

**MacDon®**



## ***Draper Clinic Handout***

FDI FlexDraper®

***The Harvesting Specialists.***

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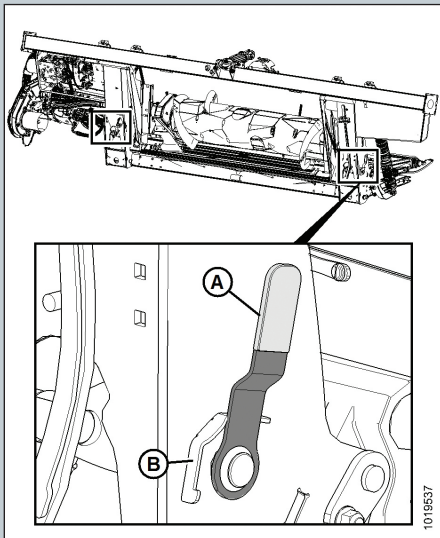
# Flex vs. Float

## When to Lock and When to Unlock

**Float** – refers to the vertical separation (or movement) of the Header from the Float Module.

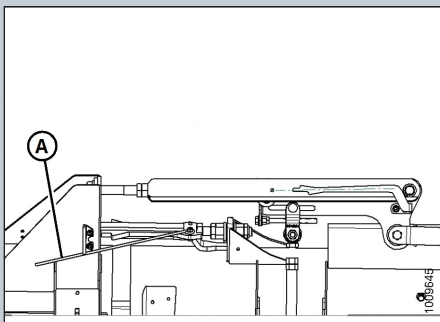
**Flex** – refers to the movement of the 3 piece header frame including the knife.

## Float

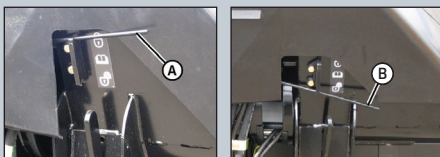


Always **Lock Float** for transport.  
Always **Unlock Float** when operating in the field.  
Handle position **(A)** is locked for transport.  
Rotate handle to position **(B)** for field operation.  
2 latches – one on either side of Float Module.

## Flex



Always **Lock Flex** for transport.  
Can be either locked or unlocked in the field.  
2 latches - one on either side. Each wing works independently.  
Reel moves with cutterbar to maintain close relationship with knife.

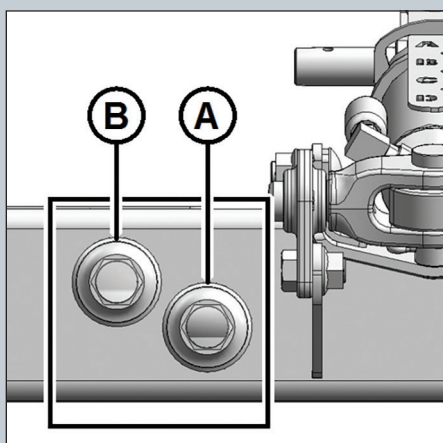


Left picture shows handle **(A)** in wing locked position.  
Right picture shows handle **(B)** in wing unlocked position.

# Break In Service

## 5 Minutes

Check hydraulic oil level in reservoir (check after first run-up and after hoses have filled with oil).



Check the oil level when oil is cold, with the cutterbar just touching the ground and with center-link retracted. FM100 adapters use **Single Grade Trans-Hydraulic Oil**.

### Normal terrain:

Maintain level so lower sight (**A**) is full, and upper sight (**B**) is empty.

### Hilly terrain:

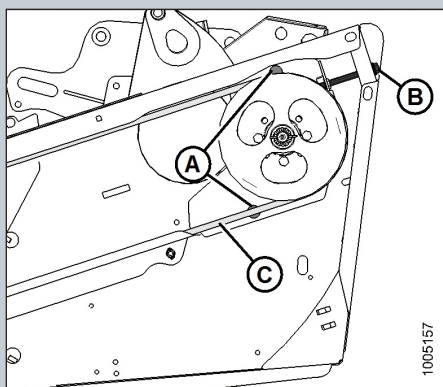
Maintain level so lower sight (**A**) is full, and upper sight (**B**) is up to one-half filled.

Refer to **Section 5.4 Hydraulics** in the Operators Manual for more information.

## 5 Hours

Check for loose hardware and tighten to required torque.

Check knife drive belt tension (check periodically for first 50 hrs).



A properly tensioned knife drive belt (**C**) should deflect 24–28 mm (15/16–1-1/8 in.) when 133 N (30 lbf) of force is applied at midspan.

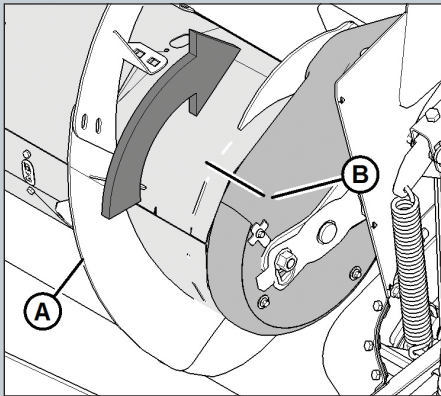
If the belt tension needs to be adjusted, loosen the two bolts (**A**) securing the motor assembly and turn the adjuster bolt (**B**) to move the drive motor until proper tension is set.

Refer to **Section 5.9 Knife Drive System** in the Operators Manual for more information.



## 10 Hours

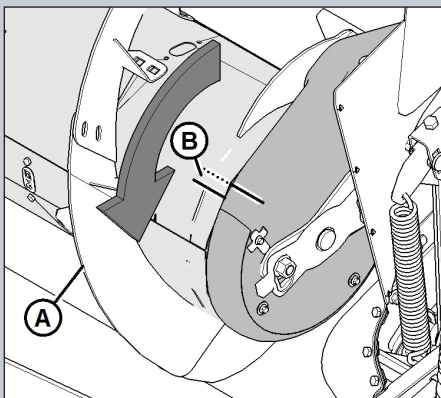
Check auger drive chain tension and knife drive box mounting hardware.



Rotate the auger **(A)** by hand in reverse direction, until it cannot turn anymore.

Mark a line **(B)** across the drum and cover.

Rotate the auger **(A)** by hand, in forward direction, until it cannot turn anymore.



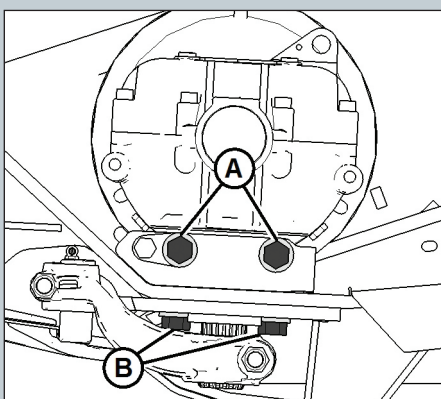
Measure the distance between the two lines **(B)**.

If the difference **(B)** is 3–8 mm (1/8–5/16 in.), no adjustment is required.

If the difference **(B)** is greater than 8 mm (5/16 in.), the auger drive chain tension needs adjusting.

If the difference **(B)** is less than 3 mm (1/8 in.), the auger drive chain needs adjusting.

Refer to **Section 5.7 Auger** in the Operators Manual for more information.



Check knife drive box mounting bolts.

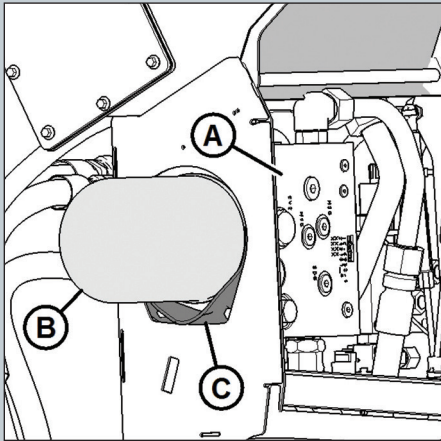
Torque the side bolts **(A)** first, then torque the bottom bolts **(B)**. Torque all bolts to 271 Nm (200 lbf-ft).

Refer to **Section 5.9 Knife Drive System** in the Operators Manual for more information.

# Break In Service

## 50 Hours

Change float module hydraulic oil filter. Change the oil filter after the first 50 hours of operation, and every 250 hours thereafter.



**New filter part number: 202986**

Clean around the mating surfaces of the filter **(B)** and manifold **(A)**.

Place a suitably sized container (approximately 1 liter [0.26 gallons]) under the oil drain spout **(C)** to collect oil runoff.

Remove the spin-off filter **(B)** and clean the exposed filter port in the manifold **(A)**.

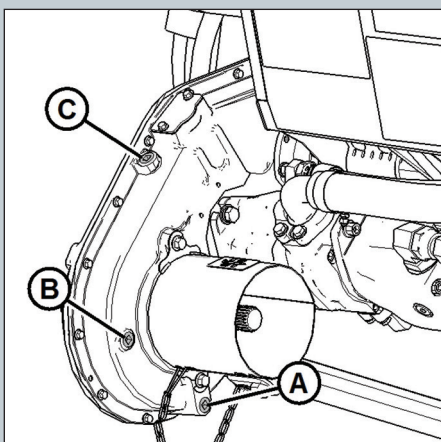
Apply a thin film of clean oil to the O-ring provided with the new filter.

Turn the new filter into the manifold **(A)** until the O-ring contacts the mating surface. Tighten the filter an additional 1/2 to 3/4 turn by hand.

Confirm oil level in the reservoir and add as required

Refer to **Section 5.4 Hydraulics** in the Operators Manual for more information.

Change header drive gearbox oil.



Remove the oil drain plug **(A)** and the filler plug **(C)**, and allow the oil to drain.

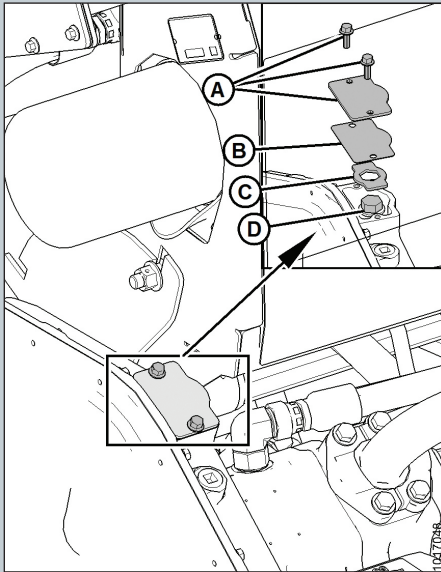
Replace the oil drain plug **(A)** and remove the oil level plug **(B)**.

