

ORBIS Settings and Operations Guide

CLAAS JAGUAR Forage Harvesters

2020 - 900 Series (498) / 800 Series (496)



Company: CLAAS of America Inc.

Address: 8401 South 132nd Street Omaha, NE 68138

Phone: 402-861-1000

Fax: 402-861-1003

Website: www.claas.com

Images and content are intended to cover ALL features and options available on 2018-2019 type i53 (ORBIS 900), i52 (ORBIS 750), and i50 (ORBIS 600) for JAGUAR Forage Harvesters. Content may vary on each machine configuration.

JAGUAR Model:	990-930 (502/499) 980-930 (498) 880-840 (500/496)	NOTE: Content focused and intended for ORBIS headers with use on 900 (498) series and 800 (496) series machines. Content also applies to 900 (502/499) series and 800 (500) series machines but cab operation will vary because of differences in monitor.
Build Year:	2017-2020	NOTICE: Content is for information purposes only and is general in nature. Always consult
Effective Date:	7/22/2020	operators manual that came with machine for more detailed instructions of operation.
Last Revision:	7/27/2020	
Previous Revision:	3/20/2019, 7/27/202	18

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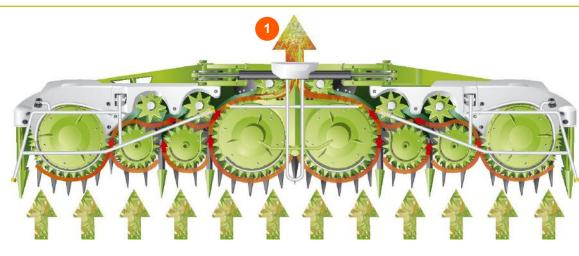
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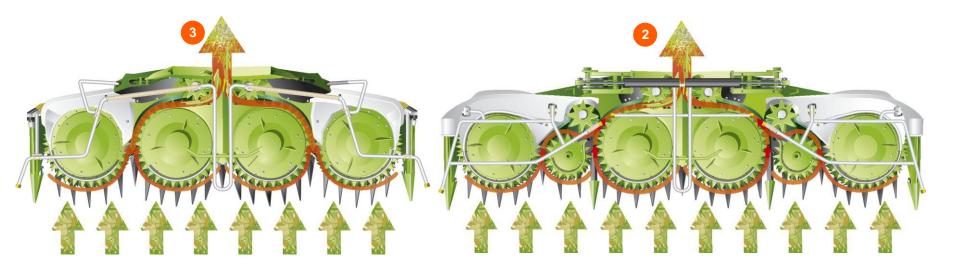
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ORBIS Models

	Crop Feeding
1	ORBIS 900 – 12 row head 30 ft (1)
2	ORBIS 750 – 10 row head 25 ft (2)
3	ORBIS 635 – 8 row head 21 ft
4	ORBIS 600 – 8 row head 20 ft (3)
Note	To insure proper movement of crop from drums and inner feed drums (Christmas trees) to the JAGUAR feeder house, the proper adjustment of scrapers on the ORBIS head is required for maxium effeciency.







JAGUAR controls and operation

J	AGUAR Controls and Setting for ORBIS	
1	Use the up (1R) and down (1L) arrows to lift and lower head	
	Cutting Height: Fixed cutting height (7) – head does not move up/down automatically	
2	AUTO CONTOUR (6/2): Automatic adjustment to contours of ground (AUTO CONTOUR only used if sensing wands on end of head)	
3	The selected cutting height control symbol (2) is black. Cutting height is running AUTO CONTOUR (Header sensors / ground pressure)	
Info	For detailed instruction on header operation see "CEBIS setup and controls guide" or Header OM (Operators Manual) sections 7.2.9 & 7.3.2 to 7.3.9	
4	Header is unholded/folded using toggle switch (8)	
	ORBIS 750 and 900 will only unfold if height of head (7) is at or below 35.	
5	The JAGUAR feeder house must be below blackout area (9) (Note: Blacked out area (9) means header is inbetween folded and unfolded positions) and feeder house can not raise above 35 when header is unfolding	
	Warning: Unfold restriction is to prevent possibility of header making contact with cab. Always consult Operaters Manual prior to unfolding and using the ORBIS header.	



