

C Series Corn Headers and FC Series FlexCorn Headers

Shipping Container Unloading Instructions

393424 Revision A

Original Instruction

C3808 Series Corn Header



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Introduction

This document explains how to unload MacDon C Series Corn Headers and FC Series FlexCorn Headers from shipping containers and prepare them for shipment to a Dealership.

To ensure that your Customers receive all the performance and safety benefits of this product, carefully follow the unloading procedure from the beginning through to completion.

Retain this instruction for future reference.

If the shipment is damaged or is missing parts, contact shortageanddamage@macdon.com.

NOTE:

A tow bar is required to remove the header from a container. Tow bars are available by special order only. Contact your MacDon representative for ordering information. Order the correct tow bar(s) for your headers:

- 8-row and smaller headers require a short tow bar (MD #2.403.445)
- 12-row and larger headers require a long tow bar (MD #2.403.446)

Conventions

The following conventions are used in this document:

- Right and left are determined from the operator's position. The front of the corn header faces the crop.
- Unless otherwise noted, use the standard torque values provided in Chapter 4 *Torque Specifications, page 21*. When torque values of 30 Nm or less are listed, their equivalents will be provided in both foot-pounds (lbf-ft) and inch-pounds (lbf-in).

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

NOTE:

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

NOTE:

This instruction is currently available in English only.

Summary of Changes

At MacDon, we're continuously making improvements, and occasionally these improvements affect product documentation. The following list provides an account of major changes from the previous version of this document.

The following table lists the changes made since the last revision (MD #262817 Revision A).

Section	Summary of Change	Internal Use Only
<i>3.3 Inspecting Header, page 14</i>	<ul style="list-style-type: none">Added Case IH AF9/10/11 and New Holland CR10/11 information to the "driveshaft and gearbox configurations" table.Revised the list of parts in the wooden crate.	Product Management Product Support

TABLE OF CONTENTS

Introduction.....	i
Summary of Changes.....	ii
Chapter 1: Safety.....	1
1.1 Safety Alert Symbols	1
1.2 Signal Words.....	1
1.3 General Safety	2
Chapter 2: Header Specifications	5
2.1 Header Specifications – C Series Corn Headers.....	5
2.2 Header Dimensions – FC Series FlexCorn Headers.....	8
Chapter 3: Unloading Container.....	11
3.1 Removing Headers from Container	11
3.2 Removing Headers from Header Cart	13
3.3 Inspecting Header.....	14
3.4 Preparing Headers for Shipping	18
Chapter 4: Torque Specifications	21
4.1 Torque Specifications for Fasteners.....	21
4.2 Torque Specifications for Hydraulic Fittings	22

Chapter 1: Safety

Understanding and consistently following these safety procedures will help to ensure the safety of those operating the machine and of bystanders.

1.1 Safety Alert Symbols

The safety alert symbol indicates important safety messages in this manual and on safety signs on the machine.

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: Safety Symbol

1.2 Signal Words

Three signal words, **DANGER**, **WARNING**, and **CAUTION**, are used to alert you to hazardous situations. Two signal words, **IMPORTANT** and **NOTE**, identify non-safety related information.

Signal words are selected using the following guidelines:



DANGER

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



WARNING

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



CAUTION

Indicates a potentially hazardous situation that, if it is not prevented, may result in minor or moderate injury. It may also be used to alert you to unsafe practices.

IMPORTANT:

Indicates a situation that, if not prevented, could result in a malfunction or damage to the machine.

NOTE:

Provides additional information or advice.

1.3 General Safety

Operating, servicing, and assembling machinery presents several safety risks. These risks can be reduced or eliminated by following the relevant safety procedures and wearing the appropriate personal protective equipment.

CAUTION

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

Wear all protective clothing and personal safety devices that could be necessary for the job at hand. Do **NOT** take chances. You may need the following:

- Hard hat
- Protective footwear with slip-resistant soles
- Protective glasses or goggles
- Heavy gloves
- Wet weather gear
- Respirator or filter mask

In addition, take the following precautions:

- Be aware that exposure to loud noises can cause hearing impairment. Wear suitable hearing protection devices such as earmuffs or earplugs to help protect against loud noises.



Figure 1.2: Safety Equipment



Figure 1.3: Safety Equipment

- Provide a first aid kit in case of emergencies.
- Keep a properly maintained fire extinguisher on the machine. Familiarize yourself with its use.
- Keep young children away from machinery at all times.
- Be aware that accidents often happen when Operators are fatigued or in a hurry. Take time to consider the safest way to accomplish a task. **NEVER** ignore the signs of fatigue.

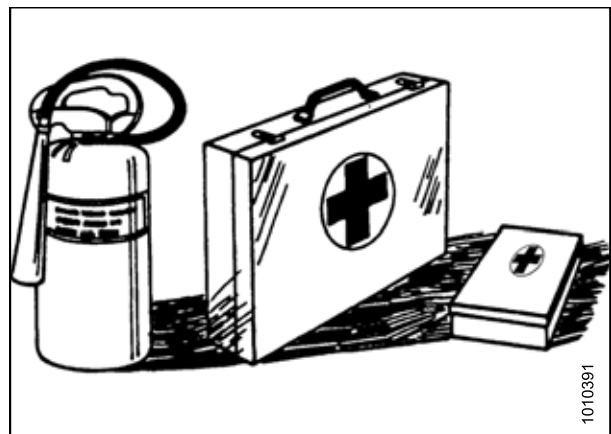


Figure 1.4: Safety Equipment

SAFETY

- Wear close-fitting clothing and cover long hair. **NEVER** wear dangling items such as hoodies, scarves, or bracelets.
- Keep all shields in place. **NEVER** alter or remove safety equipment. Ensure that the driveline guards can rotate independently of their shaft, and that they can telescope freely.
- Use only service and repair parts made or approved by the equipment manufacturer. Parts from other manufacturers may not meet the correct strength, design, or safety requirements.