Add SAE 85W-140 (API service class GL-5) oil into the filler plug **(C)** until it runs out of the oil level hole **(B)**.

**NOTE: The header drive gearbox holds approximately 2.5 liters (2.6 quarts) of oil.**

Refer to **Section 5.3 Maintenance Requirements** in the Operators Manual for more information.

Check header drive gearbox chain tension.



Remove two bolts and the chain adjusting cover **(A)**.

Ensure there is no gasket **(B)** damage.

Remove the retainer plate **(C)**.

Tighten bolt **(D)** to 6.8 Nm (60 lbf-in).

Refer to **Table 5.1** and back off (loosen) bolt **(D)** based on your gearbox configuration.

**NOTE: For proper tensioning, the chain should have 10–14 mm (3/8–9/16 in.) of deflection at its midpoint.**

Refer to **Section 5.6 Header Drive** in the Operators Manual for more information.

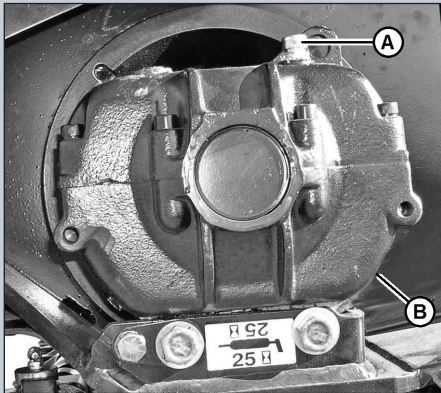
**Table 5.1 Adjusting Bolt Tightness on Configured Gearboxes**

<b>Gearbox Config</b>	<b>Gear Ratios</b>	<b>Back Off Amounts</b>
CLAAS	18/38 sprocket ratio, 74 pitch chain	1 turn or 360 degrees
CLAAS	22/38 sprocket ratio, 74 pitch chain	1/2 turn or 180 degrees
Case, New Holland, & AGCO (Challenger, Gleaner, Massey Ferguson)	29/38 sprocket ratio, 78 pitch chain	1 turn or 360 degrees
Case, New Holland, & AGCO (Challenger, Gleaner, Massey Ferguson) (Europe)	31/38 sprocket ratio, 78 pitch chain	1 1/8 turn or 405 degrees
AGCO IDEAL™ Series	29/38 sprocket ratio, 78 pitch chain	1 turn or 360 degrees

# Break In Service

## 50 Hours – Continued

Change knife drive box lubricant.



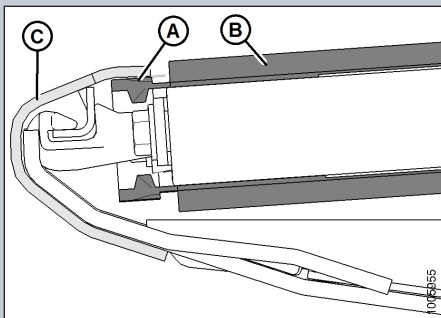
Raise the header and place a container large enough to hold approximately 2.2 liters (2.3 quarts) under the knife drive box to collect the oil.

Remove the breather/dipstick **(A)** and the drain plug **(B)**. Alternate drain plug located on forward side of the box. Drain the oil and replace the plug.

Add 2.2 liters (2.3 quarts) SAE 85W-140 to the knife drive box.

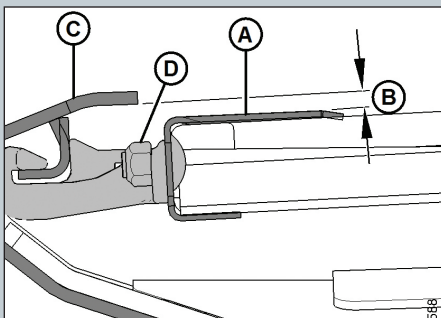
Refer to **Section 5.9 Knife Drive System** in the Operators Manual for more information.

Check side draper deck height adjustment.



Check that clearance **(A)** between draper **(B)** and cutterbar **(C)** is 1–3mm (1/16 - 1/8 in). If not, rotate connector slat to topside, loosen tension on side draper, grab draper at connector slat and lift up and rearward to remove draper from under cutterbar and expose the deck support.

Prop draper up with bar. Measure and note the thickness of the draper belt.



Loosen the two lock nuts **(D)** on the deck support **(A)** one-half turn only.

Tap the deck **(A)** to lower the deck relative to the deck supports. Tap the deck support beside nuts **(D)** using a punch to raise the deck relative to the deck supports.

Adjust so that measurement **(B)** is the thickness of the draper plus 1mm as measured previously.

Tighten hardware then reinstall and tension draper. Recheck gap to confirm correct adjustment.

Refer to **Section 5.12 Header Side Drapers** in the Operators Manual for more information

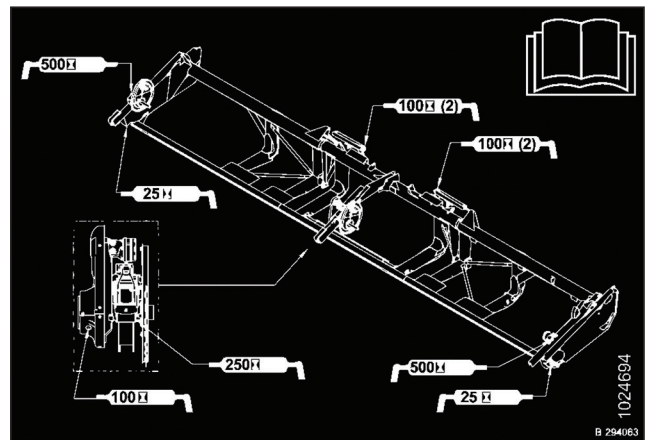
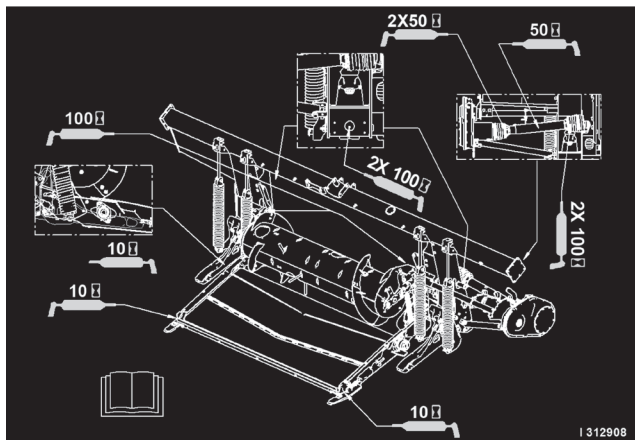
**NOTE: Correctly setting side draper deck height will limit the amount of material getting in between the drapers. This should prevent stalling and damage to side drapers.**

# Maintenance

Refer to **Section 5.3 Maintenance Requirements** in the Operators Manual for more information.

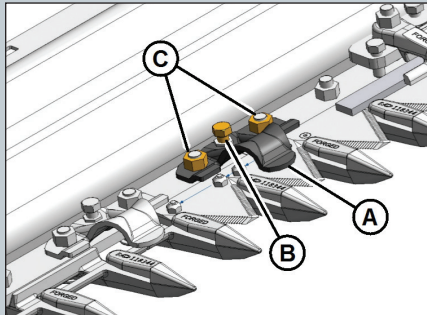
Lubrication Specs Chart				
Lubricant	Specifications	Description	Use	Capacities
Grease	SAE multi-purpose	High temperature extreme pressure (EP) performance with 1% max. Molybdenum Disulphide (NLGI Grade 2) lithium base	As required unless otherwise specified	—
		High temperature extreme pressure (EP) performance with 10% max. Molybdenum Disulphide (NLGI Grade 2) lithium base	Driveline slip-joints	—
Gear Lubricant	SAE 85W-140	API service class GL-5	Knife drive box	2.2 liters (2.3 quarts)
			Main drive gearbox	2.5 liters (2.6 quarts)
Hydraulic Oil	<b>Single grade trans-hydraulic oil recommended brands:</b> Petro-Canada Duratran John Deere Hy-Gard J20C Case Hy-Tran Ultraction AGCO Power Fluid 821 XL	Lubricant trans/hydraulic oil	Header drive systems reservoir	85 liters (22.5 US gallons)

## Grease Points



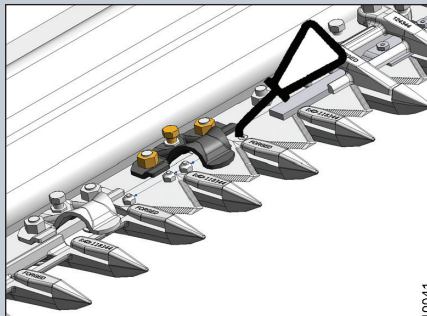
# Maintenance

## 10 Hours

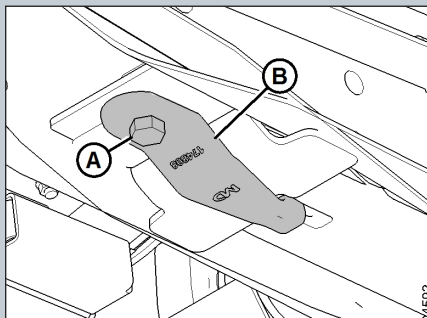


### 10 hours or daily

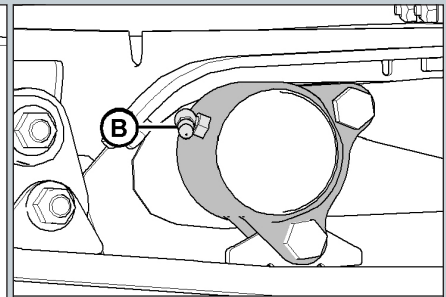
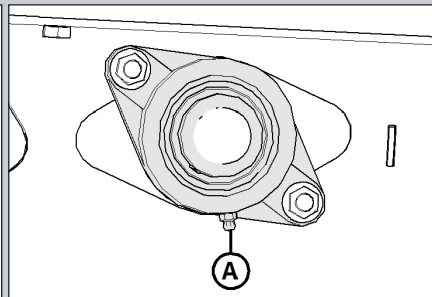
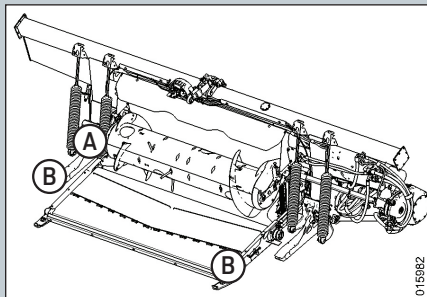
Check and adjust knife hold-down clips.  
Hold-down clearance is 0.1–0.6 mm (0.004–0.024 in.)



