

# 2142, 2152 and 2162 Draper Header CA20 Combine Adapter

## Service Manual

84175530  
(Replaces 84135858)  
Issued April, 2009

**CASE II**  
AGRICULTURE

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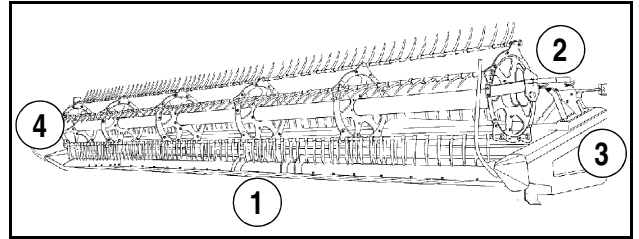
## GENERAL INFORMATION

This Service Manual contains important information about the working, adjustment, and repair of your Draper Header and Combine Adapter. Refer to the Table of Contents at the beginning of this manual to locate specific items about the machine.

This Service Manual should be used in conjunction with the Draper Header Operator's Manual.

The Left and Right side of the Draper Header and Combine Adapter are the same as your Left and Right hand while seated in the Combine Operator's seat facing forward in a normal field operation position.

**NOTE:** Throughout this manual you will see a  symbol. The information supplied after the symbol offers suggestions to help you with the operation and maintenance of the machine.



RR08F014

1. FRONT  
2. REAR


3. LEFT SIDE  
4. RIGHT SIDE


### RIGID HEADER SHOWN

## STANDARD BOLT TORQUE

**NOTE:** The tables below give correct torque values for various bolt sizes. Tighten all bolts specified in the tables unless otherwise noted.


### U.S. Standard


Grade 5 Bolts, Nuts, and Studs		
		
Size	Pound-Inches	Newton metres
1/4 inch	108 to 132	12 to 15
5/16 inch	204 to 252	23 to 28
3/8 inch	420 to 504	48 to 57
Size	Pound-Feet	Newton metres
7/16 inch	54 to 64	73 to 87
1/2 inch	80 to 96	109 to 130
9/16 inch	110 to 132	149 to 179
5/8 inch	150 to 180	203 to 244
3/4 inch	270 to 324	366 to 439
7/8 inch	400 to 480	542 to 651
1.0 inch	580 to 696	787 to 944
1-1/8 inch	800 to 880	1085 to 1193
1-1/4 inch	1120 to 1240	1519 to 1681
1-3/8 inch	1460 to 1680	1980 to 2278
1-1/2 inch	1940 to 2200	2631 to 2983

Grade 8 Bolts, Nuts, and Studs		
		
Size	Pound-Inches	Newton metres
1/4 inch	144 to 180	16 to 20
5/16 inch	288 to 348	33 to 39
3/8 inch	540 to 648	61 to 73
Size	Pound-Feet	Newton metres
7/16 inch	70 to 84	95 to 114
1/2 inch	110 to 132	149 to 179
9/16 inch	160 to 192	217 to 260
5/8 inch	220 to 264	298 to 358
3/4 inch	380 to 456	515 to 618
7/8 inch	600 to 720	814 to 976
1.0 inch	900 to 1080	1220 to 1465
1-1/8 inch	1280 to 1440	1736 to 1953
1-1/4 inch	1820 to 2000	2468 to 2712
1-3/8 inch	2380 to 2720	3227 to 3688
1-1/2 inch	3160 to 3560	4285 to 4827

**NOTE:** Use thick nuts with Grade 8 bolts.

**Metric**

<b>Grade 8.8 Bolts, Nuts, and Studs</b>		
		
Size	Pound-Inches	Newton metres
M4	24 to 36	3 to 4
M5	60 to 72	7 to 8
M6	96 to 108	11 to 12
M8	228 to 276	26 to 31
M10	456 to 540	52 to 61
Size	Pound-Foot	Newton metres
M12	66 to 79	90 to 107
M14	106 to 127	144 to 172
M16	160 to 200	217 to 271
M20	320 to 380	434 to 515
M24	500 to 600	675 to 815
M30	920 to 1100	1250 to 1500
M36	1600 to 1950	2175 to 2600

