

The Ford “Flexo-Hitch” Disc Harrows

Lift-Type Series J and Model 201

By Frank C. DeFelice

Ford manufactured its successful Series-J and the successor Model 201 “Flexo-Hitch” Lift-Type Tandem Disc Harrows between January of 1955 and December of 1983; and tens of thousands of these superb 3-point harrows were produced, so they remain plentiful even today. They were (and still are!) highly desirable for their flexible attachment system, which makes connecting them to a tractor simple; and for their floating operation, which allows its discs to follow ground contours and rise smoothly over obstructions independent of tractor position. This freedom-of-movement results in a disc harrow which performs like a pull-type unit in operation; with the convenience and maneuverability of a lift-type unit.

Because the Series-J and Model 201 disc harrows are nearly identical in terms of construction and operation (with many parts being interchangeable) we will discuss them both in this article. Ford also manufactured a Pull-Type (Transport) Flexo-Hitch disc harrow (the “Series-L” and successor “Model 204”); however we will save the discussions of these units for a future article.

Both the Series-J and Model 201 disc harrows were available in a several variants, to suit buyer preference for cutting width (6 ½, 7 ½, 8 ½; and a 10-foot-wide Model 201), disc size (16” or 18”) and type (Plain or Notched), disc profile (Flat-center or Full-concavity) and bearing style (Chilled white-iron “clamshell” bearings or “Anti-friction” Sealed Ball-bearings). Scraper sets were available as an option, to aid in scouring mud and trash from the discs. All units had disc spacing of 7-1/4 inches, and weighed between 708 to 940 pounds depending on their width.

The Series-J and Model 201 harrows (except the 10-foot-wide Model 201) were constructed of heavy gauge 2 ½” x 2 ½” x 5/16” high-carbon steel-angle. Fasteners were Grade 5, zinc-plated; including an assortment of 5/8”-11 TPI hex-head bolts, 7/16”-14 TPI carriage bolts and the now-hard-to-find 7/16”-20 TPI plain-shoulder carriage bolts, which were used to secure the chilled white-iron bearings to the hanger plates. Many frame components were common across all widths. On the wider units, Ford simply added a set of brackets to the outboard gangs, which extended back to the main frame. This allowed Ford to produce wider models economically, by using many of the same parts from their narrower units.

Gangs were independently adjustable to any of six angular positions from 3 to 20 degrees. To secure the gangs in-place, the Series-J units used 4” long x 5/8”x 3/8” diameter taper-pins with circular wire retaining rings, which were secured beneath a clip welded to the top of the harrow frame. Many of these taper-pins were lost in the field, so it is not uncommon to find the gangs of a Series-J harrow secured with a 5/8” bolt and nut. This incidentally happens to be the fastening arrangement Ford chose to secure the gang angles for its Model 201 harrows.

Both the Series -J and Model 201 units (except the 10-foot-wide Model 201) were shipped with Category I hardware installed. Both could be converted to Category II by installing an adapter kit and repositioning the lower hitch brackets. The 10-foot wide Model 201 was available only with Category II hardware, which it needed with its significantly heavier frame and 32 discs. The “pitch” or height of the rear gangs in relation to the front gangs could be set by shortening or lengthening the tractor’s top-link; with the rear capable of being raised or lowered up to 6 inches with respect to the front.

The discs on the early Series-J harrows utilized a “flat-center” profile, while later Series-J and all Model 201 harrows could be purchased with either flat-center or full-concavity profile discs. Each disc was equipped with a 1.030” diameter center hole which mated to the 15/16” (Series J) or 1” (Model 201) diameter round gang bolts.

Gang bolts were threaded with either a 15/16”-12 TPI (Series J) or 1”- 8 TPI (Model 201) thread which extends for approximately 2 ¼” with a ¼-inch keyway. A 1 ½” x 1 ½” x 3/8” thick square head was welded at the head-end of the bolt. Unfortunately, there is no known source for original-style gang bolts other than your local machine shop.