Figure 1.5: Safety around Equipment

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

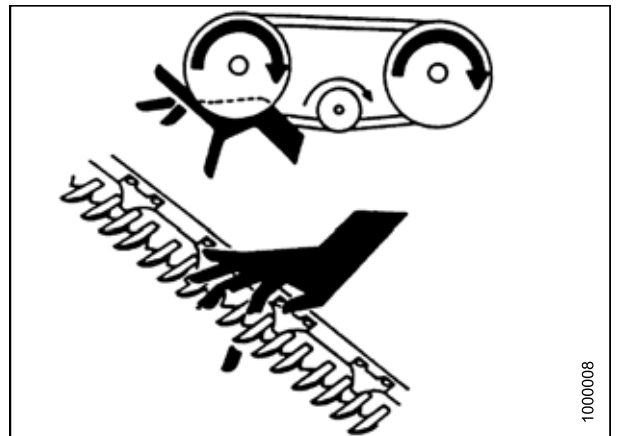


Figure 1.6: Safety around Equipment

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



Figure 1.7: Safety around Equipment

Chapter 2: Header Specifications

The dimensions and weight of the header are provided so that you can choose the correct equipment to lift, tip, and transport the header safely.

Refer to the specifications for your header:

- [2.1 Header Specifications – C Series Corn Headers, page 5](#)
- [2.2 Header Dimensions – FC Series FlexCorn Headers, page 8](#)

2.1 Header Specifications – C Series Corn Headers

The dimensions and weights of the various C Series Corn Headers are provided here.



DANGER

The equipment used for loading or unloading a machine must meet or exceed the requirements specified in this document. Using inadequate equipment may result in chain breakage, vehicle tipping, machine damage, and bodily harm to Operators or bystanders.