Checking knife hold downs and lubricating knife daily will keep your knife performing at peak levels, prevent premature wear and ensure a longer life of all your cutting components (ultimately saving you money).



Check integrity of break-away hooks and hardware daily.

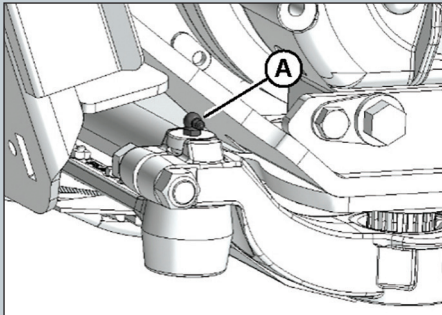


(A) Drive roller bearing

(B) Idler roller bearing (both sides)



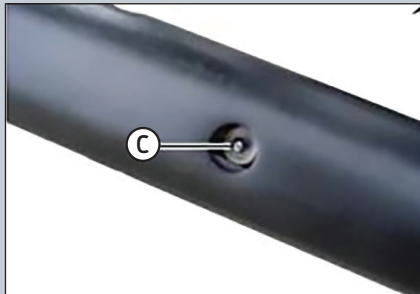
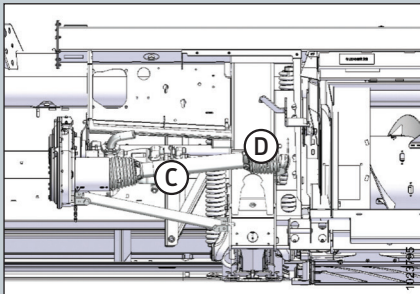
## 25 Hours



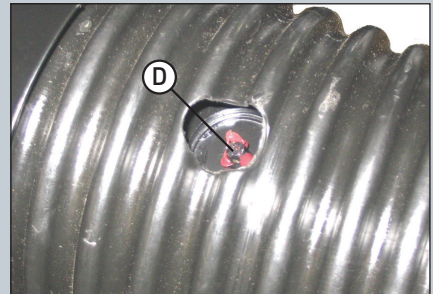
### 25 hours

Grease knife head. 1-2 pumps only. **DO NOT OVER GREASE.**

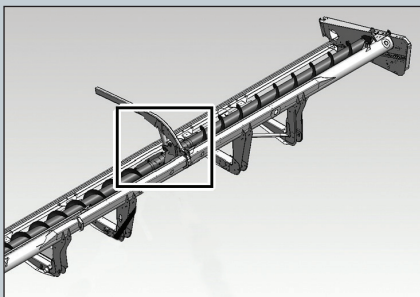
## 50 Hours



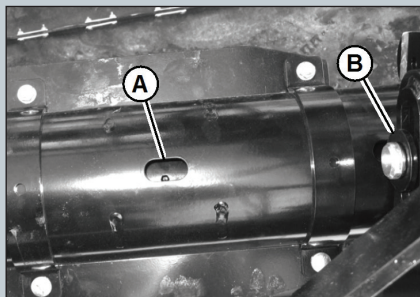
**(C)** Driveline Slip Joint



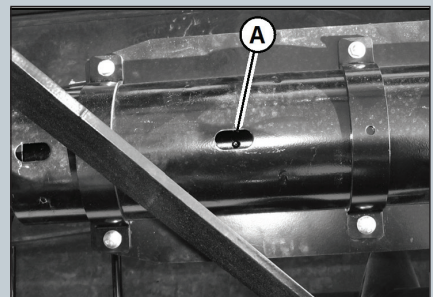
**(D)** Driveline Universal (two places)



**Optional Attachment**



**(A)** Upper Cross Auger U-joint and Bearing – Upper Cross Auger Bearing (two places)



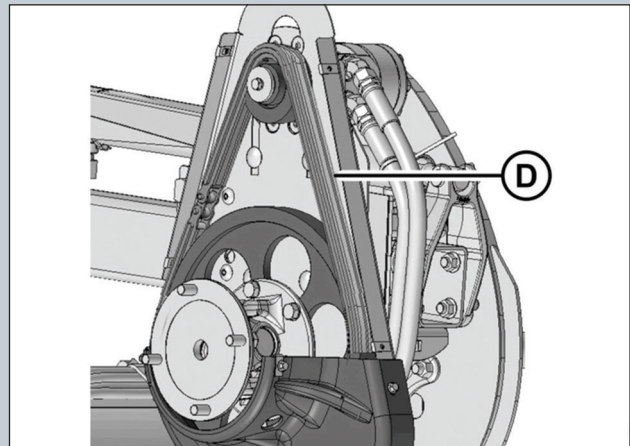
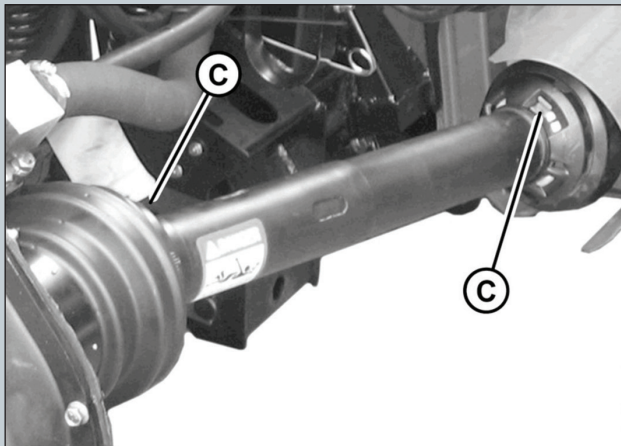
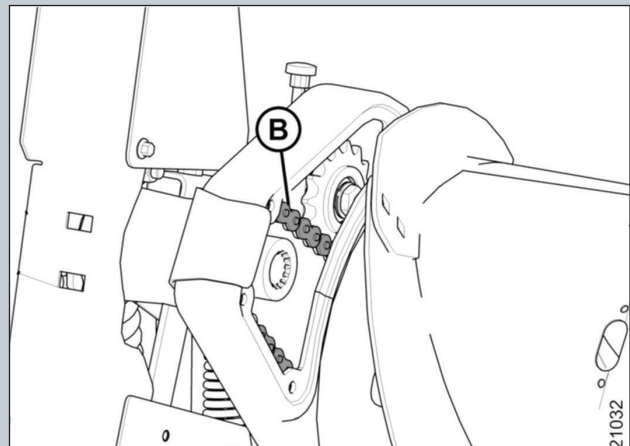
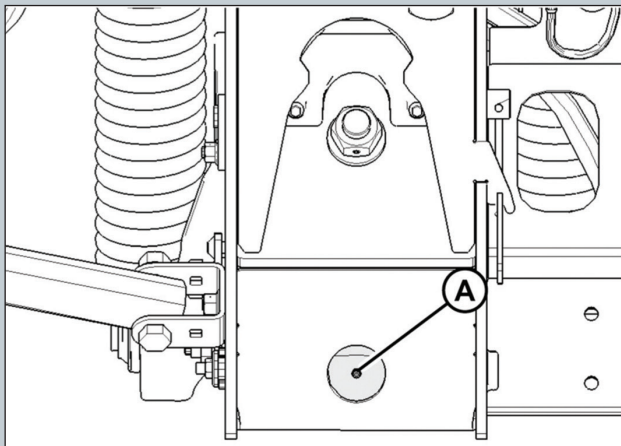
# Maintenance

## 100 Hours

Check side draper deck height adjustment.

Refer to **Section 5.12 Header Side Drapers** in the Operators Manual for more information.

**NOTE: Correctly setting side draper deck height will limit the amount of material getting in between the drapers. This should prevent stalling and damage to side drapers.**

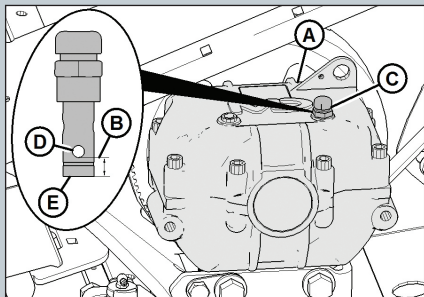


**(A)** Float Pivot – Right and Left

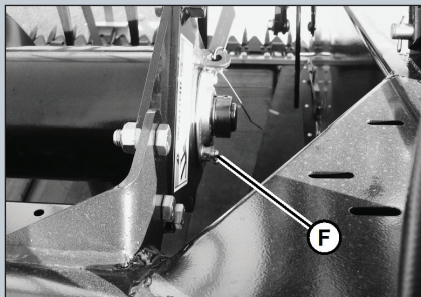
**(B)** Auger Drive Chain

**(C)** Driveline guard

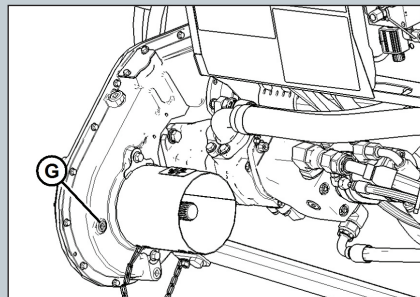
**(D)** Reel Drive Chain



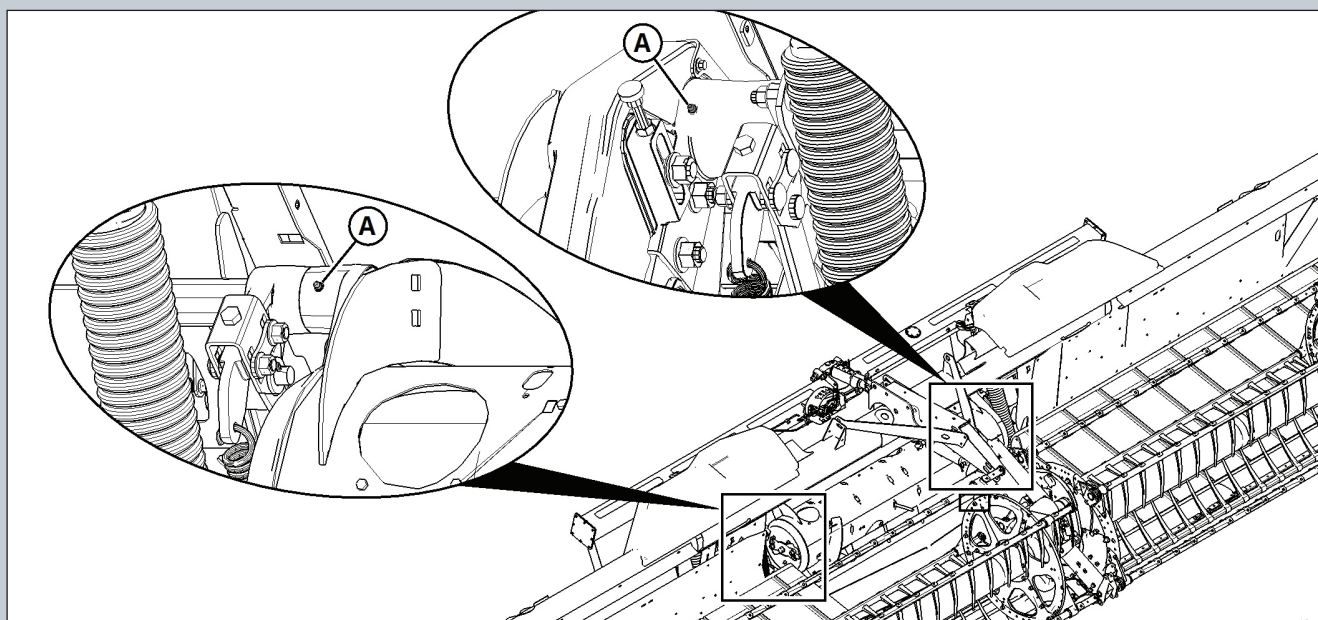
**(A)** Knife Drive Box [check oil level  
**(B)** on dipstick **(C)**: Between lower  
hole **(D)** on dipstick and dipstick  
bottom edge **(E)**]