<b>Grade 10.9 Bolts, Nuts, and Studs</b>		
		
Size	Pound-Inches	Newton metres
M4	36 to 48	4 to 5
M5	84 to 96	9 to 11
M6	132 to 156	15 to 18
M8	324 to 384	37 to 43
Size	Pound-Foot	Newton metres
M10	54 to 64	73 to 87
M12	93 to 112	125 to 150
M14	149 to 179	200 to 245
M16	230 to 280	310 to 380
M20	450 to 540	610 to 730
M24	780 to 940	1050 to 1275
M30	1470 to 1770	2000 to 2400
M36	2580 to 3090	3500 to 4200

**Metric Torque for Aluminum Components**

<b>Bolt Diameter</b>	<b>Grade 8.8</b>		<b>Grade 10.9</b>	
	<b>Nm</b>	<b>Pound Foot</b>	<b>Nm</b>	<b>Pound Foot</b>
M3				1
M4			4	2.6
M5			8	5.5
M6	9	6	12	9
M8	20	14	28	20
M10	40	28	55	40
M12	70	52	100	73

## HYDRAULIC FITTINGS

Tube OD Hose ID	Thread Size	Pound- Inches	Newton metres
<b>37 Degree Flare Fitting</b>			
1/4 inch 6.4 mm	7/16-20	72 to 144	8 to 16
5/16 inch 7.9 mm	1/2-20	96 to 192	11 to 22
3/8 inch 9.5 mm	9/16-18	120 to 300	14 to 34
1/2 inch 12.7 mm	3/4-16	180 to 504	20 to 57
5/8 inch 15.9 mm	7/8-14	300 to 696	34 to 79
Tube OD Hose ID	Thread Size	Pound- Foot	Newton metres
3/4 inch 19.0 mm	1-1/16-12	77 to 82	104 to 111
7/8 inch 22.2 mm	1-3/16-12	90 to 100	122 to 136
1.0 inch 25.4 mm	1-5/16-12	110 to 120	149 to 163
1-1/4 inch 31.8 mm	1-5/8-12	140 to 150	190 to 204
1-1/2 inch 38.1 mm	1-7/8-12	225 to 240	305 to 325

Tube OD Hose ID	Thread Size	Pound- Inches	Newton metres
<b>Straight Threads with O-ring</b>			
1/4 inch 6.4 mm	7/16-20	144 to 228	16 to 26
5/16 inch 7.9 mm	1/2-20	192 to 300	22 to 34
3/8 inch 9.5 mm	9/16-18	300 to 480	34 to 54
1/2 inch 12.7 mm	3/4-16	540 to 804	57 to 91
Tube OD Hose ID	Thread Size	Pound- Foot	Newton metres
5/8 inch 15.9 mm	7/8-14	58 to 92	79 to 124
3/4 inch 19.0 mm	1-1/16-12	80 to 128	108 to 174
7/8 inch 22.2 mm	1-3/16-12	100 to 160	136 to 216
1.0 inch 25.4 mm	1-5/16-12	117 to 187	159 to 253
1-1/4 inch 31.8 mm	1-5/8-12	165 to 264	224 to 357
1-1/2 inch 38.1 mm	1-7/8-12	250 to 400	339 to 542