HEADER SPECIFICATIONS

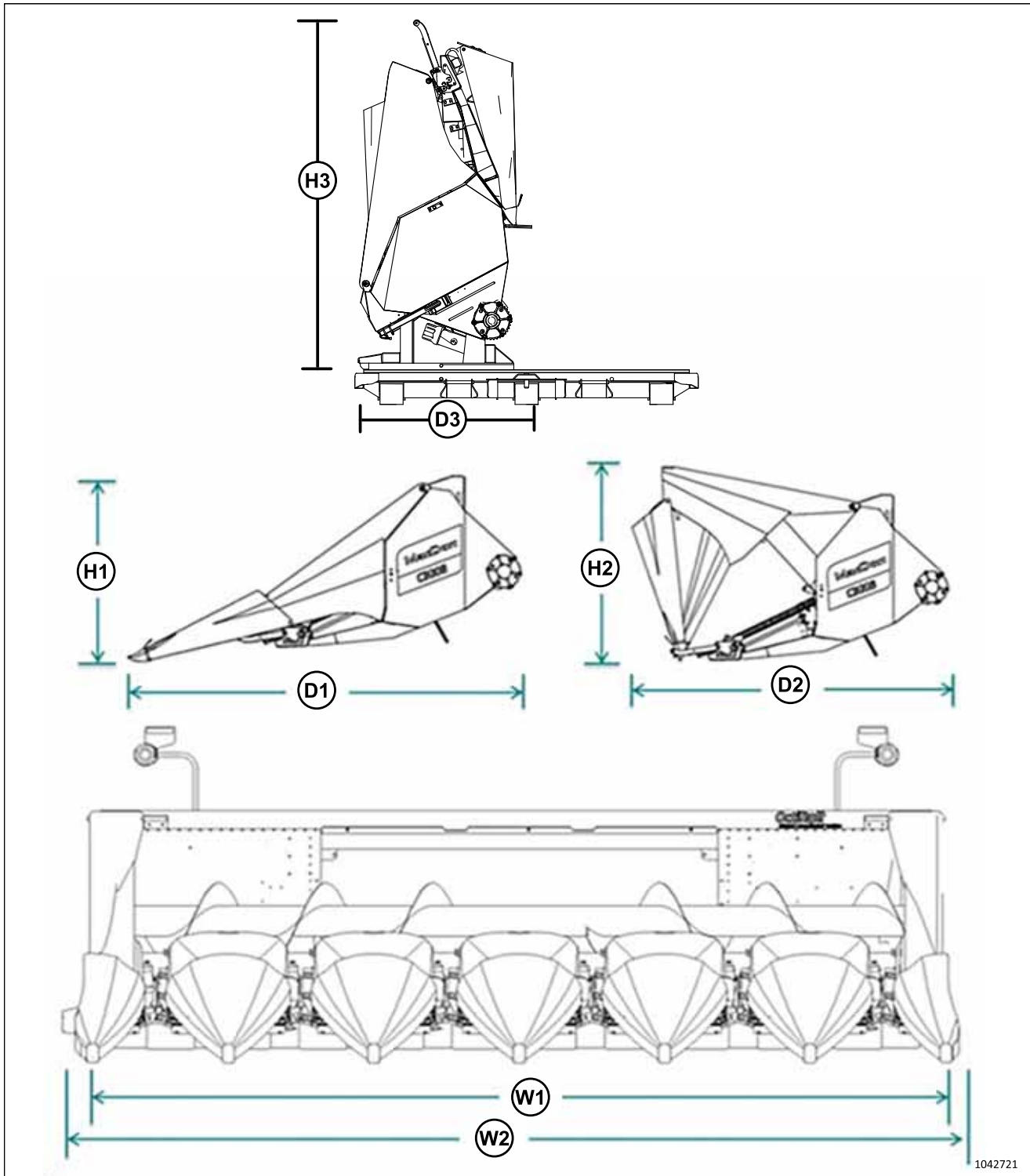


Figure 2.1: Header Dimensions

D1 - Header Length in Field Configuration

D3 - Header Length in Shipping Configuration

H2 - Header Height in Transport Configuration

W1 - Effective Harvesting Width

D2 - Header Length in Transport Configuration

H1 - Header Height in Field Configuration

H3 - Header Height in Shipping Configuration

W2 - Overall Header Width

HEADER SPECIFICATIONS

Table 2.1 Header Dimensions – All Models

Header Type	Length in Field Configuration (D1)		Length in Shipping Configuration (D3) ²		Length in Transport Configuration (D2) ¹		Height in Field Configuration (H1)		Height in Shipping Configuration (H3) ²		Height in Transport Configuration (H2) ¹	
	m	ft.	m	ft.	m	ft.	m	ft.	m	ft.	m	ft.
Non-Folding	2.97	9.7	1.10	3.6	1.10	3.6	1.45	4.8	2.45	8.0	2.43	8.0
Folding	2.97	9.7	1.20	3.9	1.10	3.6	1.58	5.2	2.45	8.0	2.43	8.0

Table 2.2 Non-Folding Header Dimensions

Row Spec.	Model ³	Weight		Effective Harvesting Width (W1)		Overall Width (W2)	
		kg	lb.	m	ft.	m	ft.
6R30	C3006	2073	4570	4.57	15.00	4.63	15.20
	C3006C	2180	4800	4.57	15.00	4.70	15.42
8R22	C2208	2140	4720	4.47	14.67	4.74	15.53
	C2208C	2260	4982	4.47	14.67	4.80	15.75
8R30	C3008	2968	6543	6.10	20.00	6.16	20.20
	C3008C	3110	6856	6.10	20.00	6.22	20.42
8R38	C3808	2900	6390	7.72	25.33	7.58	24.87
	C3808C	3080	6790	7.72	25.33	7.65	25.08
12R20	C2012	2890	6370	6.10	20.00	6.41	21.03
	C2012C	3050	6724	6.10	20.00	6.48	21.25
12R22	C2212	3325	7330	6.71	22.00	6.97	22.87
	C2212C	3630	8000	6.71	22.00	7.04	23.08
12R30	C3012	3723	8869	9.14	30.00	9.21	30.20
	C3012C	4120	9083	9.14	30.00	9.27	30.42
12R38	C3812	4197	9253	11.58	38.00	11.44	37.53
	C3812C	4290	9458	11.58	38.00	11.51	37.75
16R30	C3016	5060	11,155	12.19	40.00	12.25	40.20
	C3016C	5330	11,751	12.19	40.00	12.32	40.42
18R20	C2018	4292	9462	9.14	30.00	9.46	31.03
	C2018C	4480	9877	9.14	30.00	9.53	31.25
18R22	C2218	5036	11,102	10.06	33.00	10.33	33.87
	C2218C	5225	11,519	10.06	33.00	10.39	34.08

1. Transport configuration is used to transport the header between fields after unloading and assembly tasks are complete.
2. Shipping configuration is the configuration of the header when it is shipped from the factory.
3. Model numbers ending in "C" indicate that the header is equipped with stalk choppers.

HEADER SPECIFICATIONS

Table 2.3 Folding Header Dimensions

Row Spec.	Model ⁴	Weight		Folded Width		Effective Harvesting Width (W1)		Overall Width (W2)	
		kg	lb.	m	ft.	m	ft.	m	ft.
8R30	C3008F	3218	7094	3.23	10.6	6.10	20.00	6.16	20.20
	C3008CF	3360	7408	3.23	10.6	6.10	20.00	6.22	20.42
12R30	C3012F	4156	9162	4.75	15.6	9.14	30.00	9.21	30.20
	C3012CF	4370	9634	4.75	15.6	9.14	30.00	9.27	30.42

2.2 Header Dimensions – FC Series FlexCorn Headers

The dimensions and weight of the various FC Series FlexCorn Headers are provided here.

