



ARRO Distributed by Shield Agricultural Equipment
ARRO® Alternate Rotary Rowcrop Option

JOHN DEERE 90-SERIES ARRO INSTALLATION GUIDE

KIT IS UNIVERSAL FOR DEERE 40-SERIES HEADERS,
CONSULT SHIELDAG FOR DETAILS
KIT ALSO FITS DEERE 1293 HEADERS BUILT PRIOR TO SN 670751,
SEE SERVICE BULLETIN V20180918



ARRO® is protected by US Patent # 10,123,480
Kopper Kutter LLC, Cimarron, KS
V20190131

SERVICE BULLETIN V20180918

Subject: JD 1293 corn head reverse flighting retrofit to improve feeding of Sorghum (Milo)

To improve feeding after ARRO® conversion of John Deere 1293 corn heads built from 1989 to 1997, prior to Serial Number – 670751, the corn head auger should be retro-fitted with these two parts:

H206302 LH Reverse Flight
JD List price \$94.90, Item 8
shown to the right

H206301 RH Reverse Flight
JD List price \$94.90, item 20
shown to the right

The above part numbers, 1 of each hand, should be ordered from John Deere dealers and retro-fitted by welding them onto the center auger tube of John Deere 1293 corn heads (prior to serial number 670751).

The reverse flight became standard equipment for all 1293 corn heads starting with SN 670751 (1997)

Early model 1293 corn heads have the flat straps supporting a rubber center flap (sometimes called a beater-flap) that was supposed to improve feeding of fluffy dry crop into the feederhouse. We have found that adding the reverse flighting to these corn heads improves center feeding in many conditions.

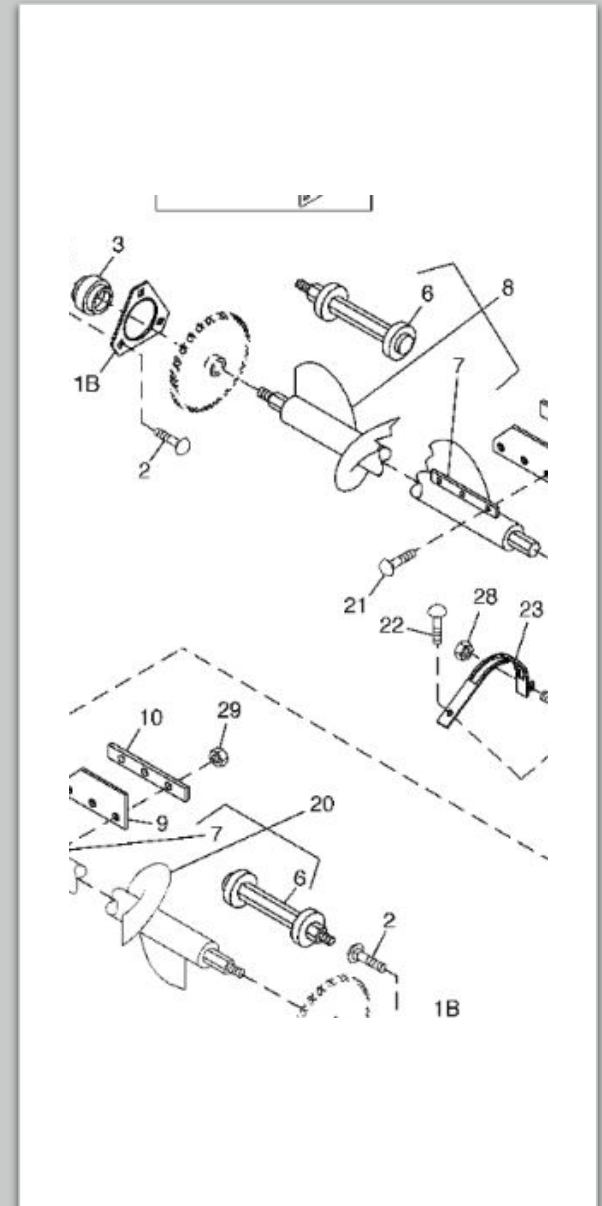
This retrofit applies to any of these 1293 model years (and serial numbers):

- 1989 starts with 630xxx 1990 starts with 635xxx 1991 starts with 640xxx
- 1992 starts with 645xxx 1993 starts with 650xxx 1994 starts with 655xxx
- 1995 starts with 660xxx 1996 starts with 665xxx
- 1997 starts with 670xxx Serial numbers starting with SN 670751 have reverse center flight installed from the factory

ARRO® is making Milo Harvest fun again !!