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JAGUAR Setup for ORBIS

	Feedroll Filler Plates
	When an ORBIS head is installed, remove the white plastic top feedroll filler plates (1). The removal will aid in smoother feeding and better chop quality.
1	Shorter Stainless bolts will need to be installed.
	Hardware PN: 1000 829.1 Quantity 50
	Plastic Filler Plates:
Info	Kit PN: 0998 203.0 (496/494) with hardware Kit PN: 1410 112.0 (497/498) with hardware



Corn Saver Plates

1	Install the corn saver plate (2) under the feed rolls to prevent grain loss.
	Remove before doing any pickup work.
2	Install the feeder house roll side cover plates (3) to prevent grain loss

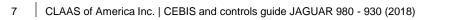


	Header Gearbox Speed Setup
1	2010 Production machines (SN: 65802549 & higher, 65901458 & higher and 99201047 & higher) come equipped with a 2 speed gearbox as standard equipment. Select 2009 ORBIS heads were also equipped with this gearbox.
	Gearbox on all (i53, i52, i50) series ORBIS headers for North America comes in position "II" which is 13% faster then position "I".
2	The top side of the input end of gearbox should have a Roman numeral "II" indicating higher speed.
	Note: Due to shielding Roman numeral cannot be seen. Need to reach in from side and feel Roman numeral on top.
0	For short LOC (Length of Cut) < 13-15 mm it is recommended to use the lower speed "I".
3	For long LOC (Length of Cut) > 13-15 mm it is recommended to use the higher speed "II".
Info	Note: If installing ORBIS on a JAGUAR (498) with Hydraulic Header Drive gearbox needs to be inverted so top side of the input end of gearbox has a Roman numeral "I"





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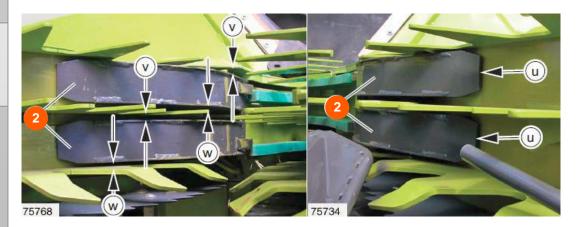


Scraper Adjustment - Drums

Adjusting the Scrapers

The picture (1) show the excess wear when the scrapers are set too tight. In addition to excess wear, if the scrapers are too tight, they can cause the clutches to wear prematurely and 1 create excess slippage. Can also cause false metal detection. ORBIS 600 = 6 Scraper ORBIS 750 = 10 Scrapers ORBIS 900 = 14 Scrapers Adjust all scrapers (2) so that the distance (up/down) between the feeder 2 disks and the impellers is the same for all of them. Distance (v) = distance (w)Adjust scrapers so that distances (u) between the scrapers and the feed cylinder / impellers are maintained. Distance (u) = 2.5 - 3 mm (0.10 - 0.12)3 in) - it is suggested to use a 2.5mm Allen wrench to check settings After adjusting, rotate disc to make sure scraper does not contact drum at any point. See section 9.8.1 in the ORBIS Info Operators Manual for further details.







Scraper Adjustment – Guides/Feed Cylinder

Adju	usting the Scrapers to Guide Bar	
1	Crop can get caught between the drum scrapers (1) and the guide bars (3) behind the drums. To prevent this adjust the clearance between (1) and (3).	
2	See OM section 9.8.1 for instructions for adjustment. Clearance (Z) = $<10 \text{ mm} (13/32 \text{ in})$ An Allen wrench is suggested to check settings.	
3	Align the drum scraper (1) edges (A) and guide bar (3) edge (B) so they are level to each other.	
A	djusting the Scrapers to Feed Cylinder (Christmas Trees)	THE LEEPER THE PARTY FERENCE
	See OM section 9.8.1 for instructions for adjustment.	
1	Check clearance (X) between stripper (4) and point of the feed cylinder. Clearance (X) = $3-6 \text{ mm} (7/64-15/64 \text{ in})$	
2	Check clearance (Y) between stripper (5) and point of the feed cylinder. Clearance (Y) = 3-6 mm (7/64-15/64 in)	



Scraper Adjustment - Wear

Outside Inner Feed Drums

The inner feed drums (small Christmas trees) each have scrapers to facilitate movement of crop from the inner feed drums to the wear guides.
 Replace inner feed drum scrapers if holes are present or if protruding metal is worn flat (2). The protruding metal (1) helps transition the crop to the green metal guides. If it is worn, the crop will hesitate or catch and crop flow will not be smooth.