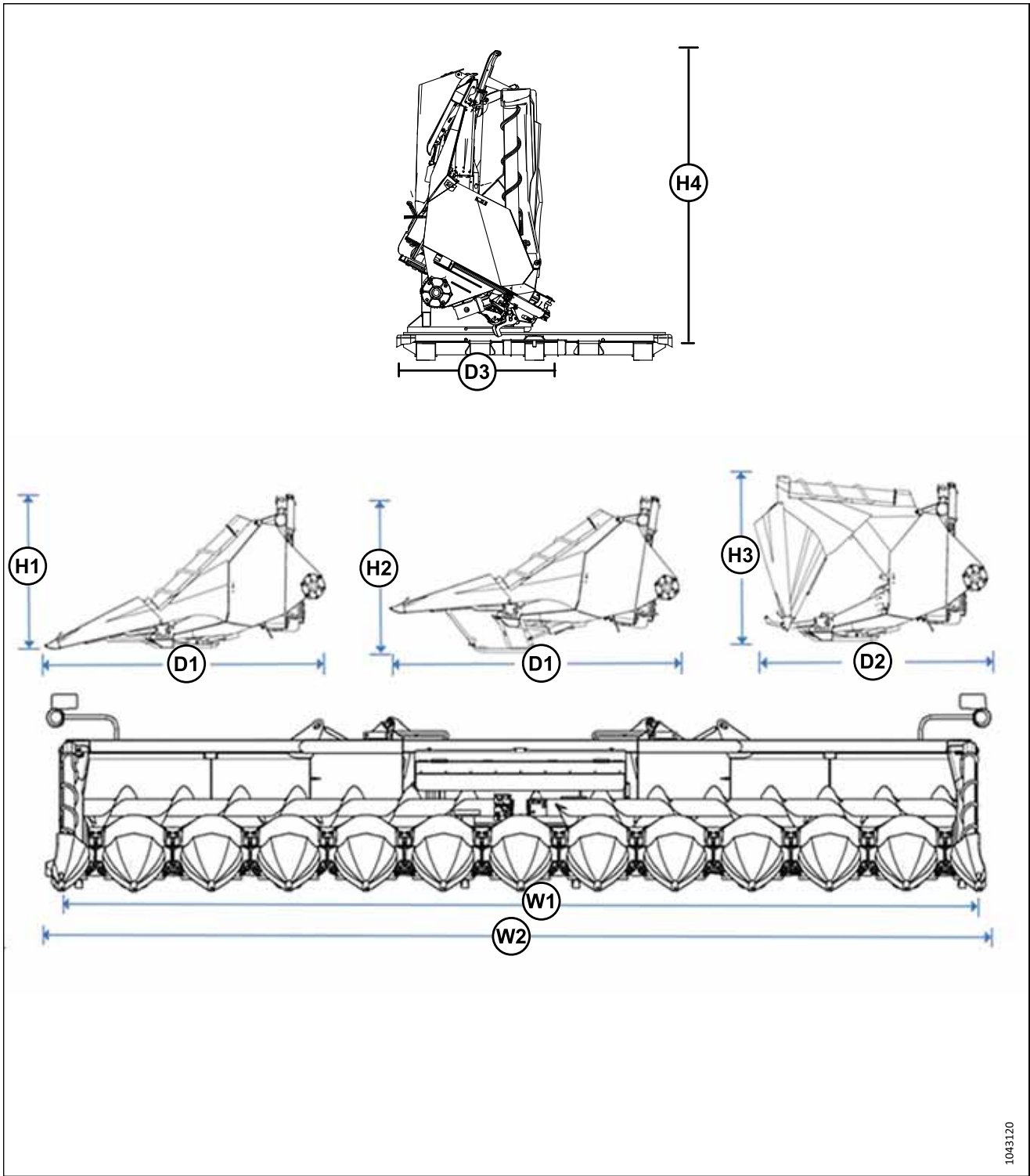


DANGER

The equipment used for loading or unloading a machine must meet or exceed the requirements specified in this document. Using inadequate equipment may result in chain breakage, vehicle tipping, machine damage, and bodily harm to Operators or bystanders.

4. Model numbers ending in "F" indicate that the header folds; model numbers ending in "CF" indicate that the header folds and is equipped with a chopper.

HEADER SPECIFICATIONS



1043120

Figure 2.2: Header Dimensions

- D1 - Header Length in Field Configuration

D3 - Header Length in Shipping Configuration

H2 - Header Height in Field Configuration with Skids Extended

H4 - Header Height in Shipping Configuration

W2 - Overall Header Width
- D2- Header Length in Transport Configuration

H1 - Header Height in Field Configuration with Skids Retracted

H3 - Header Height in Transport Configuration

W1 - Effective Harvesting Width

HEADER SPECIFICATIONS

Table 2.4 Header Dimensions – Common

Length in Field Configuration (D1)		Length in Shipping Configuration (D3) ⁵		Length in Transport Configuration (D2) ⁶		Height in Field Configuration with Skids Retracted (H1)		Height in Field Configuration with Skids Extended (H2)		Height in Shipping Configuration (H4) ⁵		Height in Transport Configuration (H3) ⁶	
m	ft.	m	ft.	m	ft.	m	ft.	m	ft.	m	ft.	m	ft.
2.99	9.81	1.33	4.35	2.46	8.08	1.41	4.62	1.65	5.40	2.35	7.71	1.62	5.32

Table 2.5 Flex Header Dimensions – Model Specific

Row Spec.	Model ⁷	Weight		Effective Harvesting Width (W1)		Overall Width (W2)	
		kg	lb.	m	ft.	m	ft.
12R30	FC3012	4610	10,164	9.14	30.00	9.21	30.20
	FC3012C	4813	10,601	9.14	30.00	9.27	30.42
16R30	FC3016	5917	13,045	12.19	40.00	12.25	40.20
	FC3016C	6187	13,640	12.19	40.00	12.32	40.42

5. Shipping configuration is the configuration of the header when it is shipped from the factory.

6. Transport configuration is used to transport the header between fields after unloading and assembly tasks are complete.

7. Model numbers ending in “C” indicate that the header is equipped with a stalk chopper.

Chapter 3: Unloading Container

Normally, two headers are shipped together in a container. Follow these procedures when unloading them from the shipping container.

DANGER

The equipment used for loading or unloading a machine must meet or exceed the requirements specified in this document. Using inadequate equipment may result in chain breakage, vehicle tipping, machine damage, and bodily harm to Operators or bystanders.

DANGER

Ensure that all bystanders have cleared the area.

To determine the equipment needed to handle the headers, refer to Chapter 2 *Header Specifications, page 5*.

3.1 Removing Headers from Container

The headers are secured to a cart inside the container for shipping. The headers and cart must be removed from the container as one unit.