**(F)** Upper Cross Auger Bearing  
**(Optional Attachment)** – one place)



**(G)** Main Drive Gearbox Oil Level



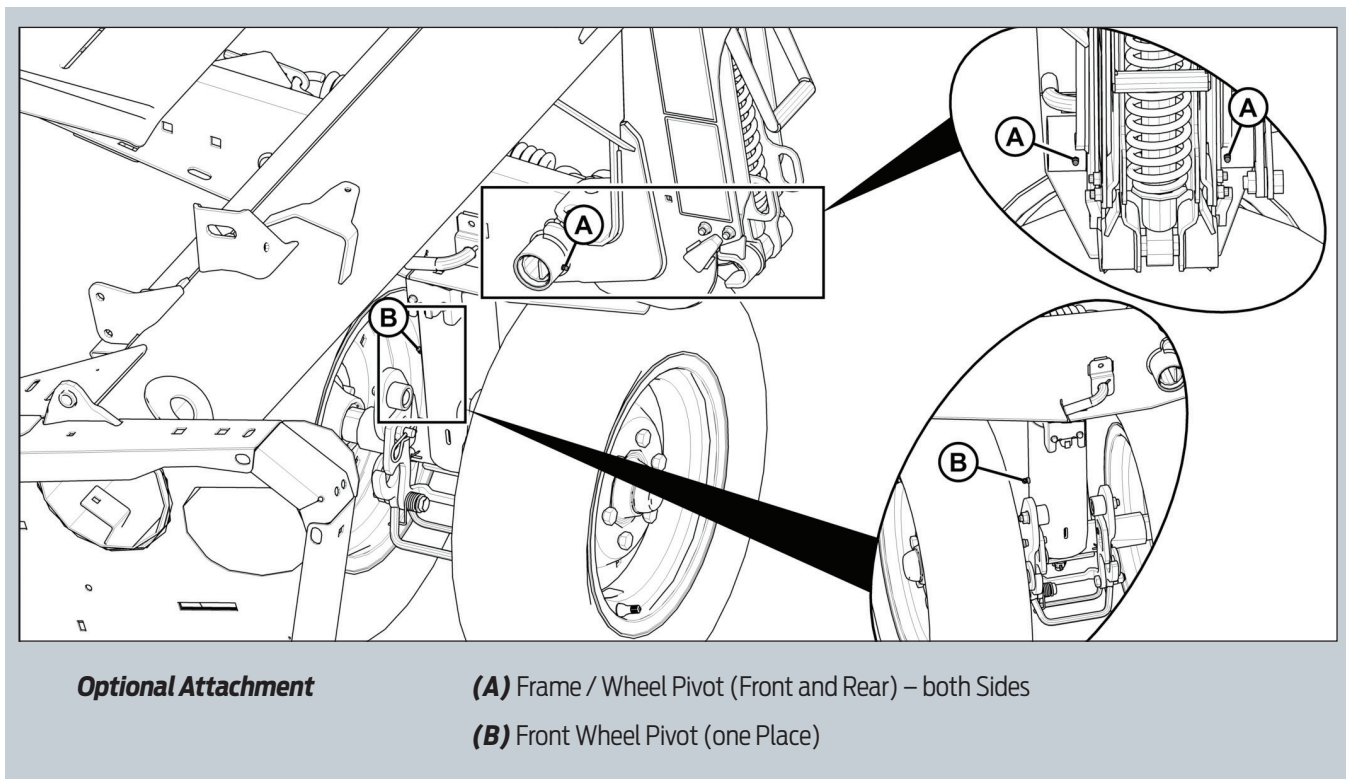
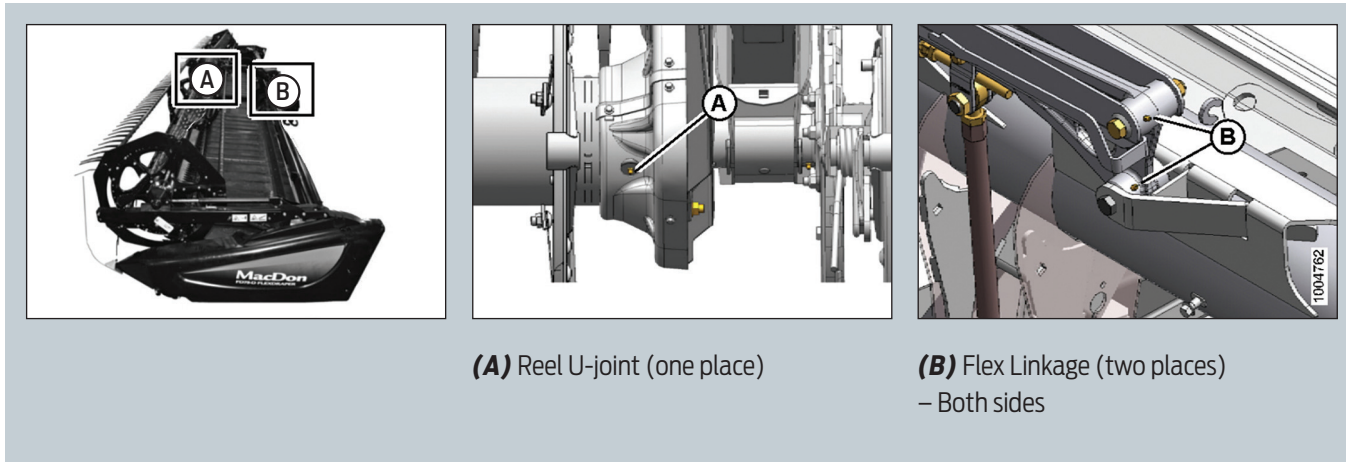
**(A)** Auger Pivots



# Maintenance

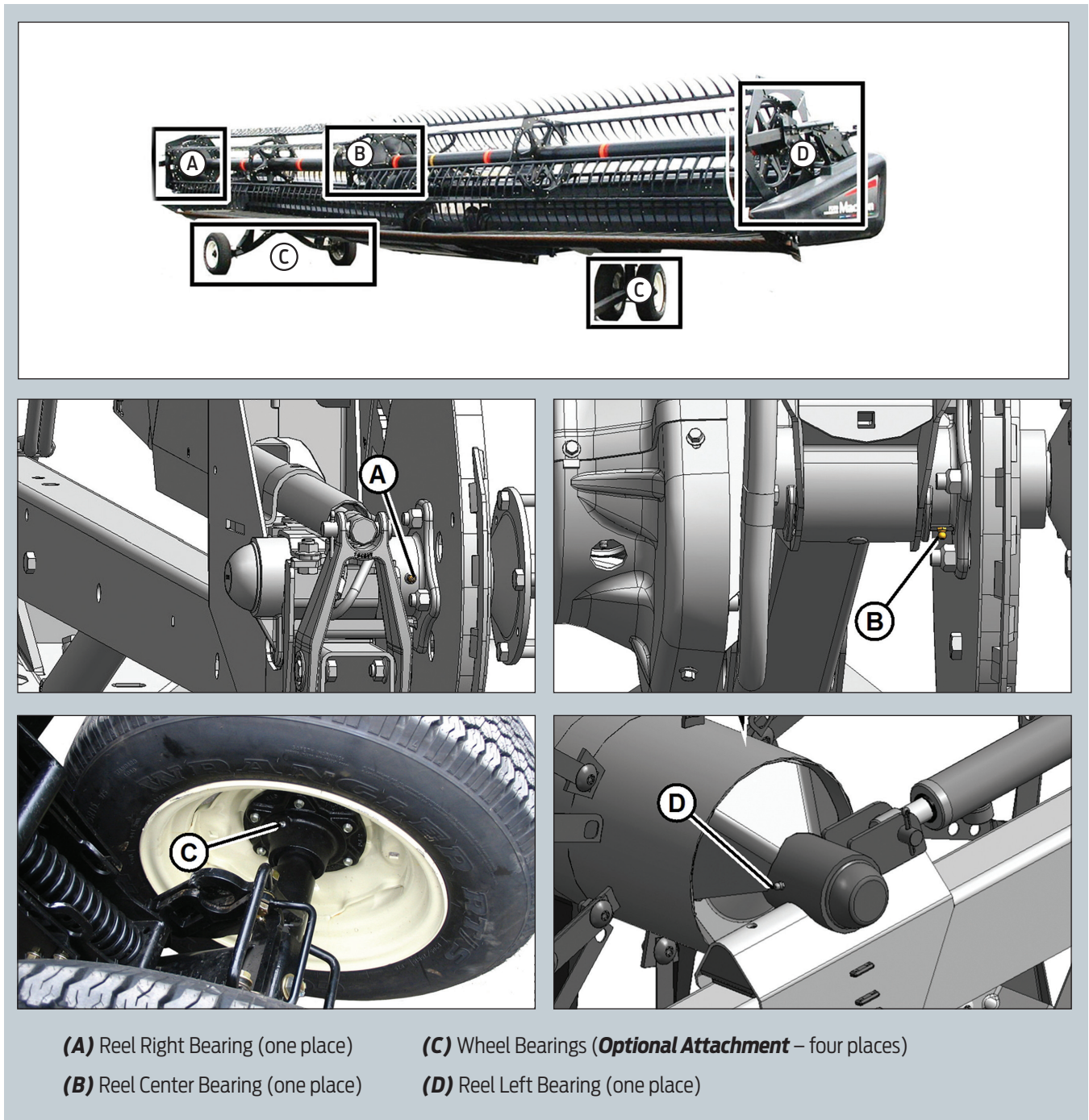
## 250 Hours

Change float module hydraulic oil filter. Refer to **Section 5.4 Hydraulics** in the Operators Manual for more information.