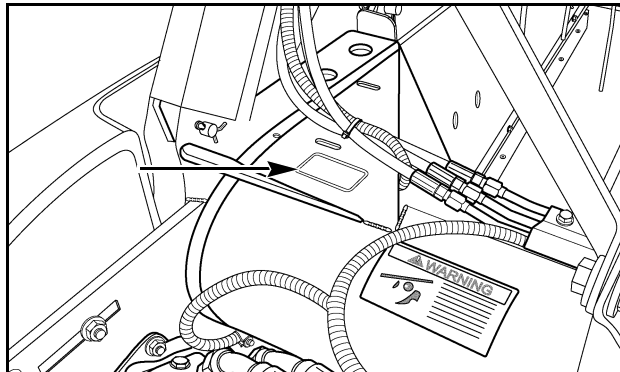
## Steel Hydraulic Fittings

Nom. SAE Dash Size	Tube OD	Thread Size	Pound-Inches	Newton metres	Thread Size	Pound-Inches	Newton metres
<b>O-ring Face Seal End</b>					<b>O-ring Boss End Fitting or Lock Nut</b>		
-4	1/4 inch 6.4 mm	9/16-18	120 to 144	14 to 16	7/16-20	204 to 240	23 to 27
-6	3/8 inch 9.5 mm	11/16-16	216 to 240	24 to 27	9/16-18	300 to 360	34 to 41
-8	1/2 inch 12.7 mm	13/16-16	384 to 480	43 to 54	3/4-16	540 to 600	61 to 68
					Thread Size	Pound-Foot	Newton metres
-10	5/8 inch 15.9 mm	1-14	552 to 672	62 to 76	7/8-14	35 to 40	47 to 54
Nom. SAE Dash Size	Tube OD	Thread Size	Pound-Foot	Newton metres	1-1/16-12	60 to 70	81 to 95
					1-3/16-12	70 to 80	95 to 109
-12	3/4 inch 19.0 mm	1-3/16-12	65 to 70	90 to 95	1-5/16-12	80 to 90	108 to 122
-14	7/8 inch 22.2 mm	1-3/16-12	65 to 70	90 to 95	1-5/8-12	95 to 115	129 to 156
-16	1.0 inch 25.4 mm	1-7/16-12	92 to 100	125 to 135	1-7/8-12	120 to 140	163 to 190
-20	1-1/4 inch 31.8 mm	1-11/16-12	125 to 140	170 to 190			
-24	1-1/2 inch 38.1 mm	2-12	150 to 165	200 to 225			

## PRODUCT IDENTIFICATION NUMBERS

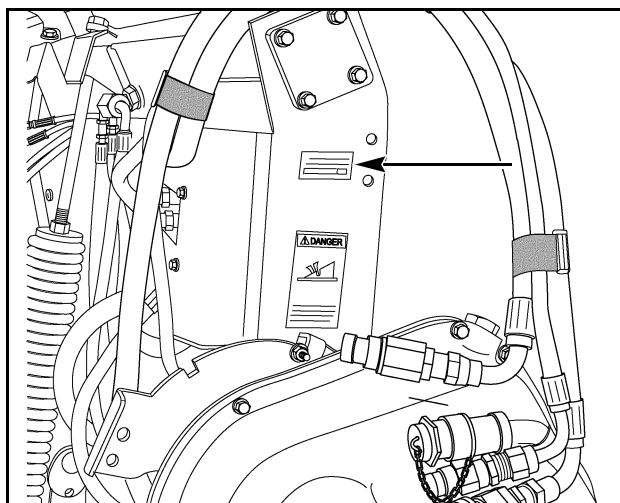
When ordering parts or when requesting information or assistance always give the following information:

1. Machine Name
2. Model Number
3. Product Identification Number (P.I.N.)



RR06E027

**HEADER P.I.N. PLATE - LEFT SIDE GUSSET  
NEAR MAIN TUBE**



RR06J046

**COMBINE ADAPTER P.I.N. PLATE - ADAPTER  
FRAME ABOVE MAIN DRIVE GEARBOX**

## ENVIRONMENT

Before you service this machine and before you dispose of the old fluids and lubricants, always remember the environment. DO NOT put oil or fluids into the ground or into containers that leak.

Check with your local environmental or recycling center or your dealer for correct disposal information.

## DISASSEMBLY, DECOMMISSIONING OR SCRAPPING THE MACHINE

When the machine is taken out of service, because it is damaged beyond repair or has reached the end of its useful life, disassembly, scrapping and/or recycling of components, tires, fluids, etc. must be performed by a qualified technician.

