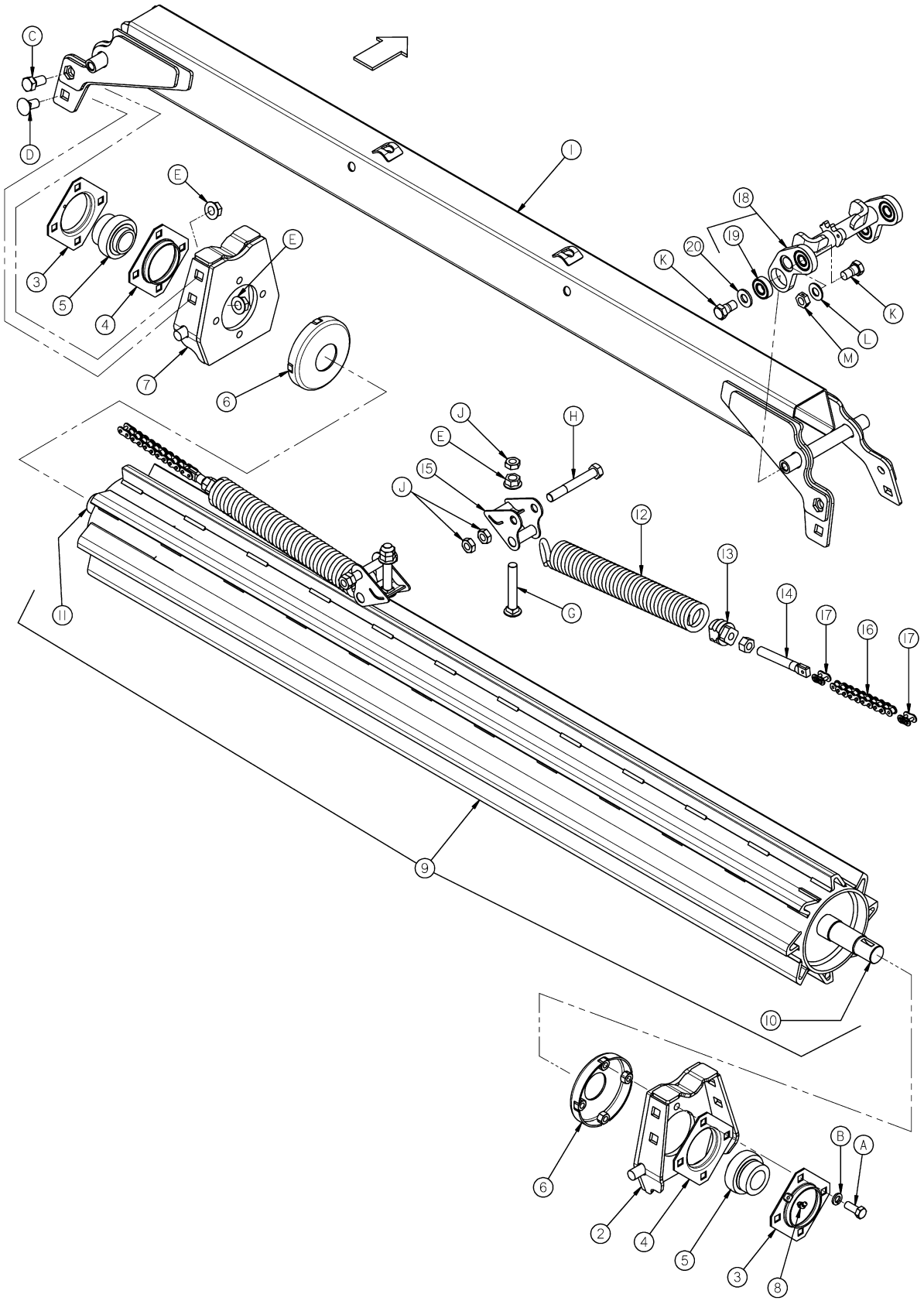
6.2 Lower Roll and Frame Assembly



Ref	Part Number	Description	Qty	Serial Number
1	159117	SUPPORT – LH	1	
2	159118	FRAME – RH LOWER WELDT	1	
3	30576	FLANGE	2	
4	50182	FLANGE	2	
5	30031	BEARING – SPH OD CW COLLAR 1.5 IN BORE	2	
6	101173	DISC WELDT	2	
7	50187	FITTING – LUBE 90° ADAPTER[10]	2	
8	130445	ROLL – LOWER WELDT	1	
9	130704	SHAFT SPINDLE – L/H LOWER ROLL (WELDED)	1	
10	130449	SHAFT SPINDLE – R/H LOWER ROLL (WELDED)	1	
11	130476	CHANNEL – PIVOT C/W BUSHINGS	2	
12	13626	BUSHING – RUBBER	4	
13	130443	BRACKET – LH ADJUSTER WELDT	1	
14	130336	BRACKET – RH ADJUSTER WELDT	1	
15	130990	GAUGE – LH ROLL OPENING	1	
16	130994	GAUGE – RH,ROLL OPENING	1	
17	47124	WASHER – RUBBER	2	
18	130532	WASHER- – FORMED	2	
19	21540	WASHER – HARDENED	2	
20	135405	BOLT – HH (MIN THD) 3/4 NC X 6.0 LG GR 5 ZP	2	
21	159404	SKID – LH, CONDITIONER	1	
22	159405	SKID – RH, CONDITIONER	1	
23	159352	SUPPORT	1	
24	13125	PIN – HAIR	1	
A	21491	BOLT – HH 1/2 NC X 1.25 LG GR 5 ZP		
B	18638	WASHER – REG. LOCK 1/2 IN. NOM. ID ZP		
C	21406	BOLT – HH 5/8 NC X 3.5 GR 5 ZP		
D	50225	NUT – FLANGE DT SMOOTH FACE .625-11UNC		
E	18593	NUT – HEX 3/4 - 10 UNC GR 5 ZP		
F	18524	BOLT – RHSN, 5/8 NC x 2.0 LG GR 5 ZP		
G	18523	BOLT – RHSN, 5/8 NC x 1.5 LG GR 5 ZP		

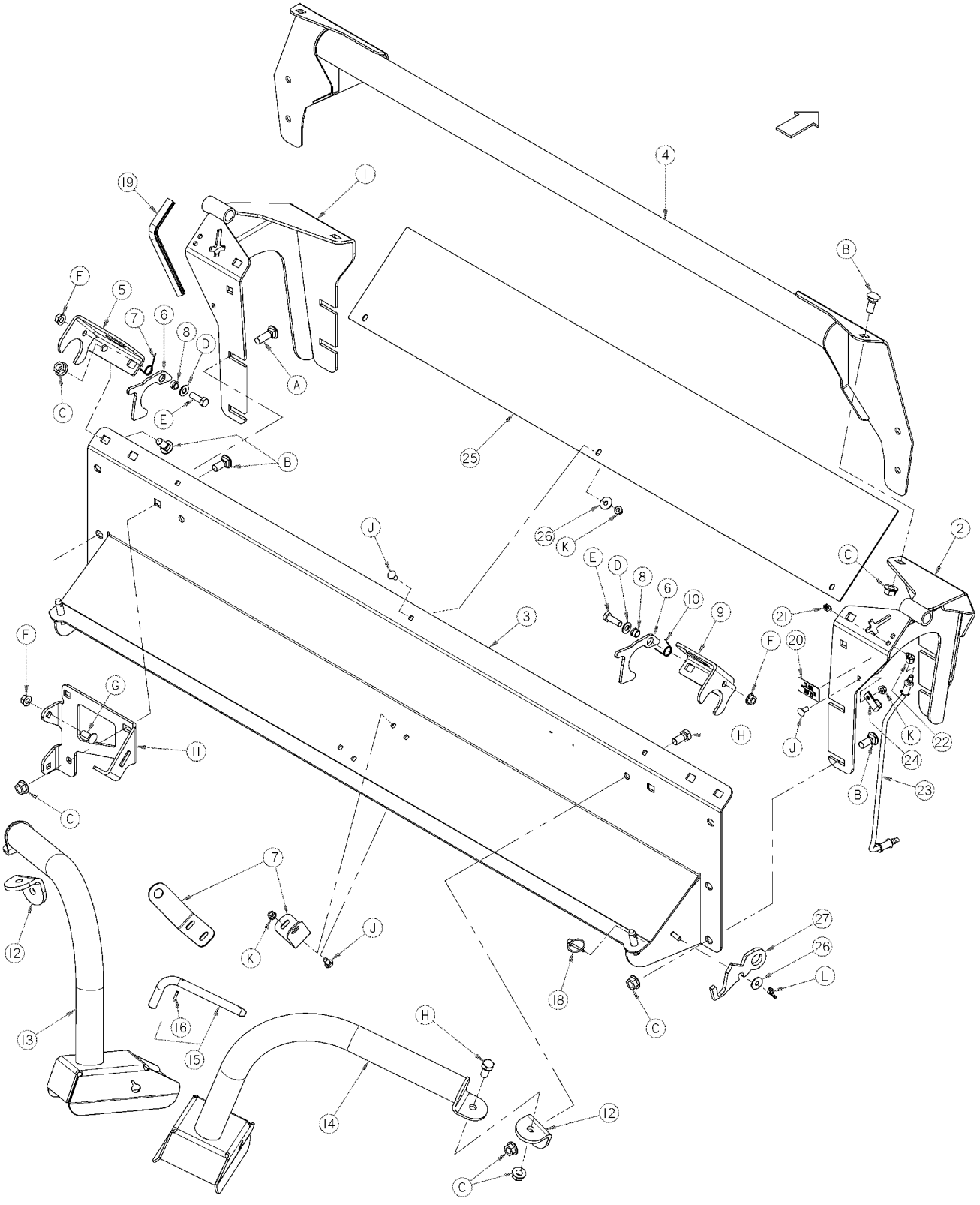
10. See section 6.4 Cover and Supports, page 112 for lube lines.