NOTE:

This procedure requires the use of a tow bar. Tow bars are available by special order only. Contact your MacDon representative for ordering information. Order the correct tow bar(s) for your headers:

- 8-row and smaller headers require a short tow bar (MD #2.403.445)
- 12-row and larger headers require a long tow bar (MD #2.403.446)

To remove headers from a shipping container, follow these steps:

1. Have the truck position the trailer at the location where the headers will be unloaded. Block the trailer's wheels.
2. Lower the trailer's storage stands.
3. Open the container doors. Remove the shipping braces securing the cargo to the walls of the container.
4. Remove any nails and other obstructions from the floor of the shipping container.
5. Have a lifting vehicle position a lifting platform at the container opening. Ensure that the platform is level with the container floor.
6. Remove ratchet straps (A) securing the headers to the container side walls.

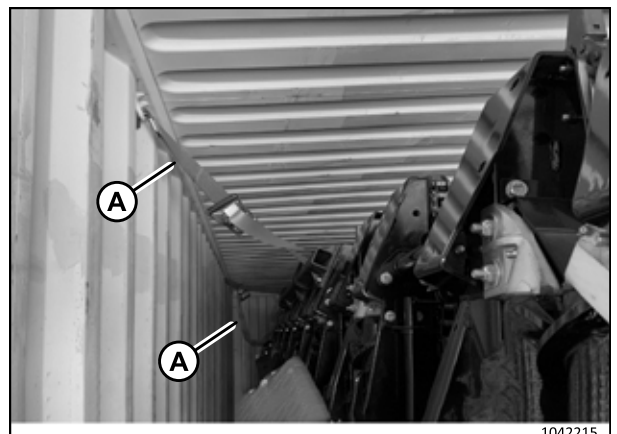


Figure 3.1: Ratchet Straps Securing Header to Container

UNLOADING CONTAINER

7. Remove front header cart floor jams (A) and discard them. These jams prevent the cart from rolling during shipping.

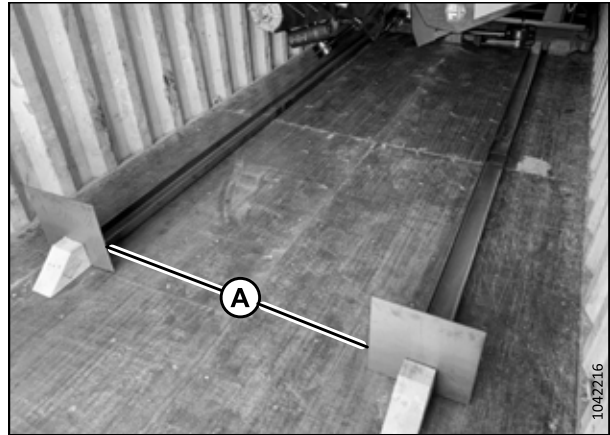


Figure 3.2: Front Header Cart Floor Jams

8. Attach tow bar (A) to attachment point (B) on the header cart.

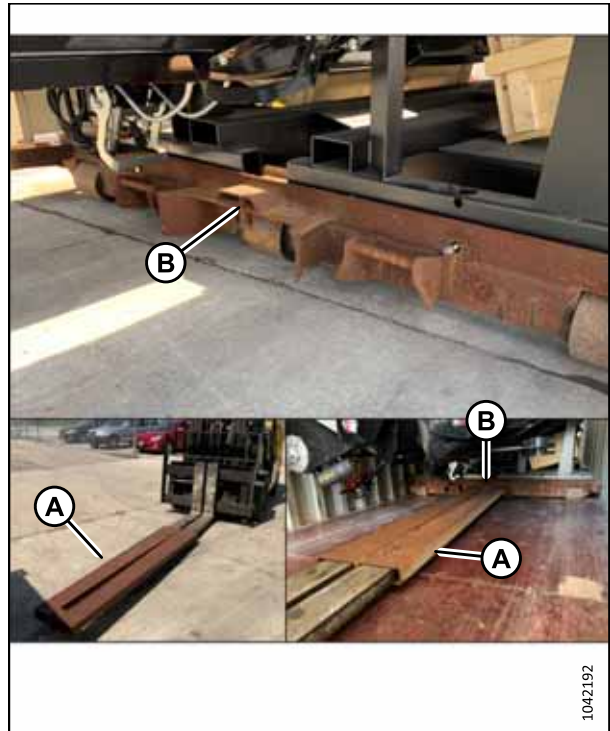


Figure 3.3: Tow Bar Attachment to Header Cart

9. Using tow bar (A), slowly roll the header cart out of the container. Make sure the headers do not contact the container walls or ceiling.

NOTE:

A forklift with side shift can be used to adjust the lateral position of the header cart as it is pulled out of the container.



Figure 3.4: Removing Header Cart from Container

UNLOADING CONTAINER

10. Remove rear header cart floor jams (A) from the container and discard them.
11. Remove all other items from the container and sweep the container floor clean before signing and releasing the container.



Figure 3.5: Rear Header Cart Floor Jams

3.2 Removing Headers from Header Cart

The pair of headers must be removed from the header cart before each one can be inspected and shipped to its setup location.

1. Check the position of clearance lights (A). There is one light at each end of each header.

NOTE:

The light brackets are designed to allow the lights to pivot when they hit something in the field. They are rotated 90° to fit in the shipping container, but may bounce and slip downward during shipping.



Figure 3.6: Clearance Light – Incorrect Position

A - Clearance Light

B - Manual Canister

2. If light (A) is positioned below manual canister (B), loosen four nuts (C), and then slide the light inboard and upward. Retighten the nuts.