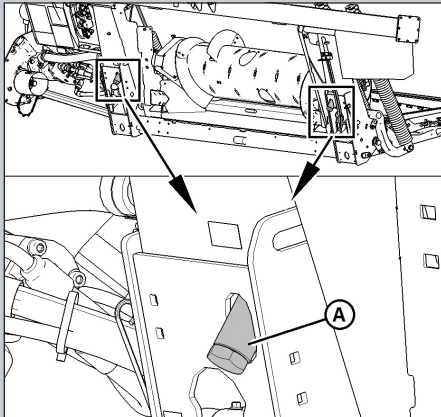
**NOTE:** Change float module hydraulic oil filter (refer to page 6).

## 500 Hours



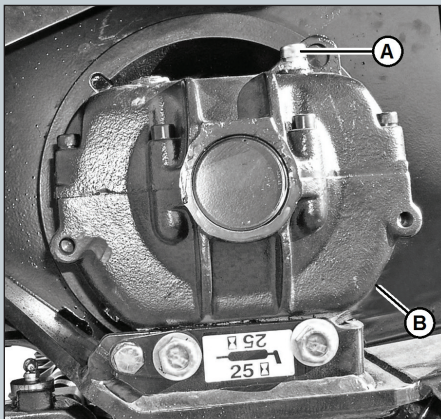
# Maintenance

## 1000 Hours or 3 Years



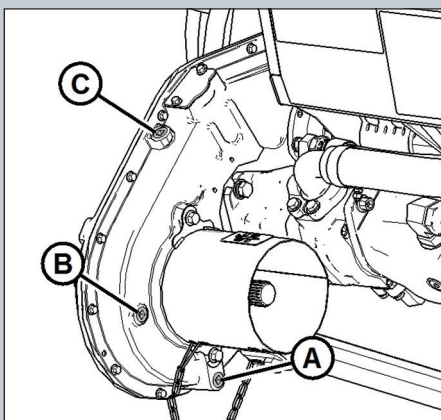
Change hydraulic oil in Float Module reservoir using approximately 85 liters (22.5 US Gallons) of **Single grade trans-hydraulic oil**.

Refer to **Section 5.4 Hydraulics** in the Operators Manual for more information.



Change oil in Knife Drive Box using approximately 2.2 liters (2.3 quarts) of 85W – 140 (API service class GL-5 oil).

Refer to **Section 5.9 Knife Drive System** in the Operators Manual for more information



Change oil in Header Drive Gearbox using approximately 2.5 liters (2.6 quarts) of 85W – 140 (API service class GL-5 oil).

Refer to **Section 5.3 - Maintenance Requirements** in the Operators Manual for more information.



# End of Season

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## CAUTION

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

## CAUTION

Cover cutterbar and knife guards to prevent injury from accidental contact.

1. Clean the header thoroughly.
2. Park the machine for storage in a dry and protected place if possible. If storing outside, always cover the machine with a waterproof canvas or other protective material.

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**NOTE:** If storing the machine outside, remove the drapers and store them in a dark, dry place. If not removing the drapers, store the header with the cutterbar lowered so water and snow will not accumulate on the drapers.

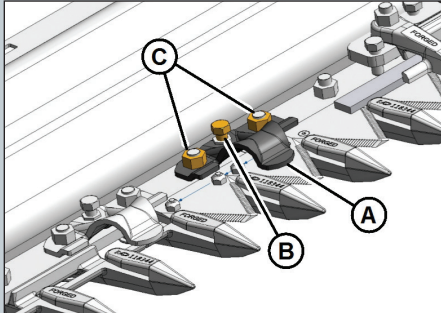
The weight of water and snow accumulation puts excessive stress on the drapers and header.

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3. Lower the header onto blocks to keep the cutterbar off the ground.
4. Lower the reel completely. If stored outside, tie the reel to the frame to prevent rotation caused by the wind.
5. Repaint all worn or chipped painted surfaces to prevent rust.
6. Loosen the drive belts.
7. Lubricate the header thoroughly leaving excess grease on the fittings to keep moisture out of the bearings.
8. Apply grease to exposed threads, cylinder rods, and sliding surfaces of components.
9. Lubricate the knife with SAE30 or equivalent oil.
10. Check for worn components and repair as necessary.
11. Check for broken components and order replacements from your Dealer. Immediate repair of these items will save time and effort at the beginning of next season.
12. Replace or tighten any missing or loose hardware.

# Knife Maintenance

## Knife Hold Down Adjustment



Check hold downs daily (every 10 hours).

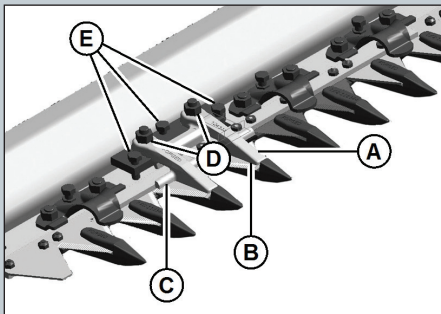
Hold down clearance is 0.1–0.6 mm (0.004–0.024 in).

Adjust bolt **(B)** to achieve clearance at **(A)**.

Checking knife hold downs daily will keep your knife performing at peak levels, prevent premature wear and ensure a longer life of all your cutting components (ultimately saving you money).

Refer to **Section 5.8.7 Knife Guards** in the Operators Manual for more information.

## Double Knife Center Guard Adjustment



Check clearance daily (every 10 hrs).

At guard tip **(B)** clearance is 0.1-0.4 mm (0.004-0.016 in).

At rear of guard clearance is .01-1.0 mm (0.004-0.040 in).

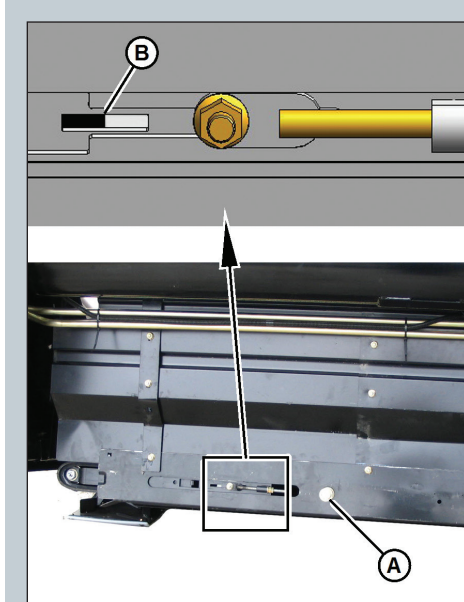
With nuts **(D)** finger tight turn adjuster bolts **(E)** to achieve clearance.

Torque bolts **(D)** to 72Nm (53 lbf-ft) after adjustments are achieved.

Refer to **Section 5.8.7 Knife Guards** in the Operators Manual for more information.

# Adjusting Draper Tension

## Side Draper Tension Adjustment



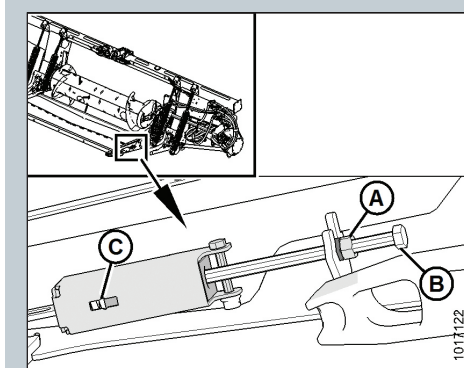
Turn bolt **(A)** clockwise and white indicator bar **(B)** will move inboard, indicating that the draper is being tightened.

Turn bolt **(A)** counterclockwise and white indicator bar **(B)** will move outboard indicating the draper is being loosened.

When properly tensioned, the white indicator **(B)** will be halfway across the inboard side of the window. (Left tension adjuster shown).

Refer to **Section 5.12 Header Side Drapers** in the Operators Manual

## Feed Draper Tension Adjustment



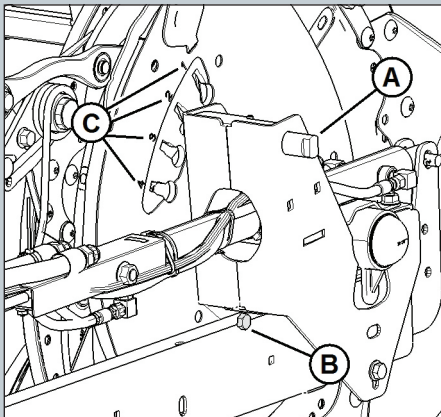
Loosen jam nut **(A)** and turn bolt **(B)** clockwise to increase center draper tension or counterclockwise to decrease center draper tension.

Tension is correct when the white indicator is centered within the indicator window on the spring box **(C)**, however it is permissible to be under-tensioned by 3mm or over-tensioned by 6mm on either or both sides to allow for proper tracking of feed draper.

Refer to **Section 5.10.2 Feed Draper Tension** in the Operators Manual

# Operation Tips

## Adjusting Reel Cam Positions



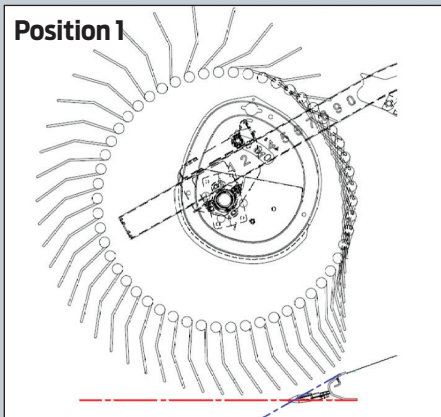
FD1 and D1 series headers feature a 4 position reel cam adjustment **(C)** on the right end of each reel (Dual reel headers must be adjusted separately for each reel). The factory cam setting is position 2.

Use a 19 mm or 3/4" wrench to rotate pin **(A)** to release cam disc and adjust cam at **(B)** to desired setting.

Turn pin **(A)** to engage cam disc lock.

Refer to **Section 3.7.12 Reel Tine Pitch** in the Operators Manual for more information.

**Position 1**



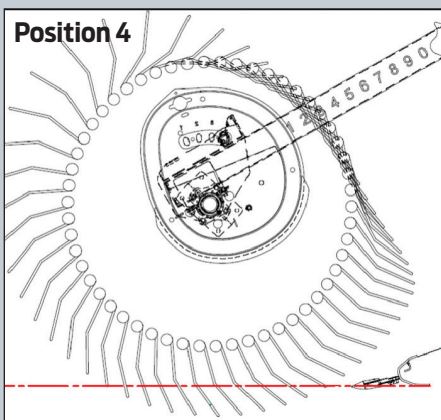
**Reel cam position 1** is recommended for straight cut canola where the reel will be pulled back behind the cutterbar and you want minimal reel finger engagement in the crop to limit loss.