ARRO® is a patent-pending product line of Kopper Kutter LLC, Cimarron, KS

Distributed by ShieldAg of Hutchinson, KS
800-798-1968 or go online at shieldag.com





**ARRO™ Tool Kit & Supplies Needed
For Deere Cornhead Conversions**
800-798-1968 www.shieldag.com



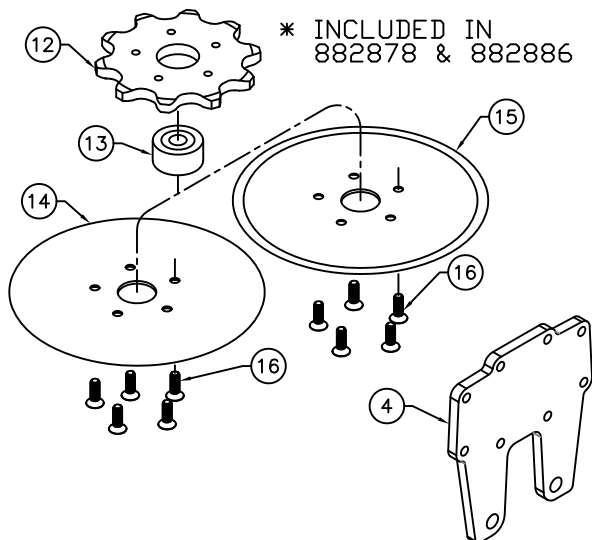
ARRO™ is patent pending by Kopper Kutter LLC, Cimarron, KS

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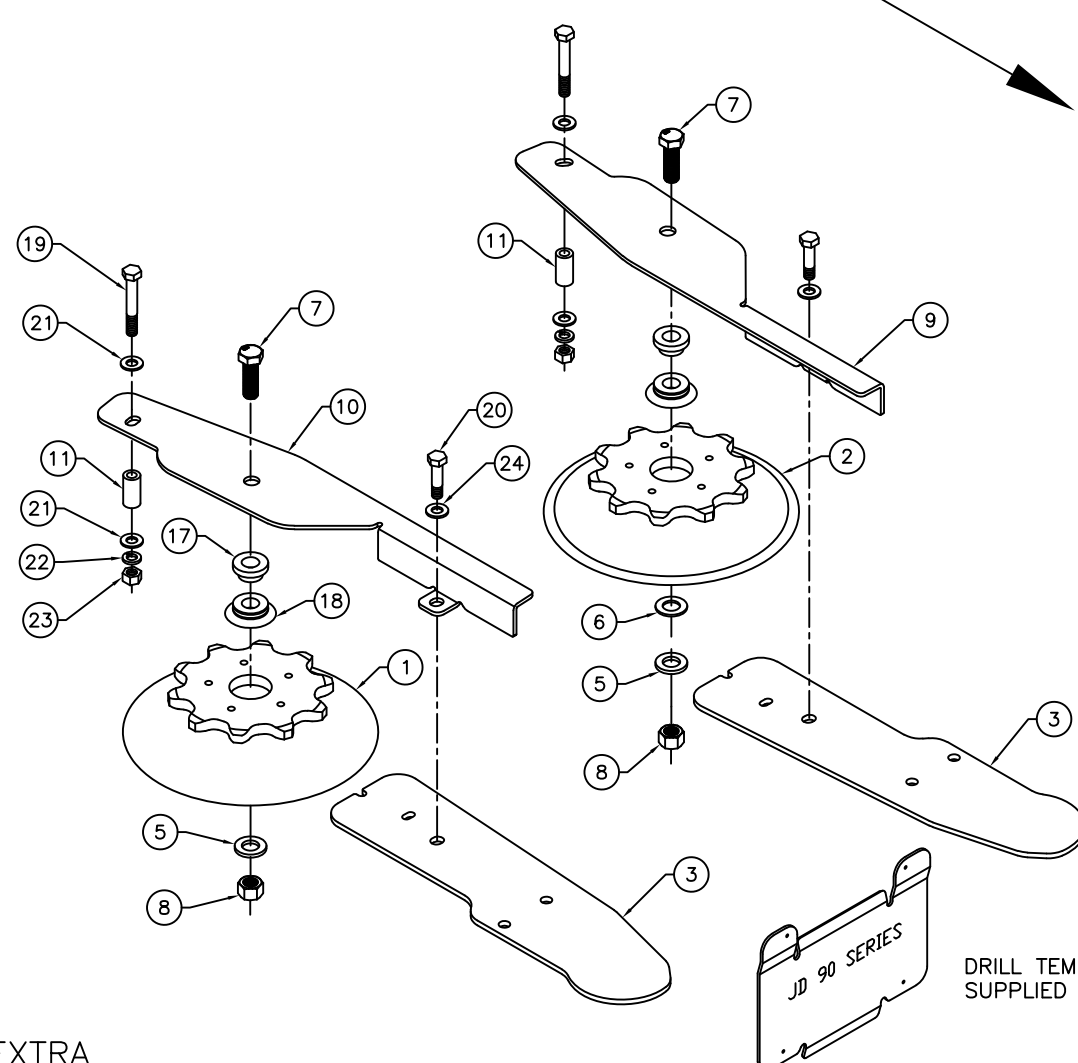
PO Box 687 • Hutchinson, KS 67504-0687 • Fax 620-662-7482 **800-798-1968**