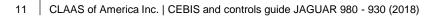






Wear Guides – Center Drum Guides

	PREMIUM LINE Wear Guides and Scraper (Standard 2016 and newer)	
1	It is critical for harvesting of Sorghum, short corn, thin stemmed corn, grassy corn, and wet brown leaves that Wear Guides and Scrapers are in good condition. Worn components will limit feeding. Most critical at Center location (1)	
2	The Guides are critical to help hold the crop in the channel for proper transition though the head and into the JAGUAR.	
3	Never run header without wear guides (1).	
4	The housing, the guide bars (1) and strippers (5) differ according to machine type. North America heads use short channel	
5	Short channel: Take measurements from the shielding edge to edge of guide. Measurements are for new headers ORBIS 750/900. Replace if more then 3/4 inch (19 mm) of wear. Measure at bolt near the center intake (Y) = 2.5 inches (63.5 mm) Two large center drums measure at middle hook (3) = 2.75 inches (69.85 mm) Note: Measurements listed in OM in section 9.8.1 are from bolt hole to edge.	
6	ORBIS 600 if center location (3) worn to 2 1/8 inches (53.97 mm) it should be replaced.	



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Wear Guides – Small Drum Guides

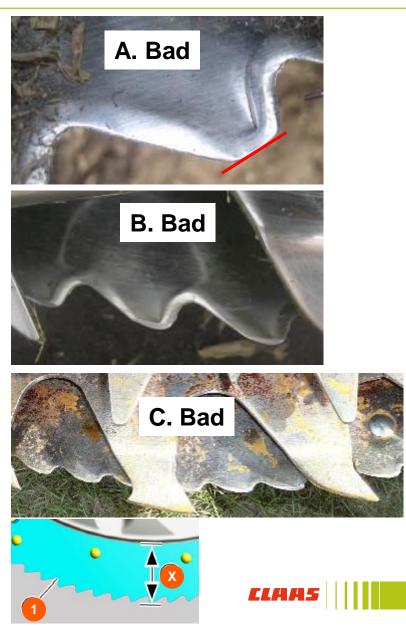
	REMIUM LINE Wear Guides and raper (Standard 2016 and newer)	1	
1	ORBIS 750/900 Wear guide measurements:		
	Crop from small drum to Christmas tree to large drum:		2
2	Measurements taken from the shielding edge to edge of guide. Replace if more then 3/4 inch (19 mm) of wear to guide.		3 4
2	Measure at bolt near the outside Christmas tree (1) = 2 3/16 inches (55.5 mm)		
	Measure at middle hook for guide $(2) = 2$ 3/8 inches (60.3 mm)		
	Crop from Christmas tree to large drum and crop convergence at center drum.	AC CO	
3	Measure at tab across from Christmas tree $(3) = 1 3/4$ inches (19 mm)		
J	Measure at bolt towards large drum (4) = 2 3/8 inches (69.85 mm)		
	Measure at tab across from large drum (5) = 1 5/8 inches (69.85 mm)		

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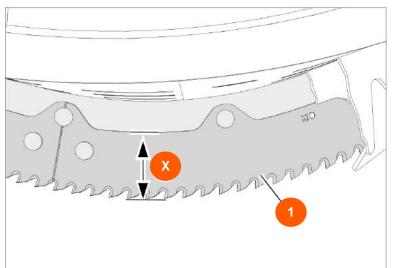
Knife wear – Old Stand Knife