**Reel cam position 2** is for most straight standing cereals and soybeans.

**Reel cam position 3** is for moderately lodged crop conditions.

**Reel cam position 4** is for severely lodged crops where the reel will be placed in front of and possibly below the cutterbar. For best lifting action.

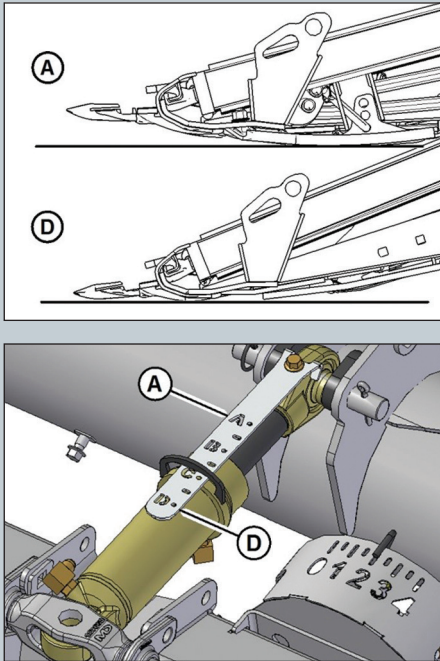
**Position 4**



As the reel tine pitch is increased it also increases the speed of the reel tine tips relative to actual reel speed.

Refer to **Section 3.6.4 Reel Settings** and **Section 3.7.12 Reel Tine Pitch** in the Operators Manual for more information.

## Header Angle



Header angle is the relationship between the header (guard tips) and the ground.

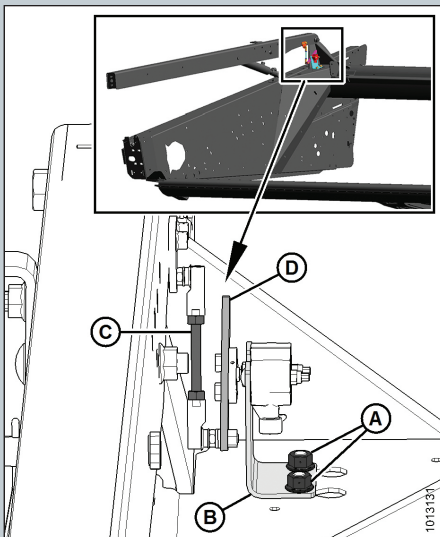
Set the header angle according to the type and condition of the crop and soil. The shallowest header angle produces the highest stubble height when cutting on the ground; the steepest angle produces the lowest stubble height when cutting on the ground.

**a.** Use shallower settings **(A)** (position A on the indicator) for normal cutting conditions or in wet soil conditions to reduce soil build-up at the cutterbar. Shallow angle settings also minimize damage to the knife in stony fields.

**b.** Use steeper settings **(D)** (position D on the indicator) for lodged crops and crops that pod close to the ground such as lentils or beans.

Refer to **Section 3.7.5 Header Angle** in the Operators Manual for more information.

## Reel Height Sensor



A reel height sensor located on the RH reel arm is a standard feature for the FDI series headers that provides reel height position output; allowing for one touch reel height resume in conjunction with header position.

It can be set to lower the reel when lifting the header at the headland to sweep crop off the cutterbar and then return to an “in crop” height when the header is lowered back to the ground.

**Not compatible with AGCO combines.**

Refer to **Section 3.8 Auto Header Height Control** in the Operators Manual for more information on calibration and setting.

# Auto Header Height Control

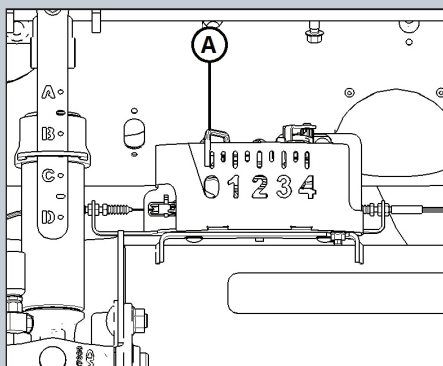
## Setting AHHC

MacDon's auto header height control (AHHC) feature works in conjunction with the AHHC option available on most current model combines.

A sensor is located in the float indicator box on the FM100 Float Module. This sensor sends a signal to the combine telling it to automatically adjust the feederhouse position to maintain a consistent cutting height and an optimum float (ground pressure) as the header follows ground contours.

1. Disengage header float locks.
2. Ensure that header float is set correctly. Refer to Quick Card.
3. Perform header calibration.
4. Set combine presets through the combine console or control handle.

**NOTE: Refer to Combine Operator's Manual and Header Operators Manual Section 3.8 Auto Header Height Control for more information on header calibration and settings.**



The indicator (**A**) should be at **0** with the header 152 mm (6 in.) off the ground. (If not it may affect the header calibration procedure.) When the header is on the ground, the indicator would be at **1** for low ground pressure, and at **4** for high ground pressure. MacDon recommends using **2** as a starting ground pressure.

Ground speed, ground conditions and crop conditions will affect the amount of ground pressure to use.

The ideal setting is as light as possible without header bouncing or missing crop.

Operating with heavy settings prematurely wears the cutterbar wearplates.



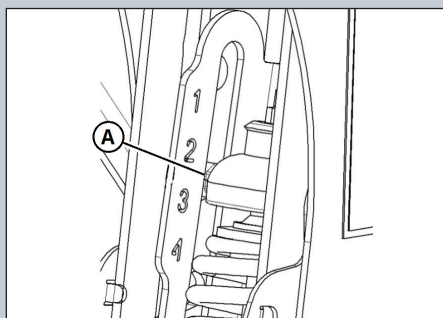
# Slow Speed Transport / Stabilizer Wheel Option

## Setting Wheel Height

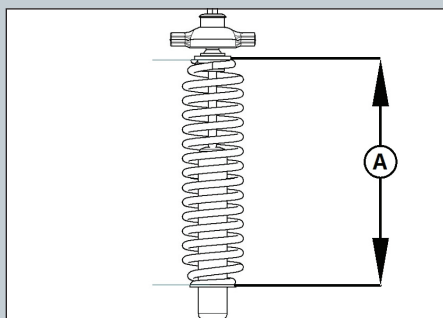
**Important:** There should only be one point of contact with the ground at any time, either the cutterbar, skid shoes or stabilizer wheels.

When cutting **on the ground:** All stabilizer wheels should be locked into the highest notch with wheels completely off the ground.

When cutting **off the ground** with Slow Speed Transport wheels or Stabilizer wheels:



Set header to desired height then position wheels to nearest notch that allows springs to be slightly compressed.



### **IMPORTANT:**

Continuous operation with excessive spring compression (i.e., load indicator reading greater than 4 or a compressed length **(A)** less than 295 mm [11-5/8 in.]) can result in damage to the suspension system.

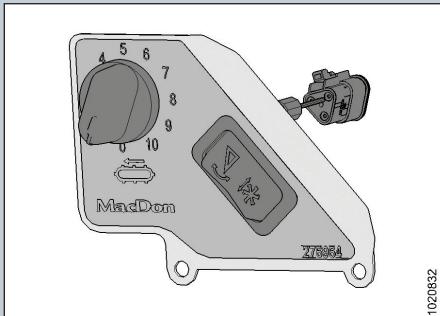
**Auto header height control when cutting off the ground:** To operate with AHHC when cutting off the ground, it might be necessary to lighten float or to add slightly more compression to stabilizer wheel springs so that the header will float upward off of adapter to sense terrain.

Ensure that float is unlocked and properly adjusted.

Do not over compress springs as this may result in hazard or damage to the shock and spring assembly.

# Performance Options

## In Cab Draper Speed Control

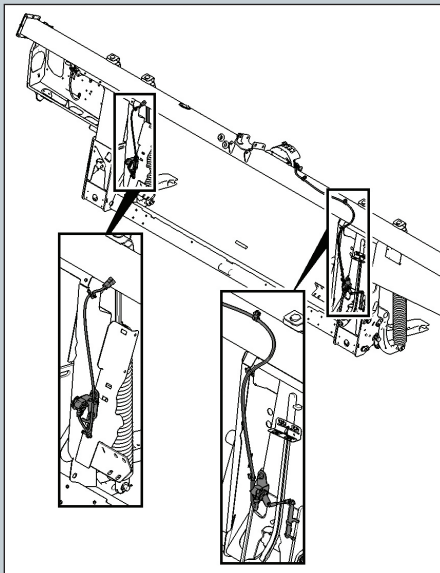


This option allows the operator the ability to adjust the speed of the side drapers from in the cab of the combine.

The kit contains a PWM valve that is installed into the hydraulic manifold and a wire harness that runs into the cab. A suction mounted control panel contains the operator interface.

**MD #B6387**

## Dual Auto Header Height



This option provides additional auto header height control sensor inputs for the combine lateral tilt circuit allowing the FM100 Float Module to automatically pivot from side to side to follow uneven terrain during operation.

The combine requires feeder faceplate tilt option.

The kit adds two additional sensors to the float linkage.

Not compatible with New Holland 10 volt AHHC system.

Not recommended for use on steep hills.

**MD #B6211**

## FD1 Series Draper Header & FM100 Float Module

### SETTING HEADER FLOAT AND WING BALANCE

Follow these five steps to set the header float and wing balance:

#### IMPORTANT:

Read your operator's manual and complete all the setup tasks before setting the header float.

#### Step 1: Preadjustments

Complete before adjusting float or wing balance.

1. Park combine on a level surface, and ensure the combine feeder house is level.
2. Ensure the top of the float module is level with the combine axle and the combine tires are inflated equally.
3. Adjust header so cutterbar is 150–254 mm (6–10 in.) off the ground.
4. Set the header angle hydraulic cylinder to between B and C on indicator (A).
5. Set the reel fore-aft to midposition (5 or 6 on reel arm decal).
6. Lower the reel completely, shut down the combine, and remove key from the combine ignition.
7. Place wing lock spring handles (B) in the locked (upper) position.
8. Place both left and right header float locks in unlocked (lowered) position (C).
9. Set stabilizer/transport wheels (if equipped) to the storage position.