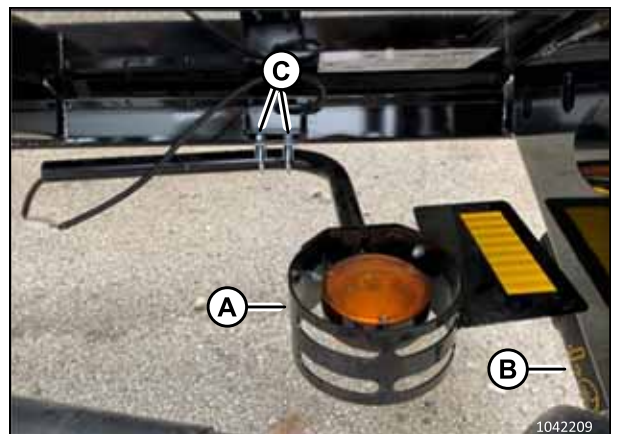


Figure 3.7: Clearance Light – Correct Position

UNLOADING CONTAINER

3. Remove pins (A) securing the header stands to the header cart. There are two pins per stand (one on each end).

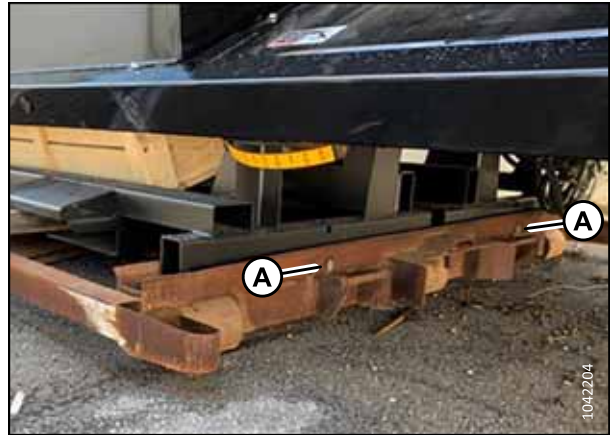


Figure 3.8: Pin Securing Header Stand to Header Cart

4. With a spotter, lift the headers off the header cart.

IMPORTANT:

Use an appropriately sized forklift to move the headers. Refer to Chapter 2 *Header Specifications*, page 5 for header weights.

5. Store the header cart for return to OROS.

NOTE:

Header carts should be returned to OROS once there are enough carts for a full container load shipment back to Hungary. All other shipping-related materials can be scrapped.

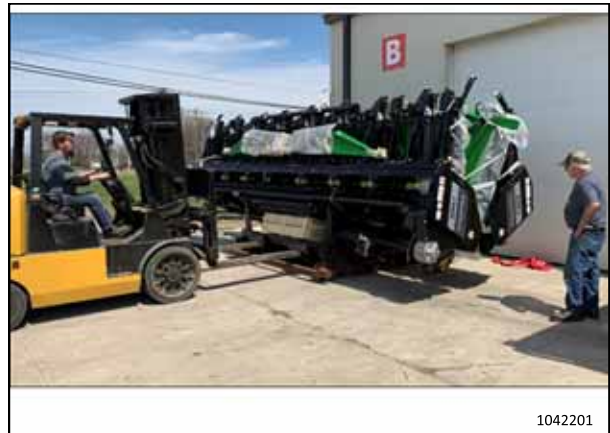


Figure 3.9: Removing Header from Header Cart

3.3 Inspecting Header

Once removed from the header cart, each header must be inspected to ensure that the order was received in its entirety, correctly, and without damage.

1. Inspect the following items to ensure that they are present and correct:
 - Serial number (located on plate [A] at the left end of the header, on the top beam)



Figure 3.10: Serial Number Plate

UNLOADING CONTAINER

- Main driveline guard – ensure that it is properly seated to the gearbox



Figure 3.11: Main Driveline Guard – Correctly Seated



Figure 3.12: Main Driveline Guard – Incorrectly Seated

- Driveshaft and gearbox – ensure that they are configured for the correct combine (gear tooth configuration [A] is written or stamped on the gearbox's aluminum housing; you may need to remove the cover to see it); refer to Table 3.1, page 15.

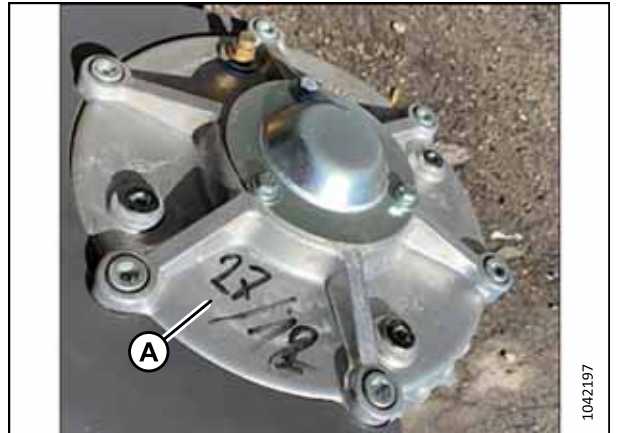


Figure 3.13: Gearbox Configuration

Table 3.1 Driveshaft Yoke and Gearbox Configurations

Combine	Drive	Gearbox Ratio	Driveshaft Yoke
Challenger®, Gleaner®, Massey Ferguson®	Fixed	27T/15T	1 3/8 - 21 spline
	Variable	27T/18T	1 3/8 - 21 spline
Case IH 1600 and 2000 Series	—	27T/11T	1 1/8 hex
Case IH and New Holland (2016 and earlier)	—	27T/12T	1 3/8 - 6 spline

UNLOADING CONTAINER

Table 3.1 Driveshaft Yoke and Gearbox Configurations (continued)

Combine	Drive	Gearbox Ratio	Driveshaft Yoke
Case IH and New Holland (2017 and later)	—	27T/12T	1 3/8 - 21 spline
Case IH AF9/10/11 and New Holland CR 10/11 NOTE: Combines equipped with the heavy duty variable drive will require the right driveshaft yoke to be converted to a 1 3/4 - 20 spline.	Fixed	27T/12T	1 3/8 - 21 spline
	Standard Duty Variable		
	Heavy Duty Variable		
CLAAS / Lexion	—	27T/15T	1 3/8 - 21 spline
IDEAL™	Fixed	27T/15T	1 3/4 - 20 spline
	Variable	27T/18T	1 3/4 - 20 spline
John Deere	Fixed	27T/11T	1 3/8 - 21 spline
	Variable	27T/15T	1 3/8 - 21 spline

- Parts shipped in wooden crate (A, Figure 3.14, page 16):
For a list of parts, refer to Table 3.2, page 17.