	Knife Wear & Replacement
1	Knives should be checked for wear as part of standard maintenance. See Section 9.8.2 of the Operators Manual for checking knives.
2	Knife (1) has reached end of useable life from wear when: Large drum measured from Bottom: Replace (X) = 128 mm (5 3/64 in) New Knives (X) = 134 mm (5 1/4 in) Measure from top (drum side): Replace (X) = 76 mm (3 in) New Knives (X) = 82 mm (3 7/32 in) On small drum measured from Bottom: Replace (X) = 100 mm (4 15/16 in) New Knives (X) = 106 mm (4 5/32 in) Measure from top (drum side): Replace (X) = 60 mm (2 3/8 in) New Knives (X) = 66 mm (2 19/32 in)
	Besides normal use wear, damage or conditions can cause premature wear.
3	If the header starts to plug (clutch slippage) or bad stubble quality after many acres occurs, the first thing to look for is dull knives. Knives can be dull by just having the ends worn flat. The flat worn tips will perform bad in grassy or small diameter crop conditions.
4	Example A: May not work properly in sorghum, short thin stemmed corn or very heavy grass field.
5	Example B: May not work properly in mild grassy corn Sorghum, short thin stemmed corn.
6	Example C: May not work properly in any crop
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Knife wear – Deep Tooth

	Knife Wear & Replacement
1	Knives should be checked for wear as part of standard maintenance. Specification for "Deep Tooth Knife" only in Operators Manual maintenance section/cutting disks/ checking knives for heads 165, 163, 161, and 166.
2	For Model year 2019 and new heads (Including: I65, I63, I61, and I66 heads) Knife (1) has reached end of useable life from wear when: Large drum measured from Bottom: Replace (X) = 85.5 mm (3.37 in) New Knives (X) = 92 mm (3.62 in)
	On small drum measured from Bottom: Replace (X) = 86.5 mm (3.41in) New Knives (X) = 92 mm (3.62 in)
3	For Model year 2018 and older heads Knife (1) has reached end of useable life from wear when: Large drum measured from Bottom: Replace (X) = 81 mm (3.18 in) New Knives (X) = 87 mm (3.42 in)
	On small drum measured from Bottom: Replace (X) = $86.5 \text{ mm} (3.41 \text{ in})$ New Knives (X) = $93 \text{ mm} (3.66 \text{ in})$
4	Part Numbers for Deep Tooth PREMIUM LINE knives in chart. Attention: A mix of standard knives and deep tooth PREMIUM LINE knives can safely be installed and operated on the same large drum simultaneously. However, the like knives must be installed at 180 degrees opposite each other.



ORBIS - MY 2018 and older	ORBIS - MY 2019 and newer
PN: 2700 460.2 – RH Large	PN: 2623984.2 – RH Large
PN: 2619 183.4 – LH Large	PN: 2623985.2 – LH Large
PN: 2619 184.4 – RH Small	PN: 2623988.3 – RH Small
PN: 2701 068.3 – LH Small	PN: 2623989.2 – LH Small



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Crop Buildup around grey points

	Knife Dise Scraper / Clearing Guards	
1	Scrapers will help in removing crop off the grey point and on the back side of the frame.	
2	Check to make sure at least 2 L-shaped (4) scrapers (PN: 383148.0 large drums / PN: 0383145.0 small drums) are installed under knife and in good condition.	
3	Once the scrapers (1) are worn/rounded on one edge, rotate the scrapers from Clockwise to Counter Clockwise drum to get a new sharp edge for cleaning to extend the life of the scraper.	
	Replace when both sides are rounded.	
	See Section 9.8.4 of the Operators Manual for Checking Clearing Guards.	Ģ
	The clearing guards (4) are critical to keeping the point clean of debris.	-
4	Scrapers can be moved between CW to CCW drums. See Section 9.8.3 of the Operators Manual for torque requirements (3)	3
5	If the factory fitted scraper knives (2L / 2S) are not enough to clear the brown leaves off the grey points the following can be added	21
	ORBIS 600 kit knife scraper: 2622 132.0 (2L)	(27)
	ORBIS 750 / 900 kit knife scraper: 2622 131.0 (small drum (2S)) 2622 132.0 (Large drum (2L))	
	Make sure scraper knives are in good condition and replace if dull or damaged.	