6.3 Upper Roll Assembly

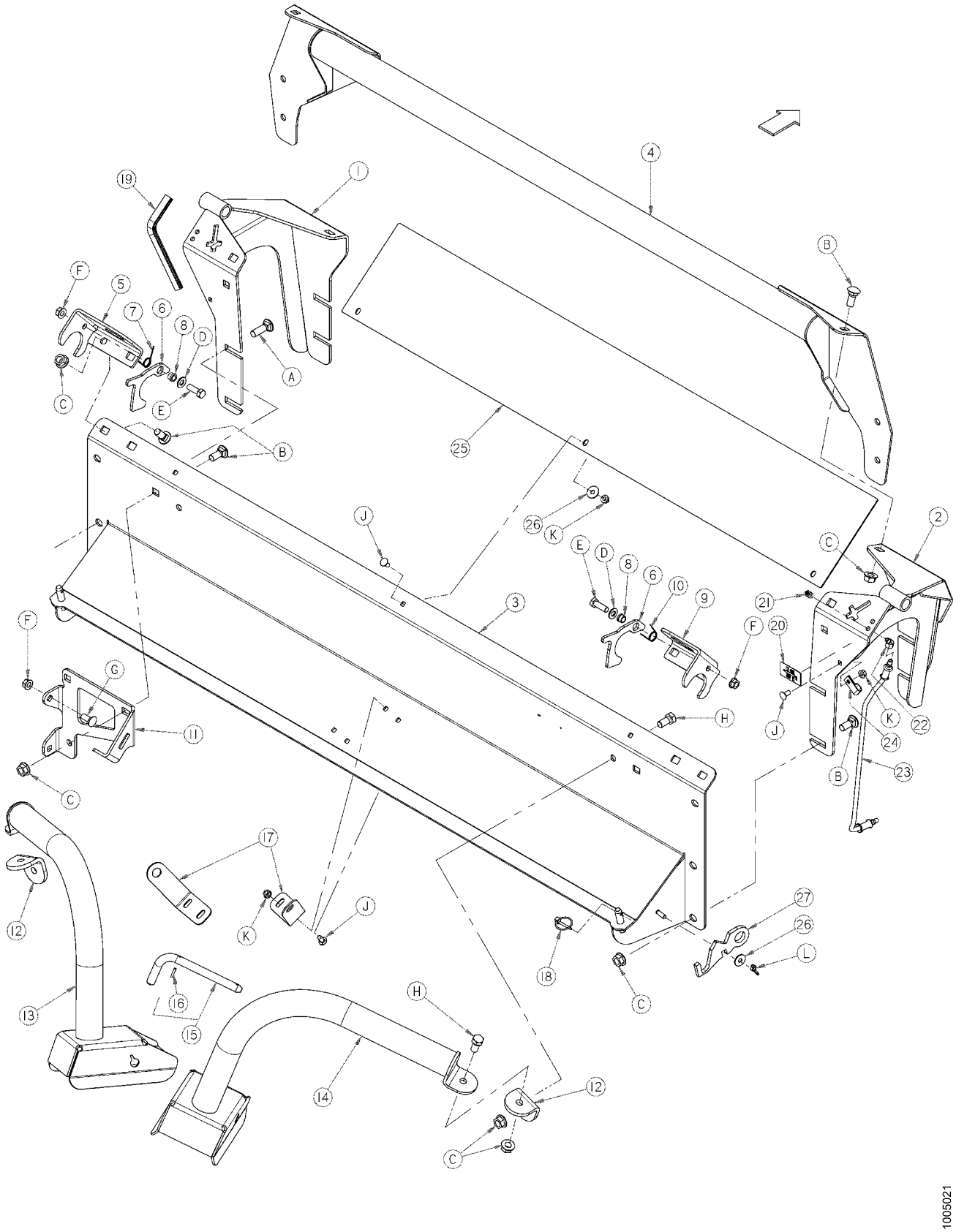


Ref	Part Number	Description	Qty	Serial Number
1	130470	CHANNEL – CROSS WELDT	1	
2	130793	SUPPORT – RH WELDT	1	
3	50182	FLANGE	2	
4	30576	FLANGE	2	
5	30031	BEARING – SPH OD CW COLLAR 1.5 IN BORE	2	
6	101173	DISC WELDT	2	
7	130472	SUPPORT – LH WELDT	1	
8	21301	FITTING – LUBRICATION	2	
9	159187	ROLL – UPPER WELDMENT	1	
10	130449	SPINDLE – RH (WELDED)	1	
11	170332	SHAFT – STUB, LH (WELDED)	1	
12	130744	SPRING	2	
13	34019	INSERT – MACH	2	
14	130527	STUD – THREADED	2	
15	130747	LEVER WELDT	2	
16	130645	CHAIN – #50 WO CONN (9 PITCHES)	2	
17	6634	LINK – CONNECTOR #50	4	
18	130450	TOGGLE ASSEMBLY C/W BEARIINGS	2	
19	50185	BEARING – BALL CYL OD 17 MM BORE	8	
20	30441	WASHER – HARDENED	4	
A	21491	BOLT – HH 1/2 NC X 1.25 LG GR 5 ZP		
B	18638	WASHER – REG. LOCK 1/2 IN. NOM. ID ZP		
C	21585	BOLT – HH 5/8 NC X 1.25 LG GR5 ZP		
D	103562	BOLT – RHSN 5/8 NC X 1.25 GR 5 ZP		
E	50225	NUT – FLANGE DT SMOOTH FACE .625-11UNC		
F	18592	NUT – HEX 5/8 - 11 UNC GR 5 ZP		
G	102658	BOLT – RHSN 5/8 NC X 4 TFL GR 5 ZP		
H	21720	BOLT – HH 5/8 NC X 4.5 LG GR5 ZP		
J	21941	NUT – HEX LOCK JAM (DIST THD) 5/8-11 UNC GR 5 ZP		
K	105141	BOLT – LOCKING SHOULDER		
L	18600	WASHER – SAE FLAT, 21/32 ID X 1-5/16 OD ZP		
M	105173	NUT – HEX JAM, CENTER LOCK		