The keyway along the threads serves two critical functions. First, this keyway works in conjunction with the protrusion cast in the hub (bumper) washer, to stop the hub washer from spinning on the threads of the gang bolt, should the fastening nut loosen. If the hub washer should spin on the gang bolt threads, the threads will be quickly damaged; and the gang nut will not be able to be re-tightened. Second, the keyway and the interlocking protrusion in the hub washer allow the farmer to easily replace the discs in the field by using one wrench on the gang nut, and another on the square of the hub-washer. Disassembly of a gang can be extremely difficult if the gang bolt was replaced with one not having a keyway; because the entire assembly (nut, hub, gang bolt, spools and discs) will all spin together as-one. If the protrusion in the hub-washer should break-off or wear-out and a new hub is not readily available, simply file one-half of a keyway into your hub-washer and insert a ¾-inch long section of ¼” key stock into the slot, to replace the protrusion. Replacement lock-straps which serve to keep the gang nut from loosening (F-NH Part 111773) can be fabricated by drilling a 1.030 inch hole (just use a 1” hole-saw) in the center of a 1-5/16” x 2 ¾” strip of 0.080 inch-thick sheet metal.

So how can you tell them apart, when the Series J and Model 201 look so much alike? First, look for a metal tag riveted to the floating hitch assembly; if one is present, it will provide the model and style designation. If not (many of the later Model 201’s never received a tag) look closely at the spools which separate the discs. If they are sculpted, with rounded end-bells that taper towards the center of the spools, you likely have a Series J; if they are straight segments of pipe with flat ends welded on, you likely have a Model 201. Look at the gang nuts as well; if they are square, you are likely looking at a Series J; if they are six-point, you are likely looking at a Model 201. Finally, check the diameter of the gang bolts. On the Series J, the originals were 15/16-inch in diameter (although many owners later changed them to 1-inch diameter); on the Model 201 they are 1-inch in diameter. The following table compares the length of the gang bolts used on Series J and Model 201 units for both flat-center and full-concavity discs. Note that the gang bolts used with full-concavity discs are longer, to accommodate the extra thickness of the contoured spacers required to be used with these discs:

Width	Discs/Gang	Series J (15/16”)	201 Flat Center Discs (1”)	201 Full Concavity Discs (1”)
6-1/2 Feet	5	32-1/8 inches	31.51 inches	32.63 inches
7-1/2 Feet	6	39-3/8 inches	38.77 inches	39.94 inches
8-1/2 Feet	7	46-3/4 inches	46.14 inches	47.10 inches
10 Feet	9	N/A	53.42 inches	54.38 inches

Now, about those bearings... buyers were offered a choice of Chilled White Iron Bearings (also known as “clamshell”, “boxer”, “NL” or “Non-Lubricated” bearings) or Sealed Ball Bearings (known as the “PL” or “Permanently-Lubricated” bearings). Most buyers opted for these chilled white iron clamshell bearings; because the entire disc assembly (discs, gang bolt, nut, spools and spacers) could be easily removed in the field by simply dropping the lower bearing housings.

Clamshell bearings consisted of three parts: a fixed Upper Housing, a fixed Lower Housing (these two forming the “clamshell”) and an Inner Spool which rotates between the Upper and Lower Housings. There are three (3) variants of these bearings; and although the individual components differ between each variant, any complete assembly can be used in any position on either model harrow. The table below lists the part numbers cast into each component:

Harrow	Upper Housing	Lower Housing	Inner Spool	Grease Fittings
Series J	112707	112707	111778	1 in upper / 1 in lower
Series J	113761	113762	100530	1 in upper only
Model 201	111499	111501	111500	2 in upper only

Note that some housings are equipped with single grease fitting, while others have two. Grease is the life-blood of these bearings; as it drives out moisture and dirt, and provides lubrication to the contact surfaces. Clamshell bearings should be greased every 4 operating hours. Simply pump grease into the bearing until it oozes from the sides of the housing. To keep the grease fittings clean, install small plastic covers having retaining loops on them. These are available at most auto part stores.