Crop Buildup around grey points

Crop Building-up on Inner Grey Point

If scrapers ((1, 3 & 2L/S) shown on previous page) are installed and crop is still building up, first check crop point (guide fingers) adjustment: Adjust if necessary.

 $\begin{array}{l} 6 \\ \text{Clearance (X) from feeder disc (4)} = 5^{+3 \text{ to } -2} \text{ mm} \\ \text{Clearance (Y) from feeder disc (5)} = 15 - 20 \text{ mm} \\ \text{Clearance (Z) from the drum wall} = 70 - 75 \text{ mm} \end{array}$

Note: Crop point (guide fingers) non thread parts are slotted (6 and 3) to allow for adjustment.

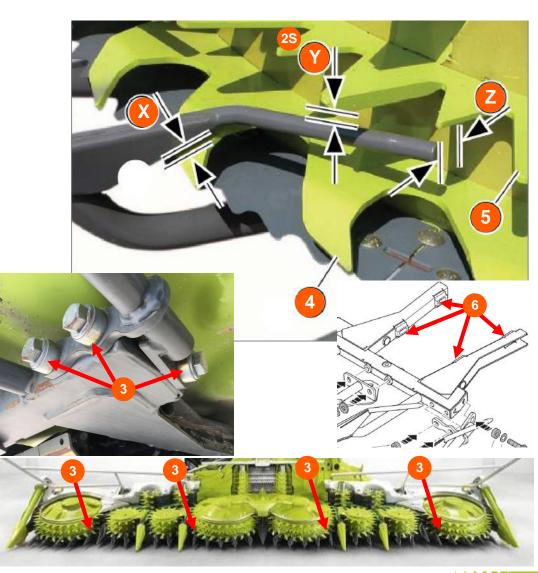
If adjustment for crop points fails, then it may be necessary to remove the inner crop flow grey point (3). (Note: If removing point put bolts back into hole to keep dirt out of threads.) When crop

7 is building on the grey points, the crop will push the knife up into the gatherer and damage the tips of the knife or the built-up crop will not allow the standing crop to be harvested. Re-install grey points when conditions change.

Operators manual contains information on adjustments of all points, dividers and cutting discs:

Sections: 9.7.1, 9.7.2, 9.7.3 for points/dividers Sections: 9.8.1, 9.8.2, 9.8.3, 9.8.4 for cutting discs

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Frame Adjustment and Plugging Between Guide and Scraper

Frame Adjustment

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It has been observed that over time the wings can become out of adjustment if not properly torqued. The bolts at the pivot should periodically have the torque checked to insure this does not happen.

For information on adjustment and torque specifications see Section 9.8.1 (ORBIS 600); 9.9.1 (ORBIS 750/900)

Plugging between Guide and Scraper

If plugging is occurring but all scrapers and guides are within recommended ranges check the following:

Step 1: Measure the gap between the knife/drum and divider point on each side of the head (A). When gap gets too large there is a missing shearbar effect on the cutting knives and crop flow can stall.

NOTE: If parts (B) have a lot of wear/flat spot on round bar divider support may need to be replaced. Step 2: If one side is wider then the other side and

all previous adjustments in guide have been

2 checked and adjusted, the ORBIS wings pivot frame may need to be adjusted. Consult your local CLAAS servicing dealer.