LEFT (TOP) DISC: BEVEL UP
RIGHT (BOTTOM) DISC: BEVEL DOWN

DIRECTION OF TRAVEL



* INCLUDED IN
882878 & 882886



#616110 BOX 24 X 10 X 6

24	2	x	FLAT WASHER .4375
23	2	330035	HEX NUT .375
22	2	330043	LOCK WASHER .375
21	4	330894	FLAT WASHER .375
20	2	339564	HHCS M12 X 1.75 X 35-10.9
19	2	x	HHCS .375 X 3
18	2	400747	DUST SEAL
17	2	314856	BUSHING 1.25 X .588
16	*	339804	SCREW .313 X .750-.138" HEAD
15	*	502732	BLADE 9"x3MM FLAT-TOP CUTTER
14	*	502724	BLADE 9"x3MM FLAT-BOTTOM CUTTER
13	*	403980	BEARING -16MM
12	*	981274	SPROCKET & HUB #555-10T
11	2	158675	BUSHING .438 X .750 X 1.563
10	1	32053100	CHAIN GUIDE RT
9	1	32052300	CHAIN GUIDE LT
8	2	339721	LOCK NUT M16-2 CLASS 8
7	2	339747	HHCS M16-2 X 90 8.8
6	2	339705	MACHINE BUSHING .625 X 1.25 X 14GA
5	2	339697	MACHINE BUSHING .625 X 1.25 X 10GA
4	1	32211500	GEAR BOX COVER
3	2	31788300	DECK PLATE REPLACEMENT
2	1	882886	DISKETTE ASSEMBLY TOP #555-10T
1	1	882878	DISKETTE ASSEMBLY BOTTOM #555-10T
ITEM	QTY	NUMBER	DESCRIPTION

MATERIAL LIST

EXTRA
HARDWARE



SHIM RECOMMENDATION:

- START WITH A LARGE SHIM ON RIGHT (BEVEL DOWN) DISC
- NEXT, USE A LARGE AND A THIN ON LEFT (BEVEL UP) DISC

TEMPLATE MARKS 4ea HOLES FOR DRILLING
2ea 11/16" HOLES FOR 16mm DISC BOLTS
2ea 3/8" HOLES FOR 3" BOLTS

DRILL TEMPLATE
SUPPLIED BY DEALER

#32054900

SHIELD AG EQUIPMENT

TITLE: ARD KIT JD 90 SERIES		REV: B	
DRAWN BY: J Peintner	DATE: 05-11-16	SCALE: 1/8	DRAWING NUMBER: KK-882159
WEIGHT: 45 LBS.			

ARRO installation tools and procedural recommendation, most tools are common to Deere and CaseIH installations.

Remove deck plate adjuster rods if they are in the way of removing the stalk roll housings. Wear safety glasses and steel-toed boots and secure your header at work height using safety blocks to keep header from dropping.