6.4 Cover and Supports

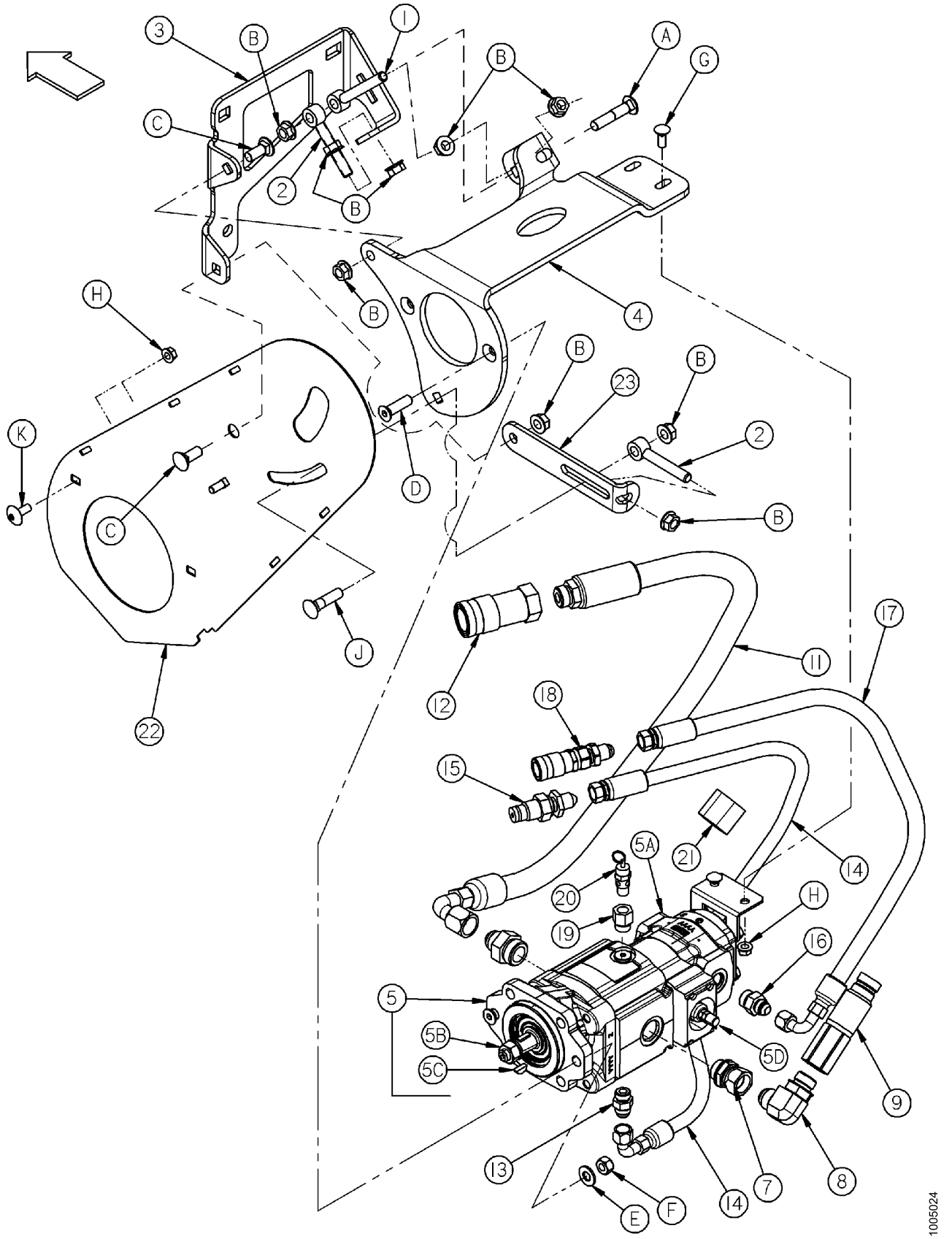


Ref	Part Number	Description	Qty	Serial Number
1	159231	SUPPORT WELDT – LH	1	
2	159582	SUPPORT WELDT – RH	1	
3	159200	COVER – TOP REAR WELDT	1	
4	130496	TUBE – CROSS WELDT	1	
5	159003	LATCH – WELDT LH	1	
6	159001	LATCH	2	
7	159020	SPRING – TORSION	1	
8	159005	SPACER – 3/4 IN.OD X .120 WALL X 12 LONG, stepped	2	
9	159007	LATCH – WELDT RH	1	
10	144505	SPRING – TORSION	1	
11	130757	SUPPORT – HYD MOTOR	1	
12	130858	ANGLE	2	
13	159329	SUPPORT – WELDT,LIFT ARM LH	1	
14	159333	SUPPORT – WELDT,LIFT ARM RH	1	
15	144415	ASSY – L-PIN - includes item 16	2	
16	16010	PIN – SPRING 3/16 DIA X 1.0 LG	2	
17	159002	ANGLE	2	
18	102264	PIN – LYNCH 3/16 X 1 9/16 IN	2	
19	110737	MOULDING – FRAME (UNIGRIP)	1	
20	23165	DECAL – 50 HR LUBE	2	
21	50188	FITTING – LUBRICATION 1/8 NPT FEMALE	2	
22	115677	FITTING – ELBOW 45° HYD	2	
23	159583	HOSE – GREASE - 1/8" NPT	2	
24	135232	CLAMP – DOUBLE HOSE INSULATED	2	
25	156815	COVER – POLY	1	
26	19685	WASHER – FLAT	4	
27	150572	PLATE – ROLL TIMING GAUGE	1	
		NOTE: For hardware, see next page.		


1005021

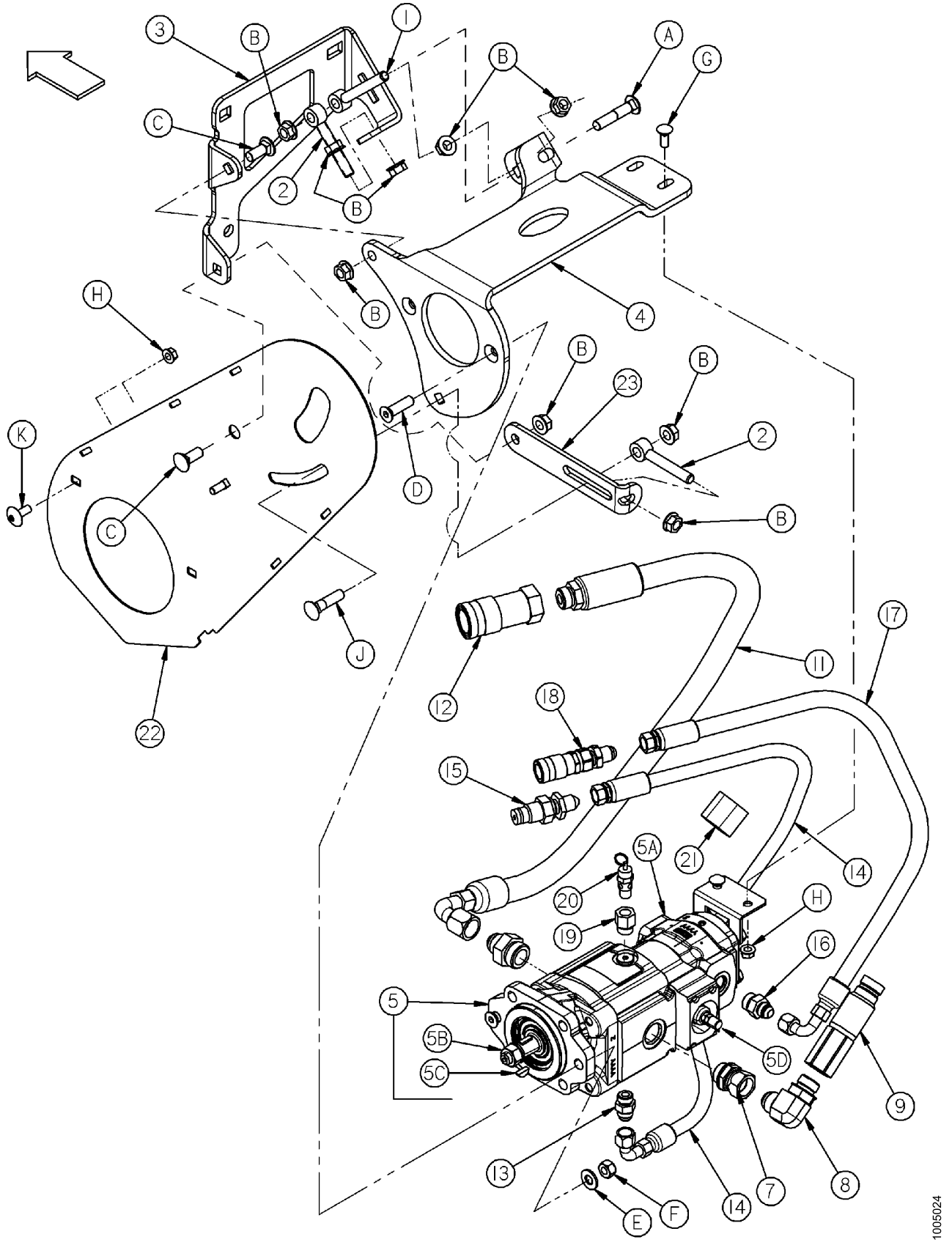
Ref	Part Number	Description	Qty	Serial Number
A	18524	BOLT – RHSN 5/8 NC X 2.0 LG GR 5 ZP		
B	18523	BOLT – RHSN 5/8 NC X 1.5 GR 5 ZP		
C	50225	NUT – FLANGE DT SMOOTH FACE .625-11UNC		
D	18599	WASHER – SAE FLAT 17/32 ID X 1 1/16 IN OD ZP		
E	18723	BOLT – HH 1/2 NC X 1.5 LG TFL GR 5 ZP		
F	50186	NUT – FLANGE LOCK SM FACE DT 0.500-13UNC GR5		
G	21471	BOLT – RHSN 1/2 NC X 1.25 GR 5 ZP		
H	21585	BOLT – HH 5/8 NC X 1.25 LG GR5 ZP		
J	21863	BOLT – RHSSN 3/8 NC X 0.75 LG GR 5 ZP		
K	30228	NUT – FLANGE DT SMOOTH FACE 0.375-16UNC		
L	21289	NUT – ING TYPE A 3/8 NC ZP		