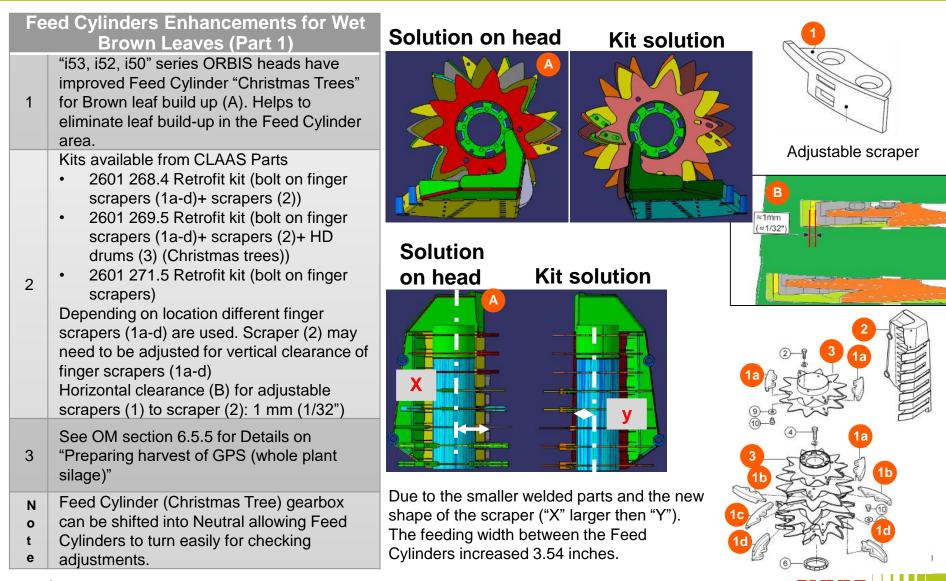
If plugging is occurring in circled areas and all scrapers and guides are within range check the ORBIS wing alignment by measuring gap between drum and divider points.

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PREMIUM LINE and Heavy Duty Wear Parts

	PREMIUM LINE Parts		(1 557	
1	 Heavy Duty PREMIUM LINE bolt on skid shoes (1) can be ordered from factory for the head. Skid shoes bolt to the skid plates under the drum gearboxes. The 5 mm Hardox Plate (1) clips onto the back of the skid shoe and is held on by 2 bolts at the front. 			
2	Order code: D03 0130 from factory Heavy Duty reinforcement ring (2) on the large drums, underneath the knife disc prevents wear and twisting of knife disc in adverse conditions. Note: Sections bolt on using existing	2		
Note	hardware. Knife ring reinforcement starting in 2018 as standard on ORBIS 900, 750, 600		+	
	Heavy Duty Grey Point Kit			
1	Reinforcement kit (3) for grey point available thru spare parts.	144	MOLLA AN	A DIAL
2	This kit includes four reinforced single grey points (4/5). Straps to connect the points with weld		Reinforced grey point #5 on LH sid	
18 CL	on tabs to the existing points. AAS of America Inc. CEBIS and controls guide JAGUAR 980 - 9	930 (2018)	reinforced grey point #3 off LH sid reinforced grey point #4 on the RH are in standard starting on 2018 he	side ELAA5

Feed Cylinder (Christmas Tree) - Kits

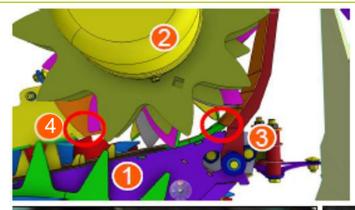


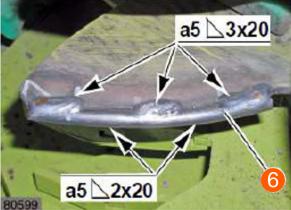
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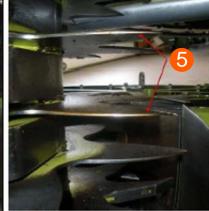
Feed Cylinder (Christmas Tree) - Kits

	Feed Cylinders Enhancements for Wet Brown Leaves (Part 2)
1	On page 9 of guide "Adjusting the scrapers to feed cylinder (Christmas Trees)" section specs were listed for adjustment. If still having problems the following can be done.
2	The stripper (1) set as close as possible to the feed cylinder (2). At the same time make sure that no edge/gap between the stripper (1) and stripper (3) (pictured right).
3	Check that the transition from the long guide rail (4) (in Picture Right) to the stripper box is clean and without gap or edge.
	Feed Cylinders Enhancements for Wet Brown Leaves (Part 3)
1	Worn sharp-edged points (5) on the feed cylinders draw a lot material into the stripper box and negatively affect the feeding quality.
2	NEW: Repair kit with welded parts for worn feed cylinders (6) (Christmas Trees) helps to resolve this
3	Kit Part number: 2702 288.0 (7) Contains: 44 x round rods 12 mm (green) 18 x Coated scrapers (purple) 06 x Coated scrapers (light blue) 04 x guide bar (light grey)