- 2-3 step ladder/platform or sturdy step stool for working around the corn head
- Air compressor and electricity—obviously to have power for tools
- Two Electric or air powered ½” Impact guns (Portable electric is handiest)
- JD450 Deere special tool (Long puller) to remove stalk rolls / snapping rolls –Shield number SA450, re-designed to work for Deere 612C stalk rolls
- Two 4” wide putty knives for removal of dirt and rust
- Allen wrench set for misc. work as needed, including changing out drill bits in mag-base drill
- 1-1/8” ½” drive impact socket for stalk roll puller, with break-over bar or heavy ratchet
- 2 Dead blow hammers or sledges to knock on stalk rolls to loosen them.
- 2’ long (or longer) air spout to blow dirt off of the gear cases and clean off the row units
- 15mm ½” drive impact socket for gear case bolts and to reinstall ARRO cover plates, keep full set of metric ½” drive sockets handy for other models
- 2’ long ½” drive impact extension to remove the gear case bolts
- Center punch or 3/16” drill for the drill template, 3/8” twist drill for 3/8” holes as needed by model
- 11R Vice Grips to hold the drill template in place
- Small Mag-Base Drill and 11/16” dia, 16mm OR 21/32” dia. hole cutting drill (Hougen-style cutter)-- Popular Mag-Base Brand Names: Hougen, Jancy, Milwaukee, Dewalt, CS Unitec, Evolution EvoMag
- 12LC Vice Grip Brand Lobster claw vice grips to help hold the mag drill base on the thin sheet metal decks, if required
- 18mm ½” drive impact socket for removing and re-installing two forward latch/chain guide 12mm bolts
- ½” Female to 3/8” Male impact adapter, for removing grease plugs from gear boxes
- 15/16” impact socket and ½” drive wiggle tail to re-adjust chain tighteners, long bolt is 5/8-11
- 15/16” wrench to re-adjust chain tighteners, nuts are 5/8-11, not metric
- Another 15/16” impact socket and wrench OR 24mm socket and wrench for ARRO disc 16mm bolt/nut, two sets needed because one guy will be installing ARRO Discs while the other guy is tightening the gathering chain adjusters
- 150 lb-ft torque wrench for ARRO discs is recommended
- RTV silicone (large tube) to make gaskets for gear case covers
- Regular corn head grease gun grease, or any moly grease gun grease
- Drill lube for the Mag-Base Drill, Petron is recommended, WD-40 or other drill lubes work OK
- Blue Loctite for Arro disc bolts (recommended) and flat head screws holding discs to sprockets
- 2 gallons of corn head gear case lube or Deere polyurea corn head grease (use OE recommended lube), and small funnel to refill lost gear lube in each gear box—there is a dipstick on each filler plug

ARRO Kit, note that the dealer will furnish one drill template with a full set of ARRO conversions, please return the drill template to the dealer upon completion of the installation.



Corn head must be pre-cleaned, power washed and blown off to remove all trash, especially from the stalk roll drive gear box area. Corn head must be securely mounted onto a combine with the lift cylinder safety blocks installed, or on a secure combine header trailer with access to all rows. It is beneficial to be able to tilt the header during installation. Most work will be done at a comfortable waist level.

Remove chain guides, gathering chains, tensioners, deck plates, trash knives and all hardware from the decks. Note that if your header has had modification for wear life in the throat of the deck, any large bars or heavy hard metal passes must be removed or accommodated for proper placement of the drill template. The drill template slides up into the throat indicated below, to assure proper placement of the sprocket disc assemblies. Mark chain tensioners with paint stick for re-use on the same rows.

At this time, inspect all gathering chains for wear. If the “droop” is more than two to three inches, the link pins have excessive wear (consult your header service manual), order new gathering chains as needed.



**Remove stalk rolls and cast housings (binoculars).
Number each row with a
paint stick for future re-use
as a corn head.**