Compliance with local laws and regulations are required. Check with your local environmental or recycling center for correct disposal information.

Always remember the environment.



RR08K002

## PLASTIC AND RESIN PARTS

Avoid using gasoline, kerosene, paint thinner, etc., when cleaning plastic or resin parts. Use ONLY water, mild soap and a soft cloth when you clean these parts.

Using gasoline, kerosene, thinners, etc., will cause discoloration, cracking or deformation of the part being cleaned.

## SAFETY DECALS

Refer to your Header Operator's Manual for safety decals and locations.

**IMPORTANT:** *Install new decals if the old decals are destroyed, lost, painted over or cannot be read. When parts are replaced that have decals make sure you install a new decal with each new part.*

## LUBRICATION AND MAINTENANCE CHART

SERVICE POINTS	FREQUENCY IN HOURS					
	N O. O F P O I N T S	G R E A S E	L U B R I C A T E	C H E C K	C H A N G E	R E P L A C E
Cutter Bar (Refer to Note 1)	1		10			
Hydraulic Hoses	1			10		
Sickle Sections, Guards and Hold-Downs	1			10		
Tire Pressure	2			10		
Sickle Head - Single Knife (Refer to Note 2)	1	25				
Sickle Head - Double Knife Refer to Note 2)	2	25				
Hydraulic Reservoir	1			25		
Reel Universal	1	50				
Double Knife Drive Bearing	1*	50				
Double Knife Drive Shaft (15 grease gun pumps minimum)	1*	50				
Idler Roller	1	50				
Drive Shaft Slip Joint	1	50				
Drive Universal	2	50				
Drive Shaft Splines	1		50			
Drive Roller Bearing	1	50				
Feed Draper Roller Bearing	1		50			
Float Spring Tensioners	2	100				
Reel Drive Chain	1	100				
Auger Bearing	1	100				
Auger Drive Chain	1	100				
Main Drive Gearbox	1			100	1500	
Auger Drive Shaft	1	100				
Vibration Damper Pivot	1*	100				
Drive Shaft Guard	2	100				
Float Pivot	2	100				
Hydraulic Connections and Couplers (Refer to Note 3)	3		100	10		
Wobble Box (Refer to Note 4)	1			100	1000	
Auger to Pan and Draper Clearance	1			100		

**1 - GENERAL INFORMATION AND SAFETY**

SERVICE POINTS	FREQUENCY IN HOURS					
	N O. O F P O I N T S	G R E A S E	L U B R I C A T E	C H E C K	C H A N G E	R E P L A C E
Wheel Pivots - Right Side	2	250				
Wheel Pivots - Left Side	1	250				
Frame/Wheel Pivot	1*	250				
Auger Pivot	1*	250				
Hydraulic Oil Filter	1				250	
Wheel Axle - Right Side	2	500				
Flex Linkage (Flex Header)	1	500				
Transport/Stabilizer Wheel Hub Bearings (If equipped)	2	500				
Reel Center Bearing	1	500				
Reel Shaft - Right Bearing	1	500				
Reel Shaft - Left Bearing	1	500				
Wheel Bearings	2*	500				
Hydraulic Oil	1				1500	
Float Adjusters	2*	A				

Use NLGI Number 2 Multi Purpose Lithium 251H EP Grease.

\* Per Side

A = ANNUALLY

NOTE 1: Use SAE 15W40 No. 1 Engine Oil

NOTE 2: Refer to Sickle Head Lubrication in this Section of the Manual

NOTE 3: Use WD40® or equivalent

NOTE 4: Use SAE 85W-140 Gear 135H EP

**OIL CAPACITIES**

Main Gearbox .....	2.5 Liters (5 pints)
Hydraulic Reservoir .....	60 Liters (16 gallons)
Wobble Box.....	2.2 Liters (2.3 U.S. quarts)

## GENERAL SAFETY INFORMATION

Understand that your safety and the safety of other persons is measured by how you service and operate this machine. Know the positions and operations of all controls before you try to operate. **MAKE SURE YOU CHECK ALL CONTROLS IN A SAFE AREA BEFORE STARTING YOUR WORK.**

Make sure you understand all the controls of the machine. Refer to Operator's Manual. All equipment has limits.