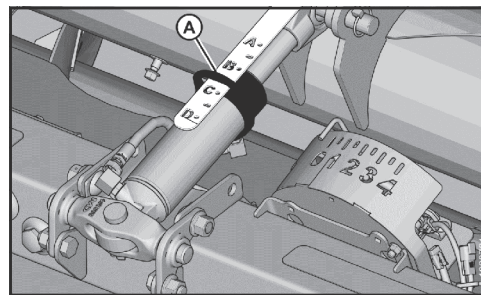


Figure 1: Center-Link

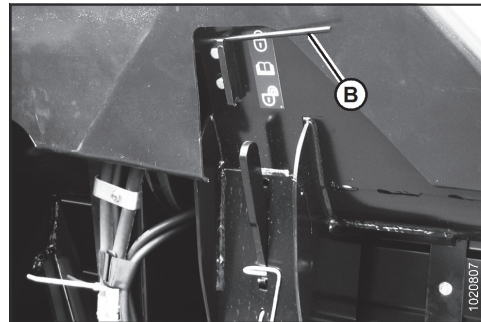


Figure 2: Wing Lock Spring Handle in Locked Position

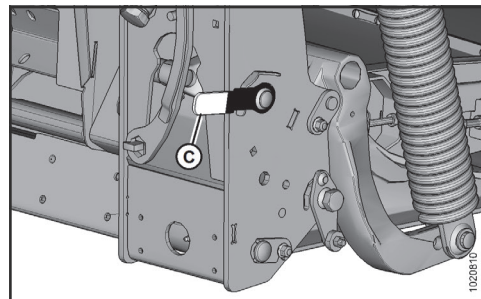


Figure 3: Float Unlocked – Right Side Shown

#### Step 2: Retrieving Torque Wrench from Storage

1. Remove the special torque wrench (A) from its storage position at the right side of the float module frame. Pull in the direction shown to disengage the wrench from its hook.

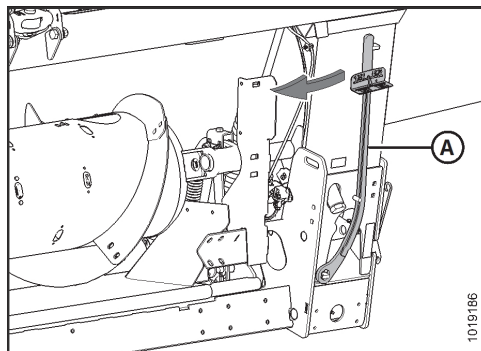


Figure 4: Torque Wrench Storage Location

# Quick Card

## Step 3: Checking Header Float

1. Place torque wrench (A) onto float lock (B). Note the change in wrench orientation when checking float module's left and right side.
2. Push down on torque wrench (A) to rotate bell crank (C) forward.
3. Continue pushing down on torque wrench until the wrench's indicator (D) reaches a maximum reading and begins to decrease. Note the maximum reading.
4. Repeat above steps for opposite side of float module.
5. Refer to Table 1.1 as a guide for float settings.
  - If the reading is high, the header is heavy.
  - If the reading is low, the header is light.

Table 1.1: Float Settings

Header Size m (ft.)	Indicator Reading	
	Cutting on the Ground	Cutting off the Ground
9.1 and 10.6 m (30 and 35 ft.)	1-1/2 to 2	2 to 2-1/2
12.1 and 13.7 m (40 and 45 ft.)	2 to 2-1/2	2-1/2 to 3

### IMPORTANT:

Torque settings in Table 1.1: Float Settings are recommended header float settings. It may be necessary to set float values outside of these ranges to suit varying crop and field conditions.

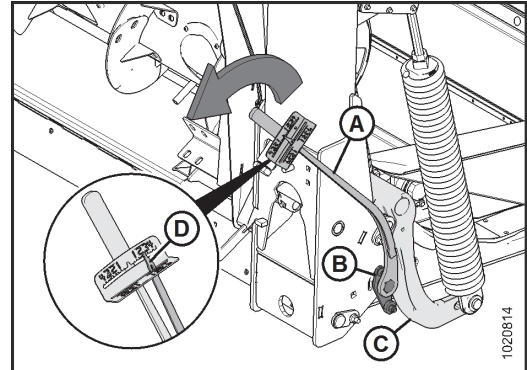


Figure 5: Checking Float – Right Side Shown

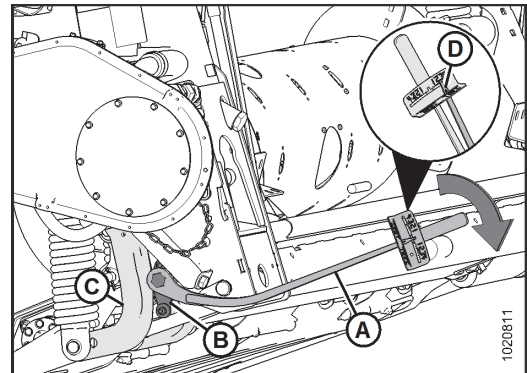


Figure 6: Checking Float – Left Side Shown

## Step 4: Setting Header Float

1. Before adjusting the float spring adjustment bolts (A), rotate the spring locks (B) by loosening bolts (C).
2. To **increase** float (decrease header weight), turn both adjustment bolts (A) on the left side clockwise. Repeat adjustment at opposite side.
3. To **decrease** float (increase header weight), turn left side adjustment bolts (A) counterclockwise. Repeat at opposite side.

### IMPORTANT:

Ensure torque wrench indicator readings are equal on both sides of float module.

### NOTE:

For 12.2 and 13.7 m (40 and 45 ft.) double-knife headers, adjust float as above, then loosen right side float spring bolts two turns.

### NOTE:

If adequate header float cannot be achieved using all the available adjustments, an optional heavy duty spring is available. See your MacDon Dealer or refer to the parts catalog for ordering information.

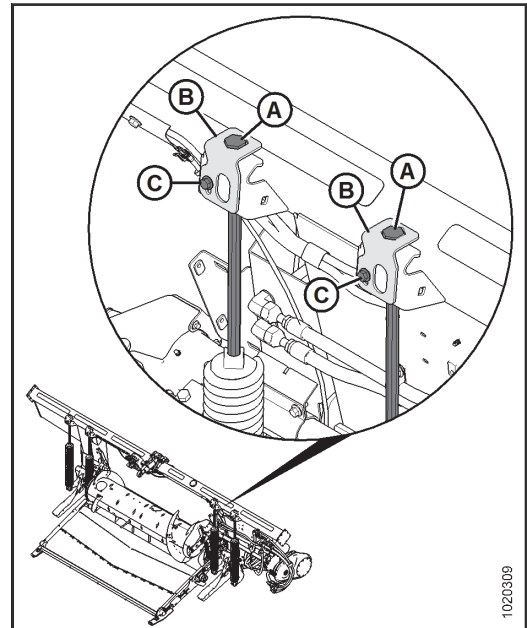


Figure 7: Float Adjustment Bolts – Left Side Shown

**IMPORTANT:**

Before proceeding, the header float must be set properly. Refer to **Step 4: Setting Header Float**.

**Step 5: Check Wing Balance**

1. Remove wing balance linkage cover on left side of the float module by removing securing bolt and rotating the cover upwards until the inboard end can be lifted off.
2. Place wing lock spring handles in the unlocked (lower) position.
3. Place torque wrench (A) on bolt (B).
4. Check that pointer (C) is properly positioned as follows:
  - a. Use the torque wrench (A) to move the bell crank so that the bell crank's lower edge (D) is parallel to the top-link's lower edge (E).
  - b. Ensure pointer (C) is lined up with the top-link (E). If necessary, bend the pointer it aligns with bolt hole (J).
5. Move wing upward with torque wrench (A) until the pointer's lower alignment tab (F) lines up with the upper edge of the top-link (E). Refer to Figure 8. Observe the indicator reading (G) on the torque wrench and record it.
6. Move the wing downward with torque wrench (A) until the pointer's upper alignment tab (H) lines up with the lower edge of the top-link (E). Refer to Figure 9. Observe the indicator reading (G) on the torque wrench and record it.
7. Check wing balance on opposite side of header.
  - If the difference between the readings is 0.5 or less, the wing is balanced and adjustment is not required.
  - If the difference between the readings is more than 0.5, the wing is not balanced and adjustment is required.

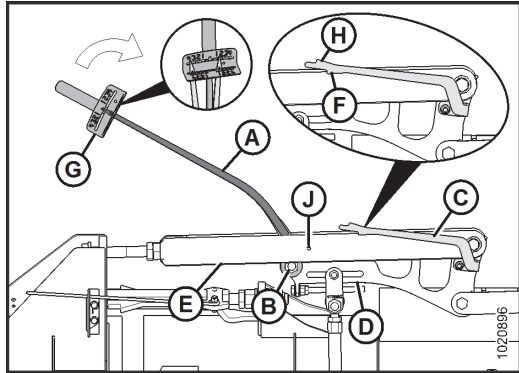


Figure 8: Wing Balance Linkage, Wings Set too Light – Left Side Shown, Right Opposite

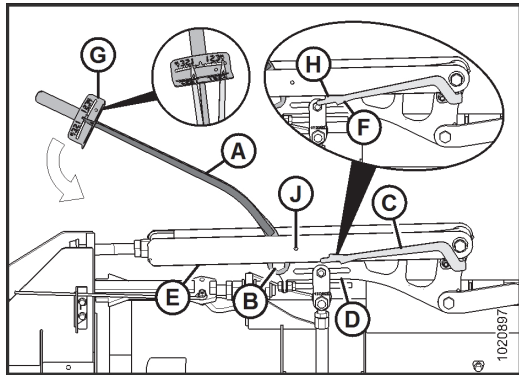


Figure 9: Wing Balance Linkage, Wings Set too Heavy – Left Side Shown, Right Opposite

**Step 6: Adjust Wing Balance**

1. Place torque wrench (A) on bolt (B) on the left side of header.
2. Loosen clevis bolt (C) and jam nut (J).
3. Recheck wing balance. Refer to **Step 5: Check Wing Balance**.
4. If necessary, make the following adjustments:
  - If the wing is too heavy, turn the clevis adjuster bolt (D) to move clevis (E) outboard (F).
  - If the wing is too light, turn the clevis adjuster bolt (D) to move clevis (E) inboard (G).
5. Adjust clevis (E) position (if necessary) until the difference between torque wrench indicator readings is 0.5 or less. Tighten clevis bolt (C) and jam nut (J).
6. Place wing lock spring handles (H) in the locked (upper) position. If lock doesn't engage, move the wing up and down with the torque wrench (A) until it locks. When locked, there will be some movement in the linkage. Repeat on opposite side of header.
7. If the cutterbar is not straight when wings are in lock mode, then further adjustments are required. Contact your MacDon Dealer.
8. Return the torque wrench (A) to its storage location on the float module frame.