6.5 Hydraulic Motor, Mounts, and Tensioner



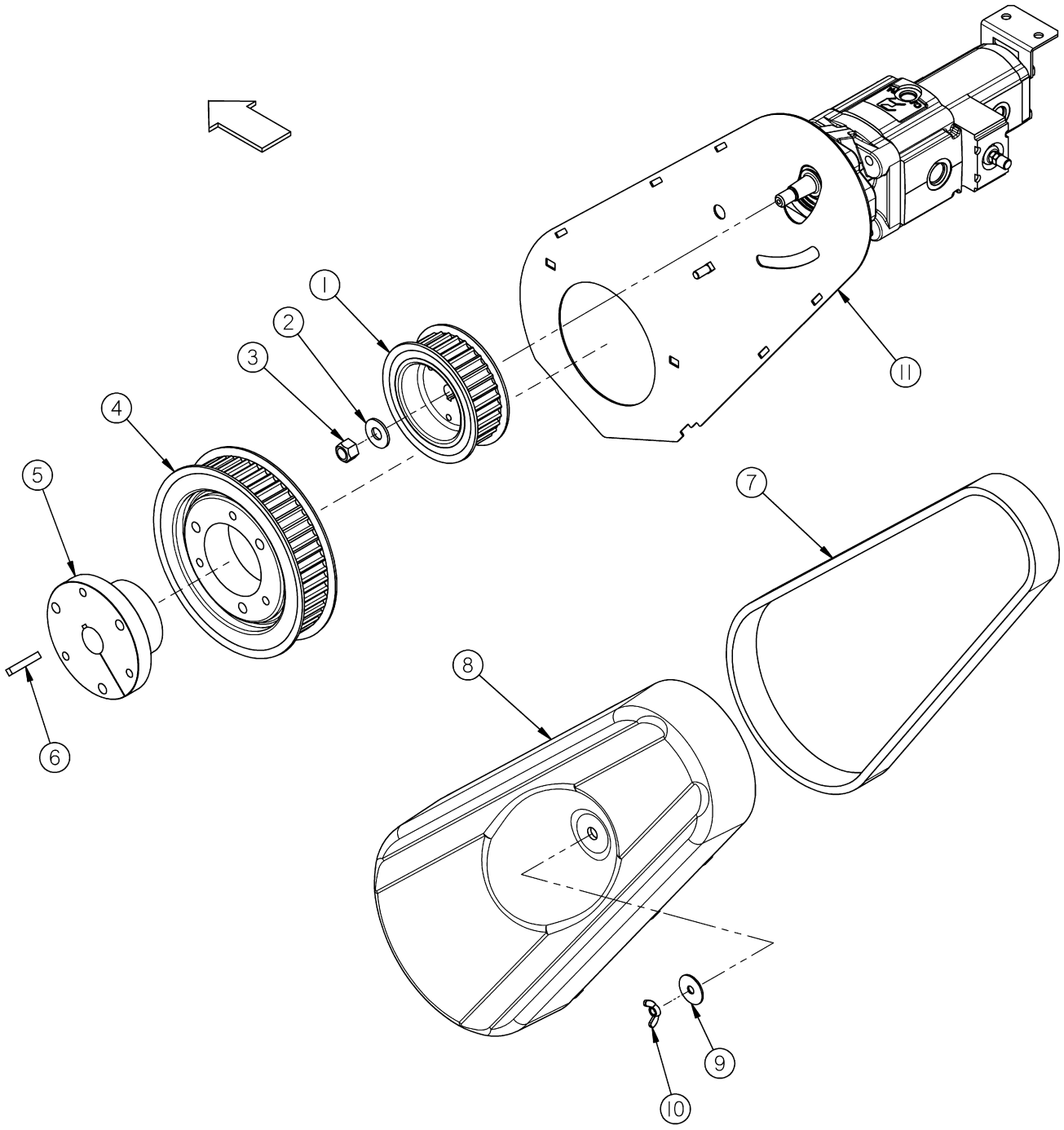
Ref	Part Number	Description	Qty	Serial Number
1	159452	BOLT WELDT – EYE	1	
2	130765	BOLT WELDT – EYE	2	
3	130757	SUPPORT – HYD MOTOR	1	
4	133965	SUPPORT – CASSAPA MOTOR	1	
5	159648	MOTOR – HYD FLOW DIVIDER, includes items 5A, 5B, 5C, 5D	1	
	159631	SEAL KIT, for motor		
5A	159645	MOTOR – HYD, GEAR (cast iron body) - PREFERRED		
	159649	MOTOR – HYD, GEAR (aluminum body) – use only if 159645 is unavailable		
5B	159633	NUT – 8mm special		
5C	159535	KEY – WOODRUFF (1/4 X 3/4 NOM.)	1	
5D	159632	VALVE – RELIEF	1	
7	40241	FITTING – ADAPTER HYD CW O-RING	1	
8	30970	FITTING – ELBOW 90° HYD	1	
9	135314	COUPLER – MALE HYD. 3/4 IN. FLAT FACE	1	
	135479	SEAL KIT – 3/4 MALE COUPLER		
10	135483	FITTING – ADAPTER HYD	1	
11	159029	HOSE	1	
12	135565	COUPLER – FEMALE HYD. 3/4 IN. FLAT FACE	1	
	111977	SEAL KIT – 3/4 FEMALE COUPLER		
13	21030	FITTING – CONNECTOR HYD, SAE 8	1[11]	
14	159646	HOSE	1[11]	
15	135237	COUPLER – MALE HYD. 3/8 IN. FLAT FACE BULKHEAD	1	
	111978	SEAL KIT – 3/8 MALE COUPLER		
16	21881	FITTING – ADAPTER HYD	1	
17	159028	HOSE	1	
18	135213	COUPLER – FEMALE HYD. 3/8 FLAT FACE BULKHEAD	1	
	135481	SEAL KIT – 3/8 FEMALE COUPLER		
19	159419	FITTING – ADAPTER HYD CW O-RING	1	
20	159635	VALVE – RELIEF	1	
21	135444	FASTENER – CINCH STRAP 6" LG	2	
22	159541	SHIELD WELD'T	1	
23	159634	BAR – TENSIONER	1	

11. Order items 13 and 14 together to ensure thread match.


1005024

Ref	Part Number	Description	Qty	Serial Number
A	21489	BOLT – RHSN 1/2 NC X 2.5 LG GR 5 ZP		
B	50186	NUT – FLANGE LOCK SM FACE DT 0.500-13UNC GR5		
C	21471	BOLT – RHSN 1/2 NC X 1.25 GR 5 ZP		
D	137503	BOLT – CSK SOCK. 1/2 NC X 1.75 GR. 5 ZP		
E	18599	WASHER – SAE FLAT 17/32 ID X 1 1/16 IN OD ZP		
F	18697	NUT – HEX LOCK DT .500-13UNC		
G	19965	BOLT – RHSN 3/8 NC X 1.0 GR 5 ZP		
H	30228	NUT – FLANGE DT SMOOTH FACE 0.375-16UNC		
J	21474	BOLT – RHSN 1/2 NC X 2.0 LG GR 5 ZP		
K	135507	SCREW – MACHINE,TRUSS HD TORX,38NCX1LG		