CNH America LLC is continuing to work for your safety: by making machines with better protection and by giving these rules for safe operation and servicing the machine.



**DANGER:** The Safety Alert Symbol and Safety messages that follow indicate extremely important information in this manual. When you see this symbol, carefully read and understand the messages that follow. Failure to read and understand these messages will cause death or serious injury. M171D



### Safety Rules



- Failure to comply to the following messages may result in death or serious injury.
- Always shut OFF engine, remove the key and engage feeder safety lock in position on lift cylinder before working under Header or feeder. Failure to engage feeder safety lock could cause death or serious injury. M184E
- Never make adjustments when machine is running. Failure to comply could result in death or serious injury. M208C
- Never operate the machine with shields remove. Always install shields after servicing the machine. Failure to comply could result in death or serious injury. M423A
- ALWAYS make sure working area is clear of other persons before you start operating this machine. NEVER allow anybody in work area during machine operation or servicing.
- Avoid eye injury when using a drill, hammer, saw, or other tools that may cause chips to fly. Always wear safety glasses when working. Failure to comply could result in death or serious injury. M428B
- NEVER operate the machine with covers, panels or guards removed. Reinstall all covers, panels or guards after servicing or cleaning the machine. Failure to comply could result in death or serious injury. CM115B
- Do Not modify the machine. Unauthorized modifications may cause operational malfunction or safety hazard.
- ALWAYS make sure working area is clear of other persons, pets, tools, etc. before you start operating this machine. NEVER allow anybody in work area during machine operation.
- ALWAYS sound horn before starting the Combine.
- Keep service area clean and dry. Wet or oily floors are slippery. Wet areas can be dangerous when working with electrical equipment. Be sure all electrical outlets and tools are properly grounded.
- ALWAYS disconnect the battery (both terminals) before welding on any part of the machine. Always wash your hands after battery components. Failure to comply could damage sensitive electrical components, death or serious injury. M866A

## 1 - GENERAL INFORMATION AND SAFETY

---

- Eliminate falls or serious injury in work areas. Keep work areas organized and clean. Wipe up oil or spills of any kind. Keep tools and parts off the floor. Failure to comply could result in death or serious injury. M429A
- Avoid injury or machine damage. After installation or servicing, make sure all tools and any equipment used during installation or service are removed from the machine. Failure to comply could result in machine damage, death or serious injury. M430B
- Never exit the machine until all components and/or attachments are down resting on the ground. Failure to comply could result in death or serious injury. M1330
- A frequent cause of death or serious injury is persons falling off the machine and being run over. Keep cab door (if equipped) closed. Instructional seat (if equipped) is used only for instructing or service diagnosing only. DO NOT permit others to ride, especially children. Seat belt must be worn at all times. Failure to comply could cause death or serious injury. M1474
- Hydraulic oil or diesel fuel leaking under pressure can penetrate the skin and cause infection or other injury. To Prevent Personal Injury: Relieve all pressure, before disconnecting fluid lines or performing work on the hydraulic system. Before applying pressure, make sure all connections are tight and components are in good condition. Never use your hand to check for suspected leaks under pressure. Use a piece of cardboard or wood for this purpose. If injured by leaking fluid, see your doctor immediately. Failure to comply could result in death or serious injury. M149D
- Always make sure to stay clear of drive shaft until all movement has stopped and Combine engine has stopped and key is removed from key switch. Entanglement with rotating drive shaft will cause serious injury or death. Always wear proper fitting clothing when working around machine.
- Handle cutter bar very carefully. Always wear heavy gloves when working around the cutter bar or handling sharp knives. Keep other body parts away from cutter bar.
- ALWAYS turn OFF engine and remove the key before servicing the Header. Never under any conditions lubricate the Header while machine is running. Failure to comply could result in death or serious injury. M207D