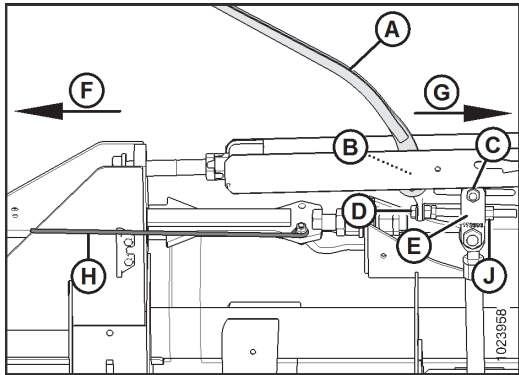


Figure 10: Wing Balance Linkage – Left Side Shown



# Quick Card

## D1 Series Draper Header & FM100 Float Module

### IMPORTANT:

Read your operator's manual and complete all the setup tasks before setting the header float.

#### Step 1: Preadjustments Complete before adjusting float.

1. Park combine on a level surface, and ensure the combine feeder house is level.
2. Ensure combine tires are inflated equally.
3. Adjust header so cutterbar is 154–254 mm (6–10 in.) off the ground.
4. Set guard angle to mid-position (A) (between B and C on the indicator).
5. Set the reel fore-aft to mid-position (5 or 6 on reel arm decal).
6. Lower the reel completely and shut down the combine.
7. Place both header float locks in unlocked (lowered) position (B) (right side float lock shown).
8. Set stabilizer/transport wheels (if equipped) to the fully raised position.

#### Step 2: Checking Header Float

1. Remove the supplied torque wrench (C) from the storage position on the right side of the FM100 Float Module.
2. Place the torque wrench onto the float lock (D). Note the change in orientation of the wrench between the left and right side.
3. Push down on torque wrench until bell crank (E) rotates forward.
4. Continue pushing down until indicator (F) on wrench reaches MAXIMUM reading and begins to decrease. Note the maximum reading.
5. Repeat above steps for opposite side.
6. Ensure the readings match the values in Table 1.1: Float Settings.

Table 1.1: Float Settings

Header Size (ft.)	Torque Settings	
	Cutting on the Ground	Cutting off the Ground
20, 25, 30 and 35	1-1/2 to 2	2 to 2-1/2
40 and 45	2 to 2-1/2	2-1/2 to 3

### IMPORTANT:

The torque settings in Table 1.1: Float Settings are recommended header float settings. It may be necessary to set float values outside of these ranges to accommodate varying crop and field conditions.

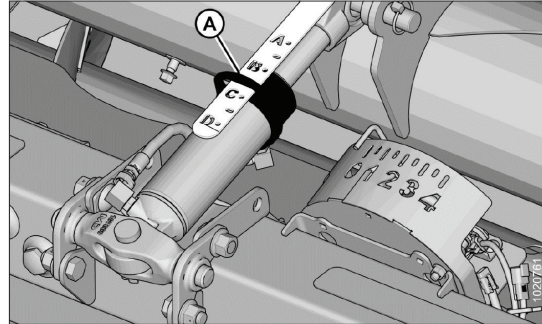


Figure 1: Center-Link

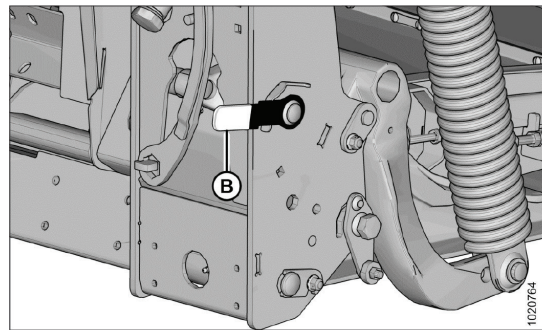


Figure 2: Float Unlocked – Right Side

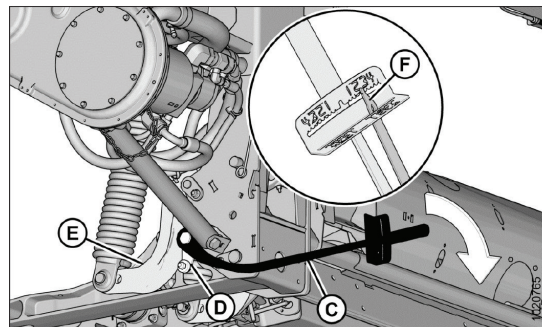


Figure 3: Checking Float – Left Side

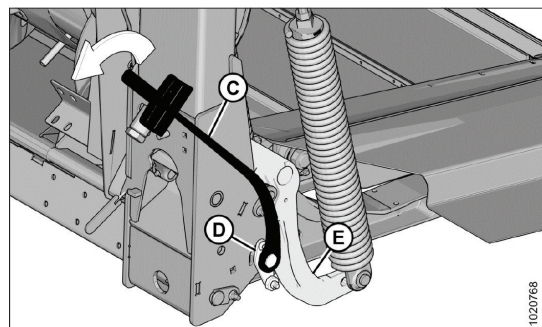


Figure 4: Checking Float – Right Side



### Step 3: Setting Header Float

1. Refer to Table 1.1: Float Settings for recommended initial float setting:  
If reading on wrench is high, header is heavy. Increase float.  
If reading on wrench is low, header is light. Decrease float.
2. Adjust the header float to match values in Table 1.1: Float Settings. Turn each bolt pair equal amounts. Before adjusting float, rotate the spring locks (A) by loosening bolts (B).

**Increase float** (decrease header weight) by turning float adjustment bolts clockwise.

**Decrease float** (increase header weight) by turning float adjustment bolts counterclockwise.

**IMPORTANT:**

Ensure torque wrench reading is **EQUAL ON BOTH SIDES**.

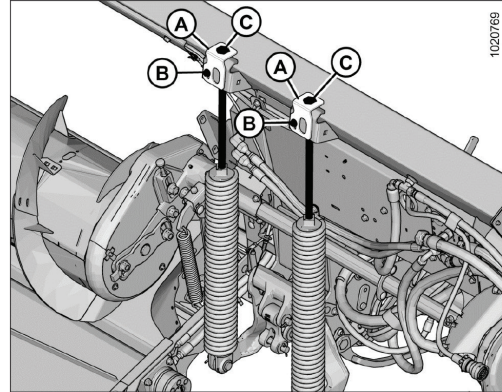


Figure 5: Float Adjustment Bolts – Left Side

### Recommended Fluids and Lubricants

Lubricant	Specification	Description	Use	Capacities
Grease	SAE multi-purpose	High temperature extreme pressure (EP) performance with 1% max Molybdenum Disulphide (NLGI Grade 2) lithium base	As required unless otherwise specified	—
		High temperature extreme pressure (EP) performance with 10% max Molybdenum Disulphide (NLGI Grade 2) lithium base	Driveline slip-joints	—
Gear Lubricant	SAE 85W-140	API service class GL-5	Knife drive box	2.2 liters (2.3 quarts)
			Main drive gearbox	2.5 liters (2.6 quarts)
Hydraulic Oil	Single grade trans-hydraulic oil Recommended brands: <ul style="list-style-type: none"> <li>• Petro-Canada Duratran</li> <li>• John Deere Hy-Gard J20C</li> <li>• Case Hy-Tran Ultratrion</li> <li>• AGCO Power Fluid 821 XL</li> </ul>	Lubricant trans / hydraulic oil	Header drive systems reservoir	85 liters (22.5 US gallons)

### Break-In Inspections

Time	Item
First 5 Minutes	Check hydraulic oil level in reservoir (check after first run-up and after the hydraulic hoses have filled with oil).
5 Hours	Check for loose hardware and tighten to required torque. Check knife drive belts tension (check periodically for the first 50 hours).
10 Hours	Check auger drive chain tension. Check knife drive box mounting bolts.
50 Hours	Change float module gearbox oil. Change float module hydraulic oil filter. Change knife drive box lubricant. Check gearbox chain tension. Check deck height adjustment.

### Ongoing Maintenance Intervals

Time	Service
Every 10 hours or daily	Check hydraulic hoses and lines for leaks. Check knife sections, guards, and hold-downs. Check tire pressure. Lubricate knife (except in sandy conditions). Grease feed draper roller bearings.
Every 25 hours	Check hydraulic oil level. Grease Knifeheads.
Every 50 hours	Grease driveline and driveline universal. Grease upper cross auger center support and U-joint. Change knife drive box lubricant.
<b>NOTE:</b> Refer to D1 Series / FM100 Operator's Manual for service beyond 50 hours.	

# Quick Card

Recommended Fluids and Lubricants				
Ensure your machine operates at top efficiency by using clean fluids and lubricants only. <ul style="list-style-type: none"> <li>• Use clean containers to handle all fluids and lubricants.</li> <li>• Store fluids and lubricants in an area protected from dust, moisture, and other contaminants.</li> </ul>				
Lubricant	Specification	Description	Use	Capacities
Grease	SAE multi-purpose	High temperature extreme pressure (EP) performance grease with 1% max Molybdenum Disulphide (NLGI Grade 2) lithium base	As required unless otherwise specified	—
		High temperature extreme pressure (EP) performance grease with 10% max Molybdenum Disulphide (NLGI Grade 2) lithium base	Driveline slip-joints	—
Gear Lubricant	SAE 85W-140	API service class GL-5	Knife drive box	2.2 liters (2.3 quarts)
			Main drive gearbox	2.5 liters (2.6 quarts)
Hydraulic Oil	Single grade trans-hydraulic oil Recommended brands: <ul style="list-style-type: none"> <li>• Petro-Canada Duratran</li> <li>• John Deere Hy-Gard J20C</li> <li>• Case Hy-Tran Ultraction</li> </ul>	Lubricant trans / hydraulic oil	Header drive systems reservoir	85 liters (22.5 US gallons)

Break-In Inspections	
To help avoid major component service or replacement, perform break-in inspections on your machine for the first 50 hours of operation. Refer to your operator's manual for complete break-in inspection and adjustment procedures.	
Inspection Instance	Item
First 5 Minutes	Check hydraulic oil level in reservoir (check after first run-up and after the hydraulic hoses have filled with oil).
5 Hours	Check for loose hardware and tighten to required torque.
	Check knife drive belts tension (check periodically for the first 50 hours).
10 Hours	Check auger drive chain tension.
	Check knife drive box mounting bolts.
50 Hours	Change float module gearbox oil.
	Change float module hydraulic oil filter.
	Change knife drive box lubricant.
	Check gearbox chain tension.

Ongoing Maintenance Intervals
Refer to the operator's manual for a comprehensive maintenance schedule and record. Log hours of operation, use the maintenance record, and keep copies of your maintenance records. Following the maintenance schedule will increase your machine's life.



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