The clamshell bearings on the Model 201 harrows require the use of end-plates on each side of the Inner Spools, to transfer uniform pressure to the adjacent discs. Two types of end-plates were offered: a flat style, for use with flat-center discs and a contoured style for use with full-concavity discs. Using the incorrect end-plates for the discs installed will result in premature disc failure. This failure appears as a circular crack in the disc, having with a diameter approximately equal to that of the end-plate. It is caused by uneven pressures along the radiused centers of the full-concavity disc. Simply match the type of discs being used to the type of end-plates you have, and your discs will last much longer. Note that Series J style bearings did not require these end-plates, because the contoured bell-ends of their Inner Spools served the purpose of transferring pressure uniformly. If you replace your Series J style bearings with the newer Model 201 style bearings, simply remember to use the correct end-plates. Flat style end-plates can be fabricated from 1/4” thick carbon steel plate which has been cut to a diameter of 4” or machined from 4” round stock. Simply bore a 1.030 hole in the center to accommodate the gang bolt. Contoured style end-plates are somewhat more difficult to fabricate; as they require the machining of a stepped ring with a height which accommodates the contour of the full-concavity discs you use.

If you are lucky enough to own one of these fabulous harrows, you probably know that their clamshell-style bearings are worth their weight in gold... because they are no longer available. Sure, you can install some aftermarket “square-shaft” arrangement of discs, bearings, gang bolts and spools (you must replace everything), but if you do, or if you give up on your old “Flexo-Hitch”, don’t discard those old bearings... sell or donate them to your neighbors!

Beginning in 1974, buyers could opt for Permanently-Lubricated (PL) Sealed Anti-friction Ball Bearings. Harrows with this option were equipped with different hanger-plates; which accommodated the vertical mountings of these sealed bearings. Although these bearings did not require regular greasing, when they fail, replacement is the only option. Replace with F-NH #7200460, Federal #DS209TT2 or Fafnir #W209PPB2 bearings; along with new 7/16"-14 TPI x 1-1/2" carriage bolts, lock-washers and nuts.

Both the Series J and Model 201 harrows use several thick washers and spacers. The 5/16" thick washers have an outer diameter of 2 1/4" and an inner diameter of 21/32". While they are available from F-NH (Part #113198) these washers can easily be fabricated from 2 1/4" or larger carbon-steel bar stock or 5/16" carbon-steel plate. Another part which can easily be fabricated is the spacer bushings which are used at all pivot points. These can be fabricated from 1 1/4" or larger carbon-steel bar stock, which has been bored with a 21/32" center hole. Four (4) different thicknesses are used:

Location	Quantity	O.D / I.D. Dimensions	Thickness
Gang Pivot	(4)	1 1/4" O.D x 21/32" I.D.	3/8"
Strut - Rear	(1)	1 1/4" O.D x 21/32" I.D.	9/16"
Strut - Front	(1)	1 1/4" O.D x 21/32" I.D.	7/8" (9/16" on 10' unit)
Flexo-Hitch Bracket	(4)	1 1/4" O.D x 21/32" I.D.	7/8"

Other than regular greasing of the clamshell bearings, occasional greasing of the pivot points, and checking for loose fasteners, no routine maintenance is required; however, it is wise to disassemble the clamshell bearings every few years to clean out accumulated dirt and hardened grease. Remember to clear the passage which runs from the grease fitting to the grease chambers within the bearings.

To keep your disc harrow looking new, protect its steel surfaces with high-quality enamel. Painting your disc harrow provides more than just beauty... it allows you to spot areas of movement between the frame members... a sure indication of loose bolts! Implements which were manufactured before 1963 were originally painted Ford/Dearborn Vermillion Red. Those manufactured from 1963 forward were originally painted Ford Empire Blue. Reproduction "Ford" and "Flexo-Hitch" decals are available on-line and should be installed on the rear frame member. For the Series-J harrows, position the "Flexo-Hitch" decal such that the letter "e" is at the midpoint of the frame. Then, the right edge of the "Ford" script should be placed approximately 2 inches to the left of the "Flexo-Hitch" decal. On the Model 201 harrows, position the decal such that the letter "F" in "Flexo-Hitch" is placed 6 inches to the right of the midpoint of the frame. Then, position the "Ford" script such that the right edge is located approximately 6 inches to the left of the midpoint of the frame.

Ford really hit the mark with the Series J and Model 201 disc harrows. They were simple, sturdy units; and have been used to disc literally hundreds-of-thousands of acres. They were perfect for the moderate horsepower tractors of the late 1950's and early 1960's, and with the proliferation of today's compact tractors, they continue to be highly desirable. *Keep yours going... and share the knowledge!*