## Hydraulic System Safety

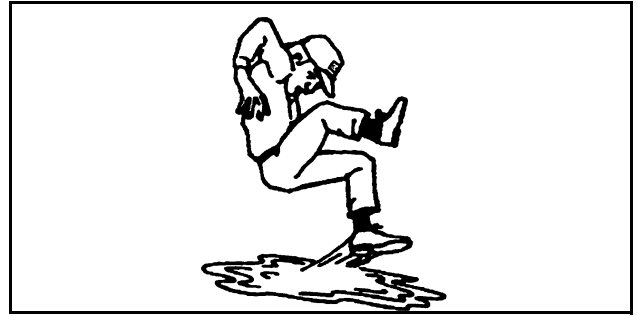


- Failure to comply to the following messages will result in death or serious injury.
- Hydraulic oil leaking under pressure can penetrate the skin and cause infection or other injury. To prevent personal injury:
  - A. Relieve all pressure before disconnecting fluid lines.
  - B. Before applying pressure, make sure all connections are tight and components are in good condition.
  - C. Never use your hand to check for suspected leaks under pressure. Use a piece of cardboard or wood for this purpose.
  - D. If injured by leaking fluid, seek medical attention immediately.
- The hydraulic hoses and fittings on your machine meet engineering specifications for the particular function. When replacing damaged, blown or worn hoses or fittings, use only manufacture authorized service parts.
- Care in hydraulic hose installation is a must:
  - A. Make sure pressure is relieved before starting installation procedure.
  - B. DO NOT kink or twist a hose, failure may occur.
  - C. Properly route the hose.
  - D. Have a certified hydraulic technician install the hose.
  - E. Remove air from the hydraulic system after installing any hydraulic component.
- Periodically check hydraulic system for leaks or damage. check for:
  - A. Leaks at hose fitting or in hose.
  - B. Damaged hoses and/or fittings.
  - C. Kinked, crushed, flattened, hard blistered, heat cracked, charred, twisted, soft or loose covered hoses.
  - D. Corroded or damaged fittings.
  - E. Leaking ports.
  - F. Excessive dirt and debris around hoses and/or fittings.
  - G. Damaged or missing hose retaining clamps, guards, shields, etc.
- DO NOT stand on or use a hose as a step. DO NOT pull or apply external forces to the hose. The hose may fail and cause injury.
- Keep all persons away from the working area. Mechanisms controlled by fluid power can become hazardous if a hose fails. Lifted mechanisms can fall to the ground, machine steering may fail, etc.
- Stay clear of a pressurized hose assembly that has blown apart. Hose fittings can be thrown off at high speed and a loose hose can whip around with great force.
- Hydraulic fluid can reach high temperatures. Allow fluid to cool before servicing the system.
- Escaping fluid under pressure may form a mist or fine spray which can flash or explode upon contact with an ignition source.
- Vibration can reduce hose service life. Make sure all retaining clamps and/or devices are secured.
- Environmental conditions can cause hose and fittings to deteriorate. Inspect hydraulic hoses periodically. Replace worn or damaged hoses and fittings.

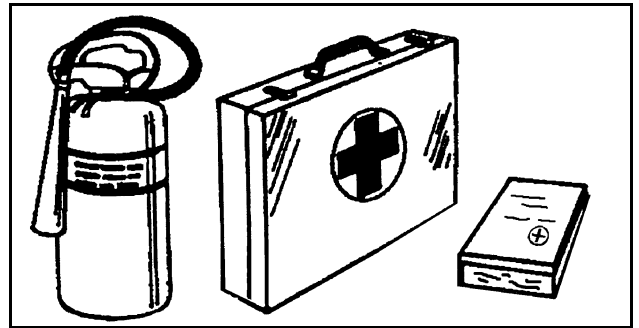
## Service Area, Fire Extinguisher, First Aid Kit

Keep the area used for servicing the machine 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.