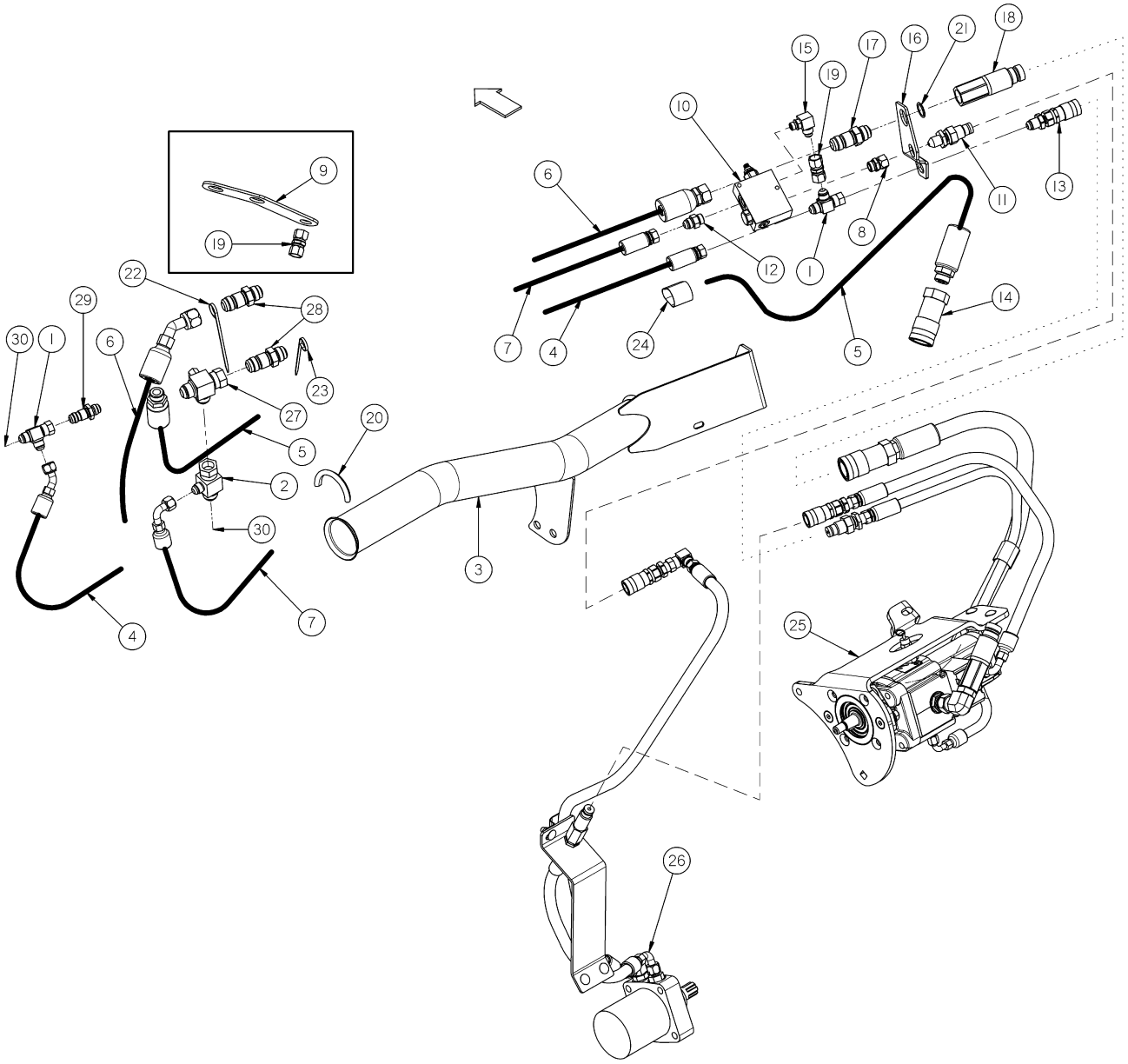
6.6 Belt Drive and Shield



1005025

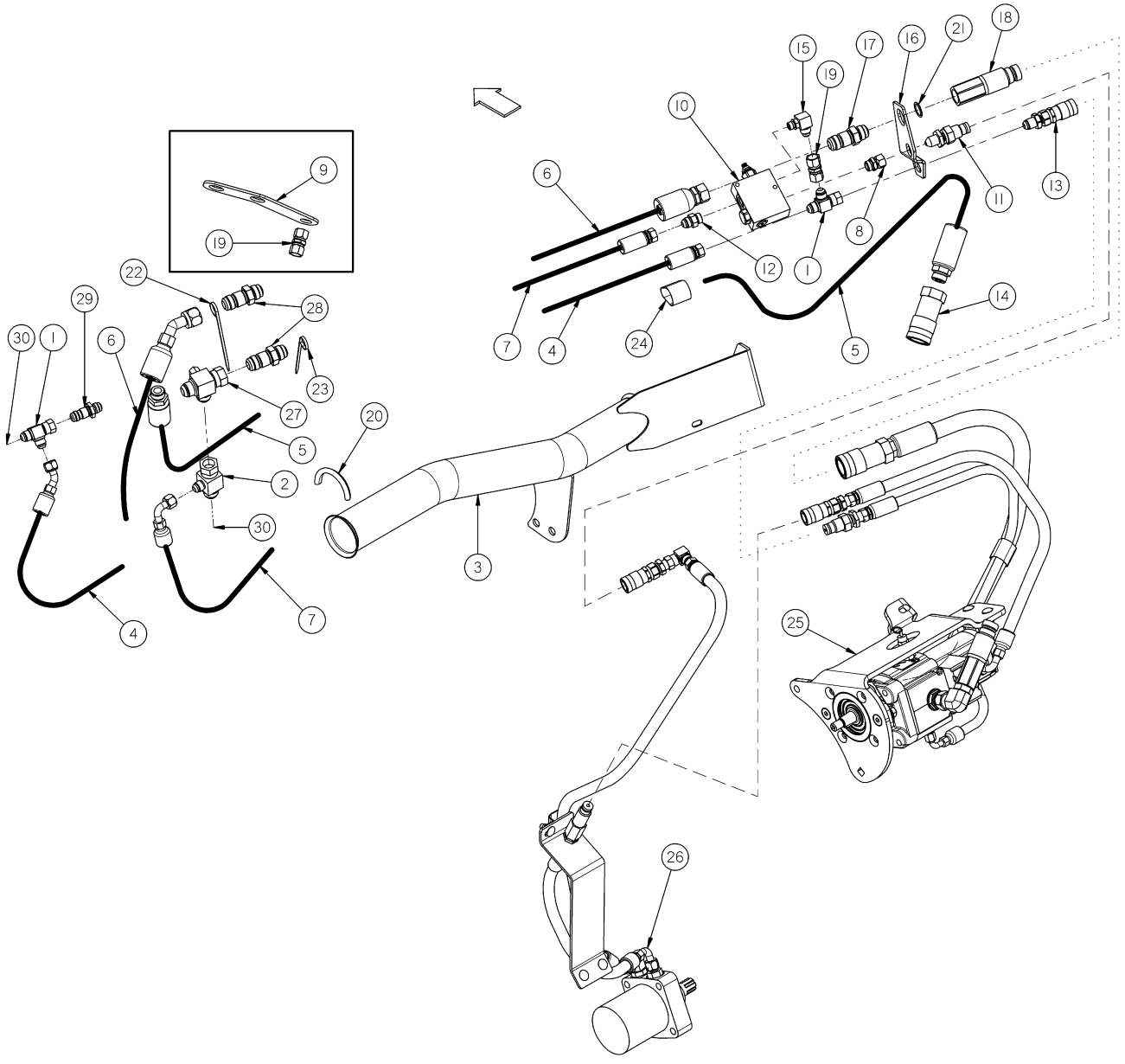
Ref	Part Number	Description	Qty	Serial Number
1	159430	SPROCKET – P32-14M-40	1	
2	1624	WASHER – SAE FLAT 5/8 ID X 1 15/32 IN OD ZP	1	
3	18714	NUT – HEX LOCK DT 5/8-18 UNF ZP	1	
4	159215	SPROCKET – P52 14M 40	1	
5	130880	BUSHING – SPLIT TAPER QD-E-1.375 BORE	1	
6	17194	KEY	1	
7	130706	BELT – HTD 1610-14M-40	1	
8	159168	SHIELD – HT DRIVE	1	
9	14045	WASHER – FLAT	1	
10	21289	NUT – WING TYPE A 3/8 NC ZP	1	
11	REF	See section 6.5 Hydraulic Motor, Mounts, and Tensioner, page 116.		

6.7 Hydraulic Completion Package



1005026

Ref	Part Number	Description	Qty	Serial Number
1	108268	FITTING – HYD TEE	2	
2	159038	VALVE – CHECK	1	
3	159158	HOLDER – HOSES	1	
4	159032	HOSE – **HYDRAULIC, 1/2 IN. ID**	1	
5	159030	HOSE – **HYDRAULIC, 3/4 IN. ID**	1	
6	120574	HOSE – **HYDRAULIC, 3/4 IN. ID**	1	
7	159159	HOSE – **HYDRAULIC, 1/2 IN. ID**	1	
8	135373	FITTING – ADAPTER HYD	1	
9	159358	SUPPORT – COUPLING — FOR 15’ FT. HEADER ONLY	1	
10	159417	VALVE – PRESSURE REDUCING	1	
11	135237	COUPLER – MALE HYD. 3/8 IN. FLAT FACE BULKHEAD	1	
	111978	SEAL KIT – 3/8 MALE		
12	21030	FITTING – CONNECTOR HYD	1	
13	135213	COUPLING – FEMALE HYD. 3/8 FLAT FACE BULKHEAD	1	
	135481	SEAL KIT – 3/8 FEMALE		
14	135565	COUPLER – FEMALE HYD. 3/4 IN. FLAT FACE	1	
	111977	SEAL KIT – 3/4 FEMALE		
15	21805	FITTING – ELBOW HYD	1	
16	159421	PLATE	1	
17	135372	FTG – 3/4" HYD BULKHEAD 37 DEG. FLAIR UNION	1	
18	135314	COUPLER – MALE HYD. 3/4 IN. FLAT FACE	1	
	135479	SEAL KIT – 3/4 MALE		
19	135540	FITTING – FEMALE UNION HYD (QTY 2 FOR 15’ HEADER)	1	
20	109791	MOULDING	1	
21	30971	O-RING	1	
22	40704	FASTENER – CABLE TIE ORANGE	2	
23	40703	FASTENER – CABLE TIE BLUE	1	
24	135444	FASTENER – CINCH STRAP 6" LG	1	
25	REF	See section 6.5 Hydraulic Motor, Mounts, and Tensioner, page 116.		
26	REF	See section 6.10 Feed Deck and Pan, page 130.		
27	REF	FITTING – HYD TEE-SPECIAL – See header parts catalog for connecting parts.	1	
28	REF	FITTING – 3/4" HYD BULKHEAD 37 DEG. FLAIR UNION – See header parts catalog for connecting parts.	2	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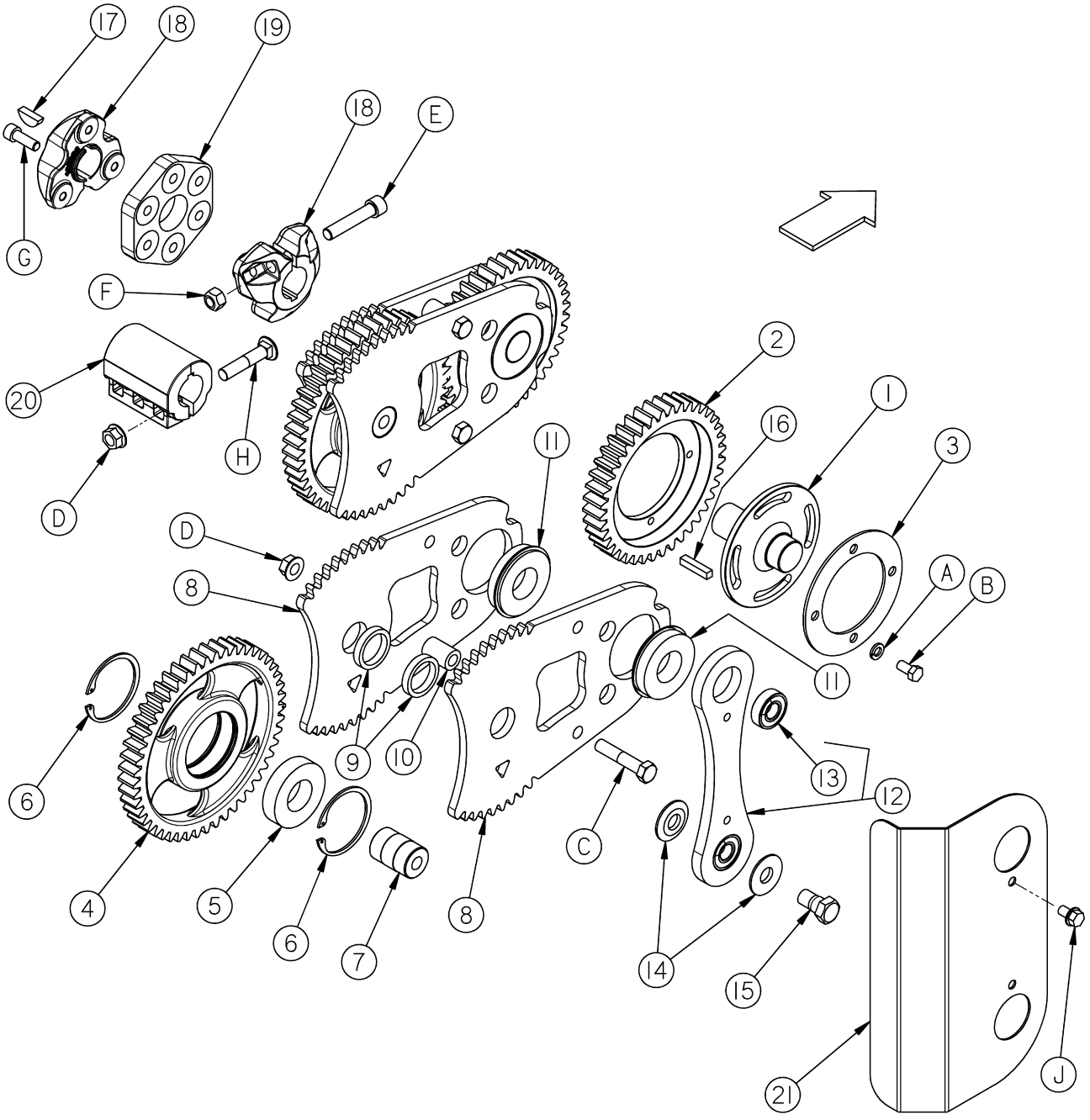
Ref	Part Number	Description	Qty	Serial Number
29	REF	FITTING – 1/2" UNION HYDRAULIC – See header parts catalogfor connecting parts.	1	
30	REF	See header parts catalog for connecting parts.		