NOTE:

- Figure 3.14, page 16 shows the header still on the header cart. The header should have been removed from the cart in the previous procedure.
- Toolbox (A) shown in Figure 3.15, page 16 is not installed on folding headers.

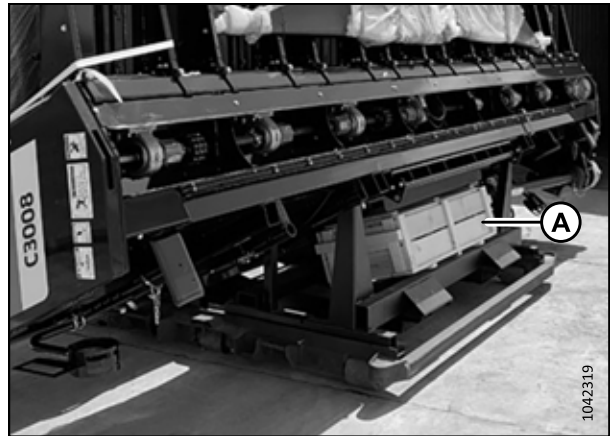


Figure 3.14: Wooden Shipping Crate

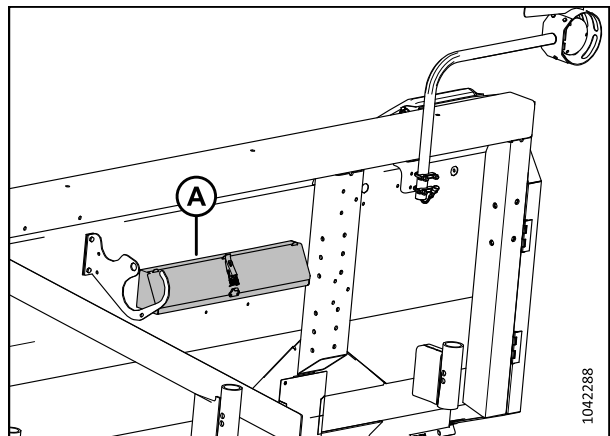


Figure 3.15: Toolbox on Back of Rigid and Flex Headers

UNLOADING CONTAINER

Table 3.2 Parts Shipped in the Wooden Crate

C Series	FC Series
<ul style="list-style-type: none"> Wire snout brackets (on headers with 76 cm [30 in.] row spacing only) Auger paddle/finger kit Snout transport pins Chopper wrench (on headers configured with stalk choppers) Yellow MacDon decals (on headers configured for Case or New Holland combines) <p>Folding headers only:</p> <ul style="list-style-type: none"> Folding switch <p>NOTE: Headers configured for CLAAS receive a folding switch, but not the in-cab harness mentioned below.</p> <ul style="list-style-type: none"> In-cab harness (for use with folding switch, only included on headers configured for the brands listed below) <ul style="list-style-type: none"> AGCO (Challenger® Gleaner®, IDEAL™, Massey Ferguson®) Case IH John Deere New Holland <p>NOTE: Although the in-cab harness is included with the brands of combine listed, it is not always required.</p> <ul style="list-style-type: none"> Alternate orifices for folding cylinders Gathering chain tool <p>NOTE: On rigid headers, the gathering chain tool is shipped in the toolbox.</p>	<ul style="list-style-type: none"> Wire snout brackets (on headers with 76 cm [30 in.] row spacing only) Auger paddle/finger kit Snout transport pins Chopper wrench (on headers configured with stalk choppers) Yellow MacDon decals (on headers configured for Case or New Holland combines) Battery power harness FlexCorn™ universal terminal (UT) control module In-cab harness (for connecting to the battery power harness, UT control module, and diagnostic tools) Row unit skid shoes and hardware 16T/18T auger drive sprocket <p>NOTE: The gathering chain tool is shipped in the toolbox.</p>

- Manuals located in the manual canister:
 - Operator's manual
 - Parts catalog



Figure 3.16: Operator's Manual and Parts Catalog

UNLOADING CONTAINER

- Combine configuration — ensure that the electrical and hydraulic completion parts are appropriate for the combine type
 - Special configurations, for example:
 - Snout color
 - Rotary end dividers (REDs)
 - Stubble stompers
 - Tall end dividers (TEDs)
 - Row guidance
 - Auto header height control (AHC)
2. Check for shipping damage (for example):
- Missing or damaged snouts
 - Decals that are peeling, bubbling, or scratched
 - Scuffed paint (touch up if possible)
 - Missing hardware or parts (toolbox cover, gathering chain tool, etc.)
 - Bent or damaged parts (snout support brackets, header field stands, clearance lights, etc.)
3. If the shipment is incorrect, damaged, or missing parts, send an itemized list and photographs to shortageanddamage@macdon.com.

3.4 Preparing Headers for Shipping

If the headers are going to be moved to another location before assembly, you will need to prepare them for shipping.