It is recommended that you have a Fire Extinguisher and a First Aid Kit in your maintenance area.



RH01N064



RH99E028



**Suggest:**

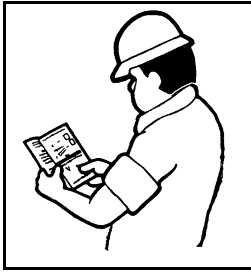
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 **Personal Safety** 






RH02F040

Throughout this manual and on the machine's safety decals, you will find precautionary statements: **DANGER**, **WARNING** or **CAUTION** followed by specific instructions or ISO two panel safety pictorial symbols. These precautions are intended for your personal safety.

Failure to follow the **DANGER**, **WARNING** or **CAUTION** instructions may result in death or serious bodily injury.

**DANGER**, **WARNING** or **CAUTION** are defined as follows:

- **DANGER:** Indicates an immediate hazardous situation that, if not avoided, will result in death or serious injury. The color associated with Danger is RED.
- **WARNING:** Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury. The color associated with Warning is ORANGE.
- **CAUTION:** Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices. The color associated with Caution is YELLOW.
- ISO two panel **pictorial symbol decals** are defined as follows:
  - The first panel indicates the nature of the hazard.
  - The second panel indicates the appropriate avoidance of the hazard.
  - Background color is YELLOW.
  - Prohibition symbols such as   and  if used, are RED.

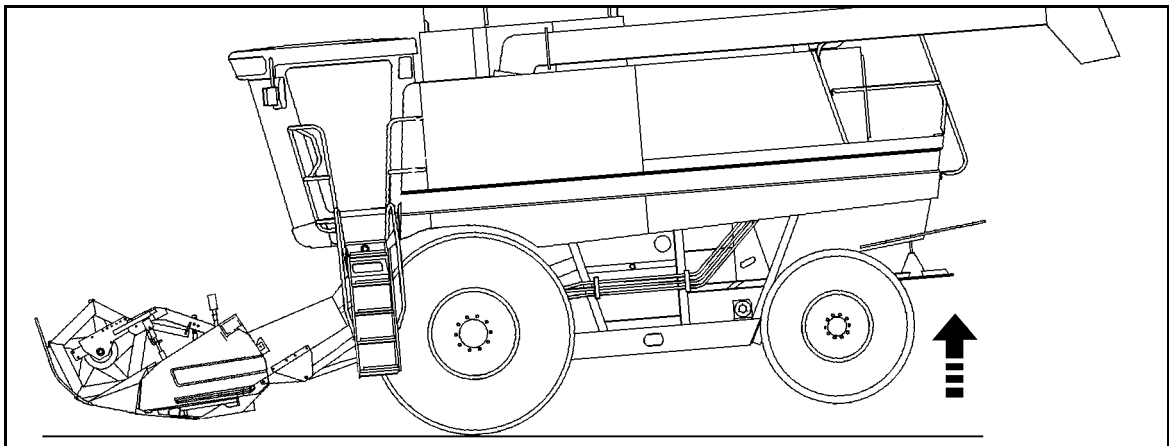
## Do Not Operate Tag

Before you start servicing the machine, attach a “Do Not Operate” warning tag to the machine in an area that will be visible.

<b>DO NOT OPERATE</b>	<b>DO NOT REMOVE THIS TAG!</b>
<b>REASON</b> _____ _____ _____ _____ _____	<b>SEE OTHER SIDE</b>
<b>SIGNED BY:</b> _____	

RH99E029

## Combine Ballast



RS00D050

Make sure your Combine has proper ballasting. Large and/or heavy Headers may alter the center of gravity of your machine. This will affect your operating, steering and braking performance.

Refer to your Combine Operator’s Manual for the correct ballast required for your application.

**ATTENTION: AXIAL-FLOW® 2300 / 2500 Series Combines: AXIAL-FLOW® 2388 / 2588 - 12 Row Ready Combine is the only 2300 / 2500 Series Combine authorized for use with the 35 foot or larger Header.**

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