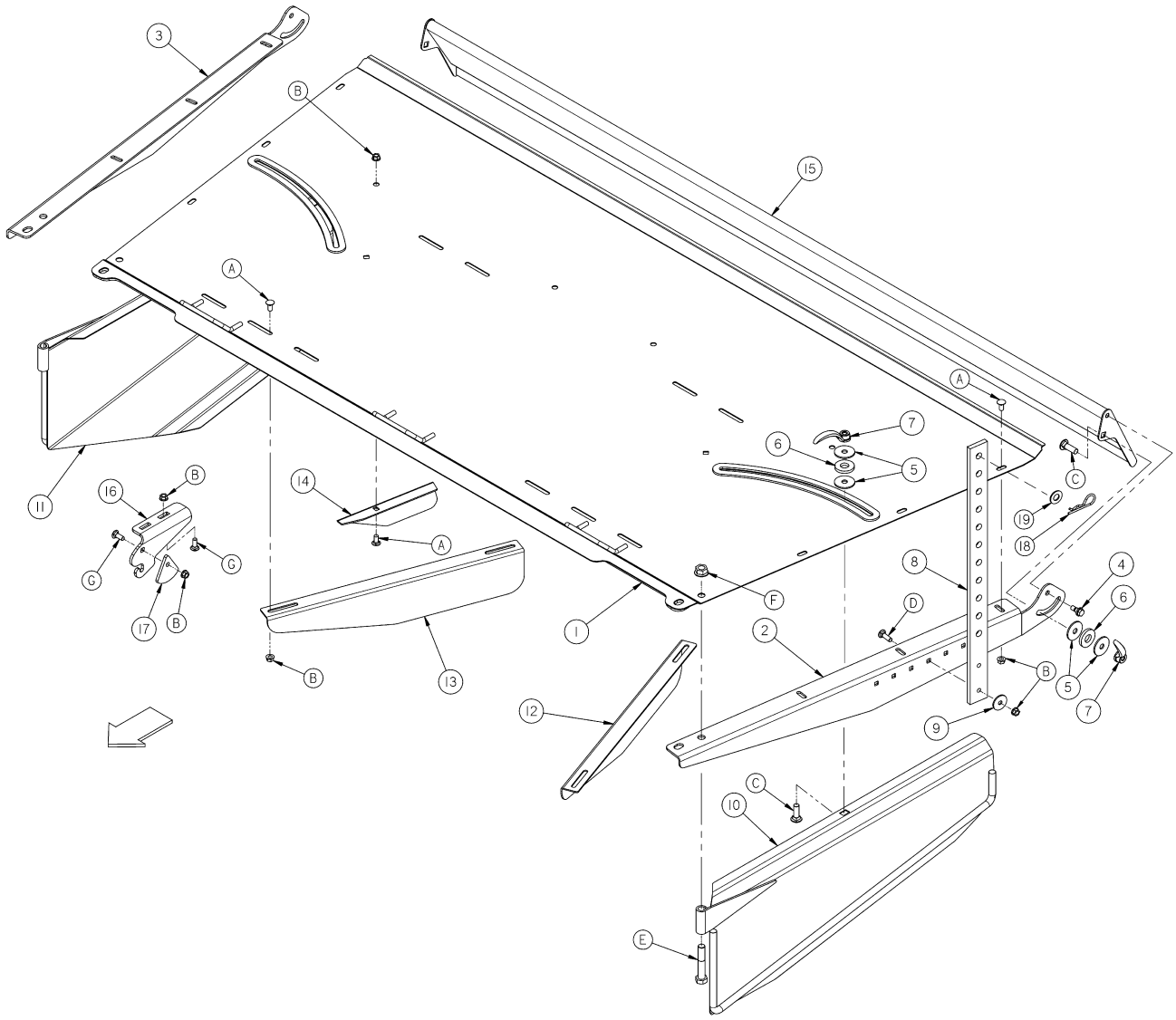
6.8 Gears and Roll Coupling Assembly



1005027

Ref	Part Number	Description	Qty	Serial Number
1	159550	HUB – MACHINING	2	
2	130680	GEAR – 40T	2	
3	129932	DISK	2	
4	130677	GEAR – 49T	2	
5	159474	BEARING – BALL CYL	2	
6	38854	RING – INT RETAINING	4	
7	130687	SHAFT – IDLER	2	
8	130685	PLATE, SIDE HEAT TREATMENT	4	
9	130689	SPACER	4	
10	130694	SPACER	4	
11	159478	BEARING – BALL CYL C3 WITH SNAP RING	4	
12	130691	SUB-ASSEMBLY – LINK	2	
13	50185	BEARING – BALL CYL OD 17 MM BORE	4	
14	130688	WASHER – MACHINED 11/16 ID X 1.75 IN OD ZP	8	
15	105141	BOLT – LOCKING SHOULDER	4	
16	26846	KEY – HUB TO COUPLING	2	
17	11142	KEY – WOODRUFF (5/16 X 1 1/8 NOM.)	2	
18	130936	COUPLING – FLEX – MACHINING, UPPER ROLL	2	
19	130736	DISC – FLEX, UPPER ROLL	1	
20	159130	COUPLING – MACHINING, LOWER ROLL	1	
21	159218	COVER	1	
A	18637	WASHER – REG. LOCK 3/8 IN. NOM. ID ZP		
B	21567	BOLT – HEX HD .375-16UNC X 0.75 LG		
C	21760	BOLT – HH 1/2 NC X 2.5 LG GR 5 ZP		
D	50186	NUT – FLANGE LOCK SM FACE DT 0.500-13UNC GR5		
E	135403	BOLT – SKT HD 1/2 NC X 2.5 LG		
F	18697	NUT – HEX LOCK DT .500-13UNC		
G	135401	BOLT – HEX SOC HD M10 X 1.5 X 30 LG ZP		
H	21489	BOLT – RHSN 1/2 NC X 2.5 LG GR 5 ZP		
J	101898	SCREW – HEX WASH HD THD ROLLING 3/8 NC X 5/8		