01 x assembly instructions







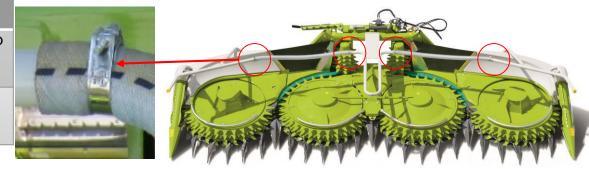
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Guide Bars and Guide Extensions

Hose Clamps on Guide bars

	Ensure that the hose clamp on the crop
1	guide is angled so the bolt is not
	interfering with the crop flow.
	Rotate hose clamps on ORBIS 600,
2	635, 750, & 900 to the rear so the crop
	flow is not disturbed by bolt clamp.



Outside Crop Guide Extensions – Tall Corn

	1	In very tall corn, crop may have a tendency to build up on the end of the head.
	2	To reduce this issue, 36 inches of 2 inch diameter PVC tubing can be added over the ends of the white crop guides "Bull Horns" and bolted to the crop guides. The extension of the end of these horns will help hold the stalk up longer and catch the tassel end of the stalk sooner so the butt of the stalk gets closer to the feedrolls.
	In standard configuration, the taller stalks tend to fall around the original crop guides "Bull Horns" and cause the stalks to build up on the head. Depending on row spacing and driver tendencies, the pieces may need to be shorter than 36 inches so they do not interfere with the next row.	
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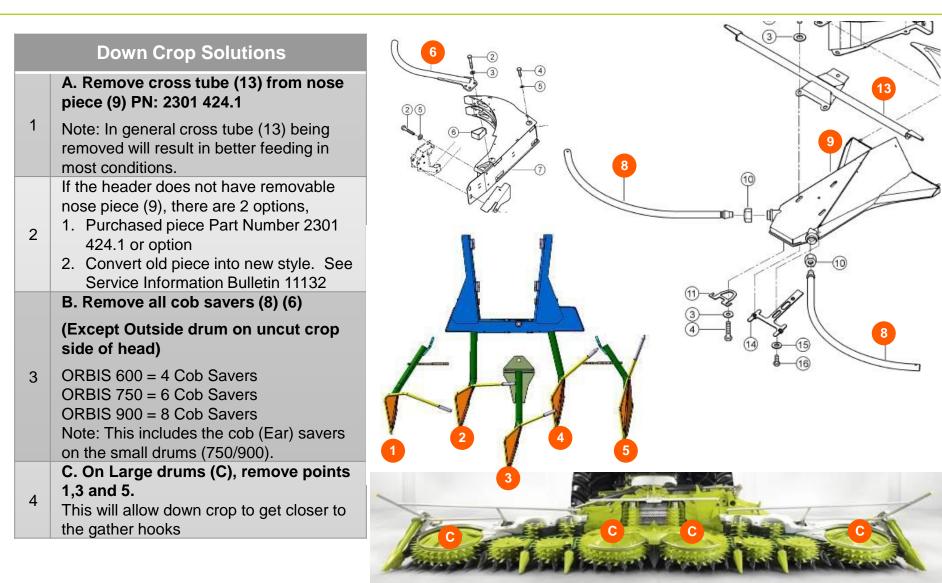
ORBIS 600

ORBIS 750



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Down Crop Solutions (Part 1)



Down Crop Solutions (Part 2)

	Down Crop Solutions	
5	D. Remove Center White tube (D) on ORBIS 750 and 900 (PN: 496 691.2).	
	Corn can wrap on the tube	
	E. Down Crop Center Point (E) (Center of head) is available – good for down corn, dill, or sorghum.	
6	Kit PN: 2302 082.0	
	Note: AUTOPILOT sensor (1) must be removed to install Down Crop Center Point	
	F. Down crop point (F) in middle of each drum	
7	Great for severe down corn. Points lift the corn up off the ground	F E
1	Kit: PN 2616 269.0	
	Note: The Down Crop Point replaces the production center point of each large drum	

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Down Crop Solutions (Part 3)

Down Crop S	Solutions
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G. Down Crop Drums