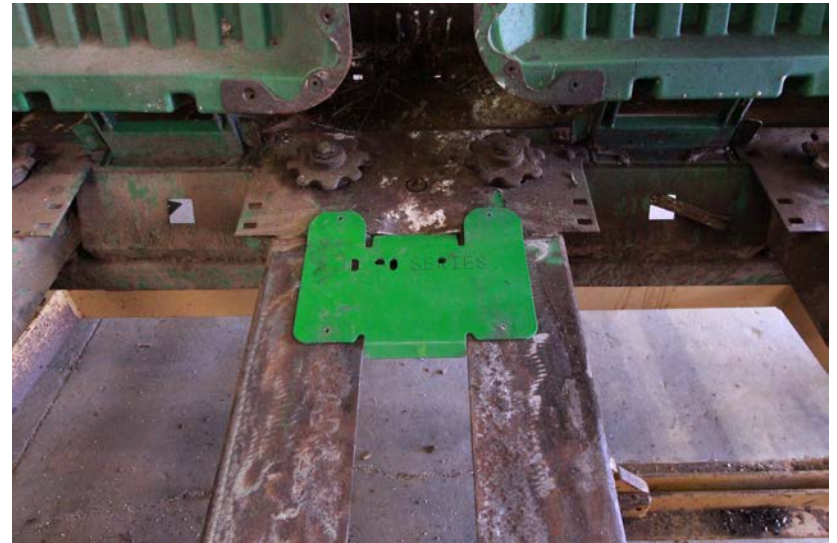
**Re-use existing hardware and gasket
along with silicone gasket maker to
install the cover plate provided in
the ARRO kit. If gear case lube was
lost while installing new cover plate,
replace as necessary. There is a hex
plug on the top of each gear case for
checking and filling gear lube.**



Clean rust and scale off the top of the deck plates to prepare for drill work and installation.



Place drill template at the rear of the row unit frame as shown, making sure it fits up against the actual throat of the row unit. Secure with vice grip.



Using either a center punch or a 3/16" pilot drill, mark or drill the four hole locations shown with the template.



Drill the two rear holes (nearest to the hinge points) with a 3/8" diameter drill. A mag-based drill works the best for this operation.



Drill the two front holes (furthest from the hinge points) with a 16mm or 11/16" diameter drill. We highly recommend using a mag-based drill for this pair of precision holes.



Lay out the two sprockets and add any type of grease-gun grease or corn head grease to the small recess in the top of the sprockets. NOTE that the parts diagram shows the orientation and placement of the matching pair of sprocket assemblies. AT THIS TIME, please check the flat head screws that fix the discs to the sprockets with the appropriate tool (either Hex-Allen wrench or Torx). Make sure that the screws are tightened to 18-25 ft.-lbs.



Check under the two 16mm holes, below the deck plates. If the drill work is near one of the stitch welds where shown, use a grinder and grind enough weld away so that the nut can set flat against the underside of the deck plate.



Lay out the two ARRO deck plates as shown.



Loosely install the 16mm bolt through the chain guide, special bushing and rubber disc cap, through the disc assembly and install the shim or shims on the bottom side, see the parts diagram for proper orientation of the discs and shims.



REFER TO PARTS DIAGRAM FOR PROPER DISC ORIENTATION AND PLACEMENT, LEFT AND RIGHT.

Install chain guides with discs as shown, and loosely install all hardware. At this time, you should TEST-tighten the 16mm large hex bolts holding the discs down. The discs should turn reasonably hard against each other but not lock up. Turning one disc should force the other disc to turn. Change shim arrangements as needed to make the discs turn with good scissor action, but ALWAYS have at least one shim under each disc so that the discs are not setting directly on top of the decks. Torque 16mm bolts to 150 ft.-lbs.

**Reinstall chain guide
tensioner assemblies.
Tighten all hardware.**

BEVEL DOWN, THIS
DISC ON BOTTOM



BEVEL UP, THIS
DISC ON TOP



Install gathering chains noting that the “lugs” must be staggered evenly, and tighten pre-load springs per the combine header service manual specifications, approximately 1/8” to 1/4” gap at the adjusting bolt head.



Check that all tools and parts are removed from header and auger trough. Start the combine and run the header slowly and check for excessive noise, which is usually caused by worn out gathering chains.





MAKING MILO HARVEST FUN AGAIN!



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ARRO® Alternate Rotary Rowcrop Option

John Deere 90-Series

ARRO recommends that the combine make a short round in the field, then shut off machine, pull up all snouts and check to make sure gathering chains are tight and the rotating discs are warm but not hot to the touch. Re-shim discs as needed if they are running hot or there is too much gap between any pair of discs, extra shims are provided. The chain guides are designed to minimize bunching of stalks/leaves, but the ARRO installation should be checked at least once daily during use. We anticipate trouble-free operation with the ARRO kit installed.

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