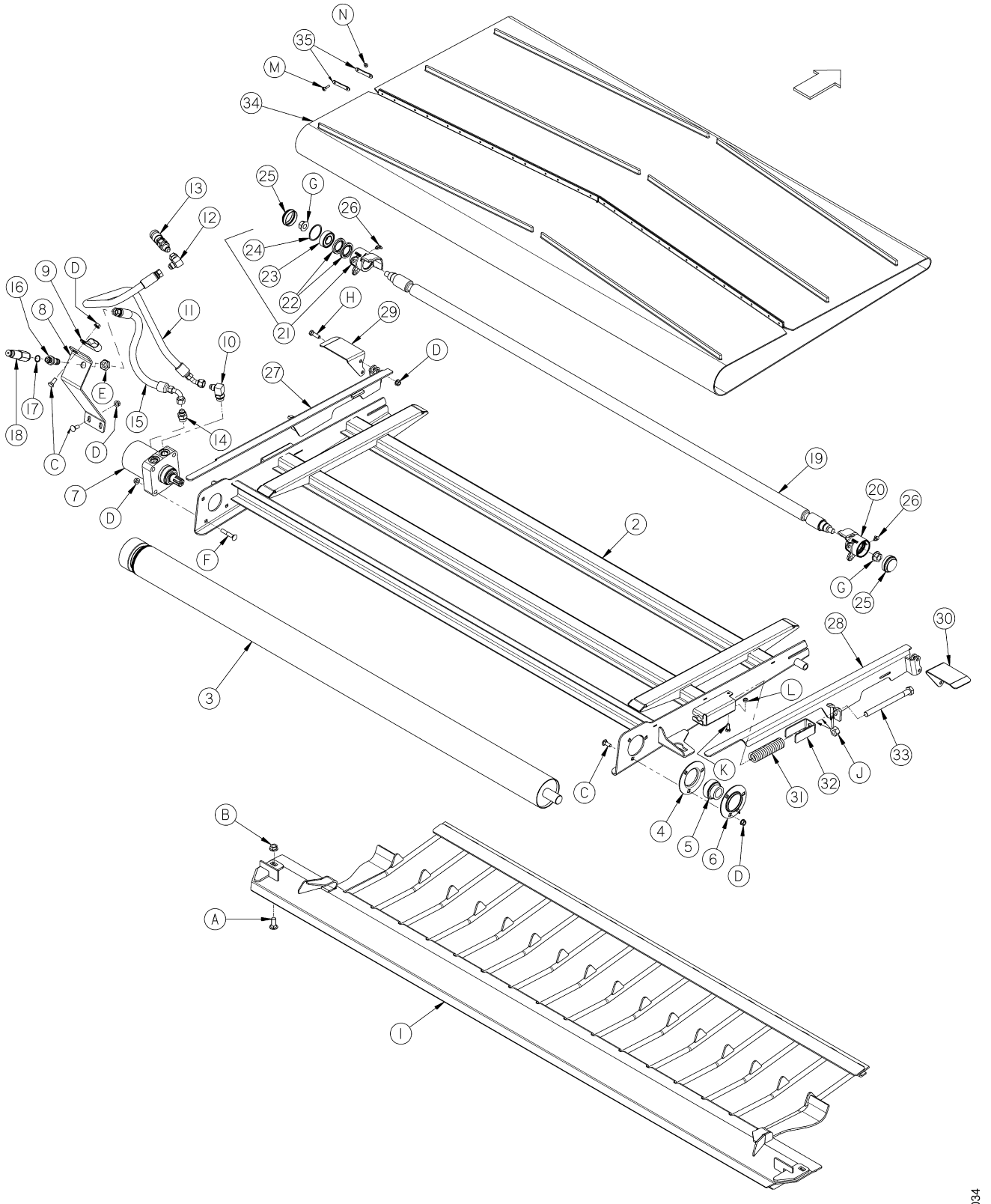
6.9 Forming Shields



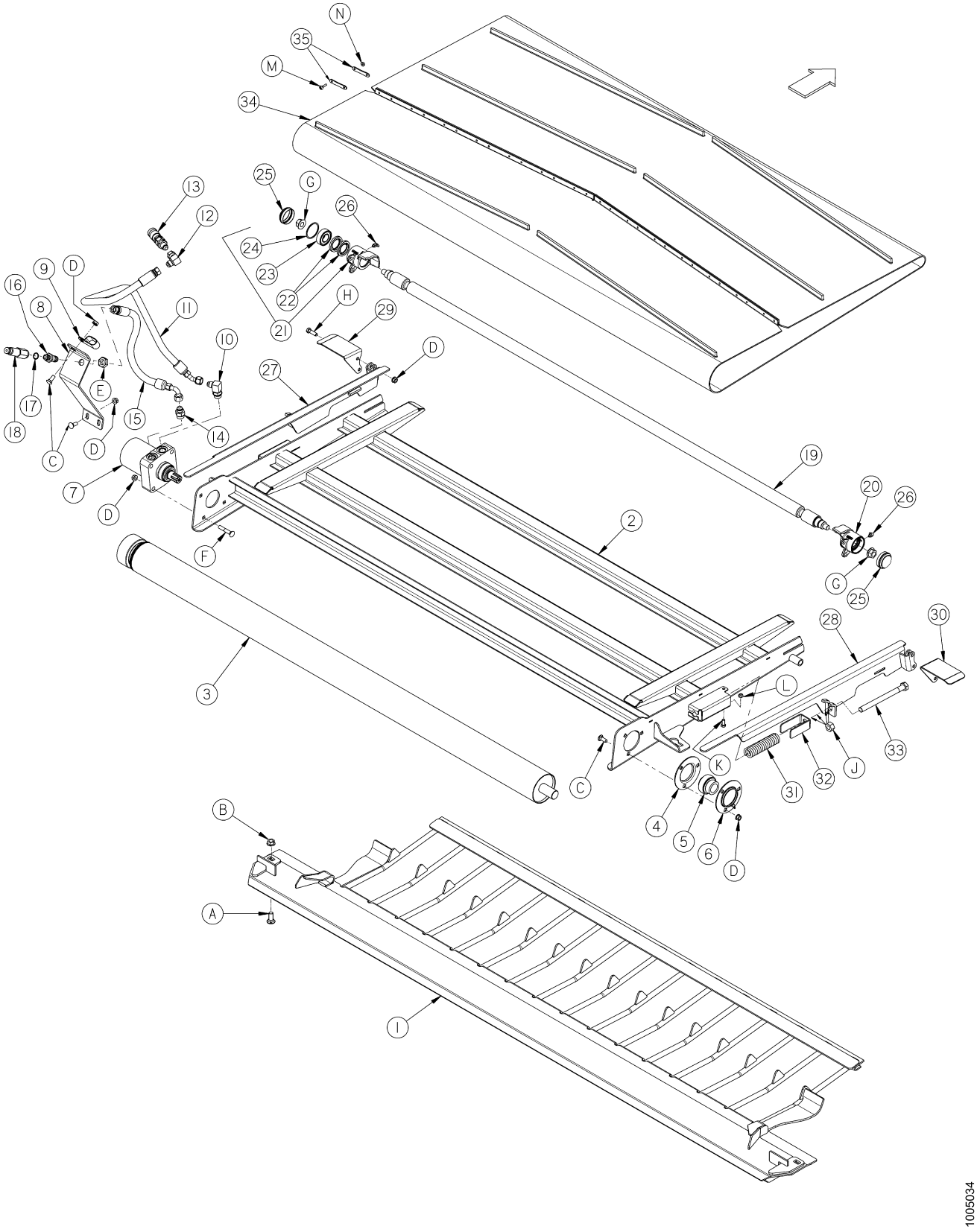
1005029

Ref	Part Number	Description	Qty	Serial Number
1	159204	COVER WELDT	1	
2	159206	SUPPORT – STRUT LH	1	
3	159207	SUPPORT – STRUT RH	1	
4	135001	BOLT – SHOULDER .375-16UNC	2	
5	42592	WASHER – FLAT	8	
6	42045	WASHER – RUBBER	4	
7	149317	HANDLE	4	
8	159294	STRAP – RUBBER	2	
9	16652	WASHER – FLAT	2	
10	159220	DEFLECTOR WELDT, LH	1	
11	130911	DEFLECTOR WELDT, RH	1	
12	130905	DEFLECTOR – FIN LH	1	
13	130906	DEFLECTOR – FIN RH	1	
14	130548	DEFLECTOR – FIN	4	
15	130900	BAFFLE	1	
16	159598	SUPPORT – HANGER (TRACTOR MOUNTED)	1	
17	159325	SUPPORT – KEEPER	1	
18	13125	PIN – HAIR	2	
19	18600	WASHER – FLAT, 21/32 ID X 1 5/16 IN OD ZP	2	
A	21863	BOLT – RHSSN 3/8 NC X 0.75 LG GR 5 ZP		
B	30228	NUT – FLANGE DT SMOOTH FACE 0.375-16UNC		
C	21469	BOLT – RHSN 1/2 NC X 1.5 LG GR 5 ZP		
D	19966	BOLT – RHSN 3/8 NC X 1.25 LG GR 5 ZP		
E	21406	BOLT – HH 5/8 NC X 3.5 GR 5 ZP		
F	50225	NUT – FLANGE DT SMOOTH FACE .625-11UNC		
G	19965	BOLT – RHSN 3/8 NC X 1.0 GR 5 ZP		