1. If the headers were ordered with tall end dividers (TEDs), dividers (A) will be secured to the back of the headers along with the end snouts. Remove the dividers, and strap them on the truck separately.

NOTE:

End snouts and center snouts strapped to the header for shipping purposes can be left where they are.

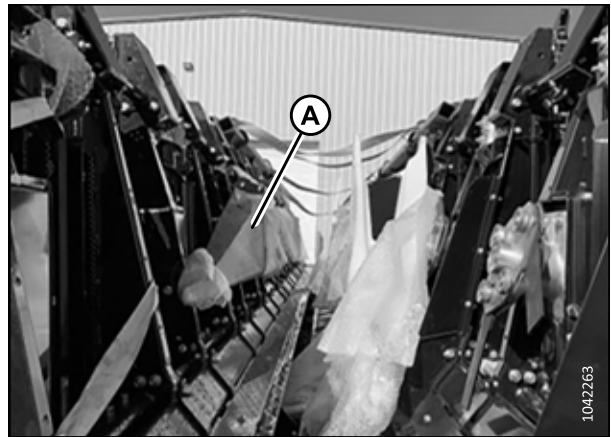


Figure 3.17: Tall End Dividers Shipped on Headers

UNLOADING CONTAINER

2. Ensure that the driveline(s) are secured to the storage brackets with lynch pins and that the safety chain(s) are attached as shown.



Figure 3.18: Driveline Secured to Storage Bracket

3. If the side shields are protected with bubble wrap, remove and discard the bubble wrap.

IMPORTANT:

If the bubble wrap is left in place, it can melt onto the side shields during periods of high temperatures and leave permanent stains on the side shields and decals.



Figure 3.19: Bubble Wrap Protecting Side Shields

4. Place the headers on the trailer with the snouts facing each other, staggered so that the snouts nest within each other.
5. Secure the headers to the trailer using straps attached to the main frame components only.

IMPORTANT:

Straps should **NOT** be anchored to, or crossed over drive and driven components like drivelines and augers.



Figure 3.20: Orientation of Headers on Trailer

Chapter 4: Torque Specifications

The following tables provide torque values for various bolts, cap screws, and hydraulic fittings. Refer to these values only when no other torque value has been specified in a given procedure.

- Tighten all bolts to the torque values specified in the charts below, unless you are directed otherwise in this manual.
- Replace removed hardware with hardware of the same strength and grade.
- Refer to the torque value tables as a guide when periodically checking the tightness of bolts.
- Understand the torque categories for bolts and cap screws by reading the markings on their heads.

Jam nuts

Jam nuts require less torque than nuts used for other purposes. When applying torque to finished jam nuts, multiply the torque applied to regular nuts by 0.65 to obtain the modified torque value.

Self-tapping screws

Refer to the standard torque values when installing the self-tapping screws. Do **NOT** install the self-tapping screws on structural or otherwise critical joints.

4.1 Torque Specifications for Fasteners

Specifications are provided for the appropriate final torque values to secure various sizes of metric bolts, screws, and nuts.

NOTE:

The torque values provided in the following metric bolt torque tables apply to hardware installed dry; that is, hardware with no grease, oil, or threadlocker on the threads or heads. Do **NOT** add grease, oil, or threadlocker to bolts or cap screws unless you are directed to do so in this manual.

Table 4.1 Torque Values for Fasteners (Nm)

Size	Quality		
Bolts/Screws	Class 8.8	Class 10.9	Class 12.9
Nuts	Class 8	Class 10	Class 12
M6	10	14	16
M8	23	33	40
M10	45	63	75
M12	78	110	130
M14	122	175	210
M16	195	270	325
M18	260	370	440
M20	370	525	630
M24	640	900	1080
M30	1260	1800	2160

TORQUE SPECIFICATIONS

Table 4.2 Torque Values for Fasteners (lbf·ft)

Size	Quality		
Bolts/Screws	Class 8.8	Class 10.9	Class 12.9
Nuts	Class 8	Class 10	Class 12
M6	7	10	12
M8	17	24	30
M10	33	46	55
M12	58	81	96
M14	90	129	155
M16	144	199	240
M18	192	273	325
M20	273	387	465
M24	472	664	797
M30	929	1328	1593

4.2 Torque Specifications for Hydraulic Fittings

The standard torque values for hydraulic ring tube fittings are provided. If a procedure specifies a different torque value for the same type and size of fitting found in this topic, use the value specified in the procedure instead.

Table 4.3 Dimensions and Torque Specifications – L Series

Size	Minimum Tube Wall Thickness	Torque Value	
		Nm	lbf·ft (*lbf·in)
6	6 x 1	25	*221
8	8 x 1	40	30
10	10 x 1	50	37
12	12 x 1.5	70	52
15	15 x 1.5	90	66
18	18 x 1.5	115	85
22	22 x 2	210	155
28	28 x 2	310	229
35	35 x 3	500	369
42	42 x 3	600	443

Table 4.4 Dimensions and Torque Specifications – S Series

Size	Minimum Tube Wall Thickness	Torque Value	
		Nm	lbf·ft
6	6 x 2	35	26
8	8 x 1.5	55	41
10	10 x 1.5	70	52

TORQUE SPECIFICATIONS

Table 4.4 Dimensions and Torque Specifications – S Series (continued)

Size	Minimum Tube Wall Thickness	Torque Value	
		Nm	lbf·ft
12	12 x 1.5	85	63
14	14 x 2	110	81
16	16 x 1.5	120	89
20	20 x 2	200	148
25	25 x 2.5	340	251
30	30 x 3	480	354
38	38 x 4	850	627

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