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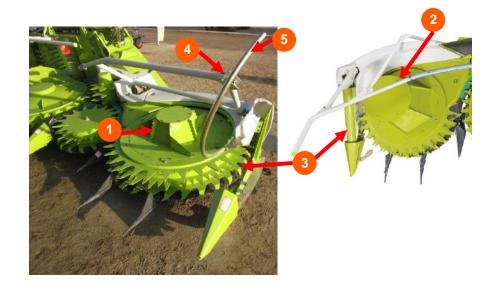
PN: 0498 290.0 – 2 Drums Short (1) (ORBIS 750, 900)

- 8 **PN: 0498 413.0 –** 2 Drums Tall (2) (ORBIS 600)
 - To Optimize crop flow in down crop conditions
 - For more information see Service Information Bulletin: 11179

H. Remove Outside Corn Auger (PN: 0499 702.2)

- If down crop is piling up on the end of the head that is on the uncut crop side of head, remove outside corn auger (3)
- If crop is hanging up on outside white crop guide "bull horn" (4), remove it. (Only removable on ORBIS 750, 900)
- Turn Ear Saver (5) straight up and slightly outside of head.



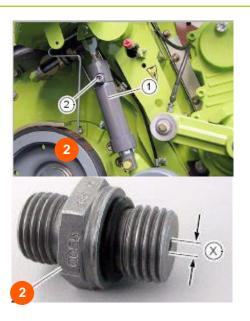




Engagement Hydraulic Cylinder and JAGUAR Service Area Cleaning

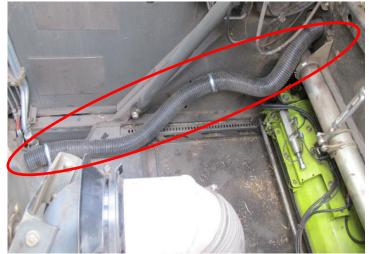
Checking Restrictor

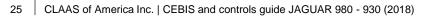
1	Refer to section 6.4.3 of the Operators Manual - Prior to Initial Operation
	Check the diameter (X) of the restrictor
2	bore in the restrictor screw-in adapter (2) and replace if necessary. It is important
	to have the proper restrictor for header engagement. If not, the clutches on the
	head will slip when starting the head.
	Note! The CLAAS part code is stamped into the restrictor screw-in adapter (2).
3	See OM section 6.4.3 for Restrictor PN
	and sizes for JAGUAR Models



Cleaning Kit in Corn Cracker Area

1	The flexible hose will suck the dirt directly out of the maintenance room. The tube is fixed by magnets and can be custom positioned. Retrofit kit PN: 2401 660.0
2	Radiator screen suction hose is moved to RH side of accelerator.







Corn/crops with ORBIS

These are general recommendations for setting. Operator of JAGUAR is responsible for properly setting machine for the crops and conditions they will be operating in!

JAGUAR Part	Recommendation	
Feeder house rolls	- White poly filler OFF top feed roll	
Feeder house	 Install corn saver plate under feeder rolls Install the feeder house roll side cover plates 	
Cut length	- Operator determined	
Cutter drum	- Select number of knives in CEBIS installed on drum	
- New or flipped shear bar set gap to 6-5 - Used 3-5 depending on crop - 6-10 dry crop - Adjust shear bar after every knife sharpening or every other sharpening		
Cylinder Bottom	- High throughput – 6-9 mm gap (Average to above average corn)	
Knife sharpening interval - Sharping interval is condition and crop dependent – regularly sharpen so takes less then 15 passes to keep knives sharp		
Corn cracker gap	 1-2 mm – Adjust as needed for optimum silage quality Cracker differential speed SHREDLAGE = 50% Standard L = 30% standard (40% / 43% / 60%) choice best option for your conditions 	
Accelerator gap	 Toothed paddles – Clearance must be at least 2 mm Smooth paddles – Clearance must be at least 4 mm All paddles types – Set gap to widest distance allowed for desired through capacity. 10 mm max gap for least amount of hp used NOTE: The tighter the gap the greater the wear and more HP used 	
Spout cylinder adjustment for end flap	Inner position: See OM section 7.22.5 or Converting the discharge spout flap section	