6.10 Feed Deck and Pan



Ref	Part Number	Description	Qty	Serial Number
1	159432	PAN- – FINGER FEED WELDT	1	
2	159399	FRAME, FEED DECK – WELDT	1	
3	133838	ROLLER – DRIVE 4", WELDT	1	
4	49306	FLANGE	1	
5	21859	BEARING – SPH OD EXT INNER RACE 1 3/16 BORE	1	
6	30661	FLANGE	1	
7	159197	MOTOR – HYD 4.0 CID (WITH 921 PSI RELIEF)	1	
	37181	SEAL KIT – FOR MOTOR 159197		
	159606	VALVE – RELIEF, 921 PSI		
8	159183	HOLDER – COUPLING	1	
9	103738	CLAMP – PVC INSULATED 13/16 " TUBE SIZE	1	
10	21801	FITTING – ELBOW 90° HYD	1	
11	130998	HOSE	1	
12	30314	FITTING – ELBOW 90° HYD	1	
13	135213	COUPLING – FEMALE HYD. 3/8 FLAT FACE BULKHEAD	1	
	135481	SEAL KIT – FOR 3/8 FEMALE COUPLER		
14	21881	FITTING – ADAPTER HYD	1	
15	159422	HOSE	1	
16	30819	FTG – 1/2" HYD UNION	1	
17	44209	O-RING	1	
18	135386	COUPLER – MALE HYD. 3/8 IN. FLAT FACE	1	
	111978	SEAL KIT – FOR 3/8 MALE COUPLER		
19	159256	SHAFT – IDLER ROLLER	1	
20	133124	HOUSING ASSY – RH IDLER CUP (includes items 22–24)	1	
21	133126	HOUSING ASSY – LH IDLER CUP (includes items 22–24)	1	
22	100862	SEAL – OIL	4	
23	118185	BEARING – BALL CYL, 52 MM O.D., 25 MM I.D.	2	
24	118011	RING – RETAINING INTERNAL	2	
25	133372	CAP, DUST	2	
26	21010	FTG – LUBE 90 DEG 1/4 - 28 TAPER THD	2	
27	159383	SUPPORT WELDT – LH	1	
28	159385	SUPPORT WELDT – RH	1	
29	159260	GUIDE – LH	1	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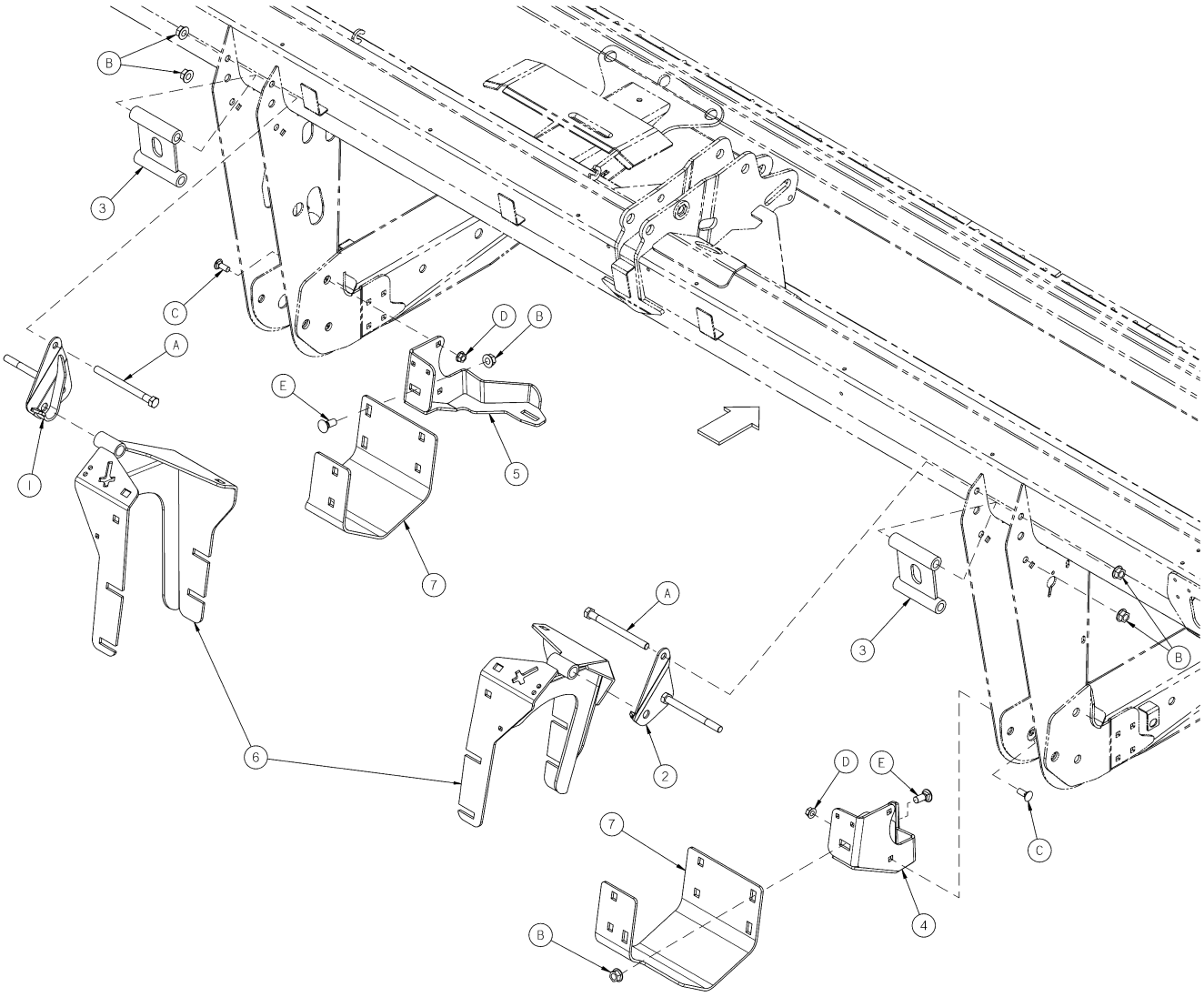
Ref	Part Number	Description	Qty	Serial Number
30	159264	GUIDE – RH	1	
31	133946	SPRING – COMPRESSION	2	
32	130246	RETAINER – SPRING	2	
33	50190	BOLT – HH (MIN THD) 5/8 NC X 7.5 LG GR 5 ZP	2	
34	159393	DRAPER – 1850 WIDE X 2107 LONG	1	
35	130283	STRAP – DRAPER CONN	28	
A	21471	BOLT – RHSN 1/2 NC X 1.25 GR 5 ZP		
B	50186	NUT – FLANGE LOCK SM FACE DT 0.500-13UNC GR5		
C	19965	BOLT – RHSN 3/8 NC X 1.0 GR 5 ZP		
D	30228	NUT – FLANGE DT SMOOTH FACE 0.375-16UNC		
E	7674	NUT – HEX JAM 3/4 -16 UNF GR 5 ZP		
F	21485	BOLT – RHSN 3/8 NC X 2.25 LG GR 5 ZP		
G	50225	NUT – FLANGE DT SMOOTH FACE .625-11UNC		
H	21264	BOLT – HH 3/8 NC X 1.25 LG GR 5 ZP		
J	18592	NUT – HEX 5/8 - 11 UNC GR 5 ZP		
K	21558	BOLT – HEX HD 5/16 NC X 0.75 LG GR 5 ZP		
L	18690	NUT –HEX LOCK DT 5/16-18 UNC ZP		
M	49671	SCREW – BUTTON HD RIB NK; #12-24 NC X 0.920 IN. LG		
N	30669	NUT – CSK CENTER LOCK#12 - 24 NC		

6.11 Mounting Brackets



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Ref	Part Number	Description	Qty	Serial Number
1	130802	SUPPORT – LH WELDT	1	
2	130803	SUPPORT – RH WELDT	1	
3	159590	SPACER BRACKET	2	
4	130831	SUPPORT – RH WELDT	1	
5	130817	SUPPORT – LH WELDT	1	
6	REF	See 6.4 Cover and Supports, page 112.		
7	REF	See 6.2 Lower Roll and Frame Assembly, page 108.		
A	50190	BOLT – HH (MIN THD) 5/8 NC X 7.5 LG GR 5 ZP		
B	50225	NUT – FLANGE DT SMOOTH FACE .625-11UNC		
C	21471	BOLT – RHSN 1/2 NC X 1.25 GR 5 ZP		
D	50186	NUT – FLANGE LOCK SM FACE DT 0.500-13UNC GR5		
E	18523	BOLT – RHSN 5/8 NC X 1.5 GR 5 ZP		

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Model HC10 Hay Conditioner Predelivery Checklist

Perform these checks and adjustments prior to delivery to your Customer. Refer to Unloading and Assembly Instructions for adjustment details. The completed checklist should be retained either by the Operator or the Dealer.

CAUTION

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

Conditioner Serial Number: _____

✓	Item	Reference
	Check for shipping damage or missing parts. Be sure all shipping dunnage is removed.	—
	Check roll drive belt tension.	3.12.1 Checking Roll Drive Belt Tension, page 59
	Check conditioner roll gap, timing, and alignment.	3.12.2 Checking Roll Gap, page 60 and 3.12.3 Checking Roll Timing, page 60
	Check rear and side forming shields evenly set to desired position.	3.9 Installing the Forming Shield, page 53
	Grease all bearings.	3.11 Lubricating the Conditioner, page 56
	Check roll intermesh hardware is securely tightened.	4.9.2 Adjusting Roll Gap, page 80
	Check hydraulic hose routing.	4.3 Attaching Hay Conditioner to Header, page 65
	RUN-UP PROCEDURE	3.12.4 Running Up the Conditioner, page 61
	Check reverse operating mode.	See windrower manual.
	Check hydraulic hose routing for clearance when raising or lowering header.	—
	POST RUN-UP CHECKS. STOP ENGINE.	—
	Check for hydraulic leaks.	—
	Check belt drive for alignment and heated bearings.	5.7 Drive Belt, page 96
	Check manuals in windrower cab.	3.12.5 Storing Manuals, page 62

Date checked: _____

Checked by: _____

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