

# DIY Nikon AI modification

- by [Lars Holst Hansen](#)

*This is **NOT** meant as a general outline of the AI modification procedure but merely as an illustrated report from my first attempt with this subject.*

As Nikon released the AI lenses in 1977 they offered a modification of (most of) the pre-AI lenses (see [original flyer](#) and [lens chart](#) @ [www.aiconversions.com](http://www.aiconversions.com)). The modification consisted of an aperture ring replacement - the new one having a [METER COUPLING RIDGE](#), an [EE SERVO COUPLING POST](#) and ADR (=Aperture Direct Reading) numbers. The modified lenses were not fitted with a [LENS SPEED INDEXING POST](#) however, but see why this is otherwise a good idea in some cases [HERE](#).

These days one should be lucky to find a repair place with these modification kits still in stock, but there is no need to despair. It is not that difficult to AI modify. I recently modified an old NIKKOR-S Auto 50mm 1:1.4 (kindly given to me by Alasdair Mackintosh), and here is what I did:



FIG. 1 - Unmodified lens

At first I called the local Nikon agent ([DFA](#)) in Denmark and asked for the price of an AI modification kit for this particular lens. Surprisingly they still had it in stock but they were asking 350 dkr (= 43 US\$). I found that way too steep (although it is probably fair considering the original prize, see the [lens chart](#)), so I got my tools out of the box.



FIG. 2 - Lens mount detachment

To remove the lens mount I unscrewed 4 screws leaving the one at 6 o'clock (see fig. 2). This screw holds the spring that loads the aperture action lever and is not attached to the lens body.



FIG. 3 - Aperture ring screw

I then removed the screw that transfers the aperture ring position to the aperture setting mechanism (see fig. 3).



FIG. 4 - Retaining ring

The aperture ring was however still held by a retaining ring (see fig. 4).



FIG. 5 - Securing screw (1)

To get the retaining ring off I had to remove the METER COUPLING PRONG as it covered a little hole that allowed access to a securing screw (see fig. 5).



FIG. 6 - Securing screw (2)

The tiny securing screw (fig. 6) and the retaining ring was only used on the early version of this lens (with serial # bellow 635511 the repair manual says).



FIG. 7 - Retaining ring detachment

Lacking a better tool I used a pair of scissors to unscrew the retaining ring (fig. 7).



FIG. 8 - Disassembled lens

Now I had the lens disassembled and ready for modification (fig. 8).



FIG. 9 - Filing the aperture ring

I used a simple file to remove about 1.5 mm of the aperture ring edge from f/8 to about three stops on the other side of f/1.4 (see fig. 9 & [10](#)), thereby leaving a [METER COUPLING RIDGE](#) having a leading edge with a 5 f-stop offset (f/8) compared to the maximum aperture (f/1.4). Lenses with a maximum aperture worse than f/1.8 should have a 4 and 2/3 f-stops offset.



FIG. 10 - Crude AI modification

The lens was now crudely AI modified and ready for use with the major part of the AI coupled cameras. I still lacked a few details to call this a [full AI modification](#) though.



FIG. 11 - EE servo coupling post

An [EE SERVO COUPLING POST](#) was 'added', again by simply removing part of the aperture ring edge (fig. 11). I positioned it by eye using a NIKKOR 35mm 1:2 (AI-S) as a template. I am not sure how exact its position must be - but I am not likely to ever need it (in connection with a DS-12 Aperture Control Attachment).



FIG. 12 - Touch up paint

Black touch up paint was applied to the shiny face (fig. 12). *I have later discovered that it wont bind, so I might need some special aluminium paint, see figs. [16](#) and [17](#).*



FIG. 13 - Preliminary result of (my first) AI modification attempt.

The modification was refined a bit but I was still lacking some important details; ADR numbers, a METER COUPLING PRONG, and perhaps most important to me a [LENS SPEED INDEXING POST](#). I seriously needed this to enable AMP (matrix) metering with my FA.



FIG. 14 - ADR strip from Tamron adaptall-2 added.

I cannibalized an ADR strip from a retired Tamron adaptall-2. The number alignment is not perfect as the radii of the rings differ. The ADR windows are however wide enough to allow for satisfactory viewing. Some people get the ADR engraved directly into the aperture ring.



FIG. 15 - Female F-mount ring marked with some LENS SPEED INDEX POST positions.



FIG. 16 - Female f-mount ring is mounted to assist LENS SPEED INDEXING POST positioning.

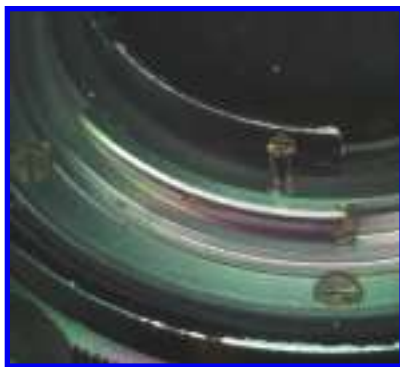


FIG. 17 - LENS SPEED INDEXING POST

In order to find the exact position of the [LENS SPEED INDEXING POST](#) I detached the female f-mount ring of an E2 extension ring. This ring was then mounted on a NIKKOR 50mm 1:1.4 (AI-S) lens and the LSIP position was simply transferred to the ring. I have also transferred positions for 1:2, 1:2.8, and 1:3.5 lenses (see fig. 15).

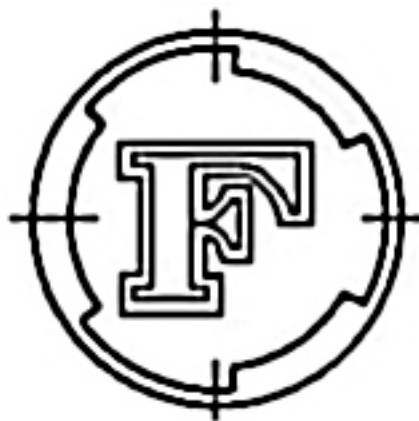
For the LSIP itself I used a screw - again cannibalized from the Tamron adapter (see fig. 16 & [17](#)). This particular screw was useful as the top part of it was unthreaded. It would therefore not damage the LENS SPEED INDEXING LEVER of the camera. In addition it had a dull dark colour. With the mount detached (see fig. [2](#)) I simply hand drilled a hole in the right spot considering the 1.4 LSIP mark on the E2 ring and the radius of the screw.

I checked the position using my FA on S mode to see whether it would choose 1:1.4 before jumping to a slower shutter speed when the lighting got lower - It would indeed choose 1:1.4 as the widest aperture before shifting the shutter speed! The LSIP was successfully positioned and I now get AMP (matrix) as with any post-AI lens with my FA. I still miss one detail though; the METER COUPLING PRONG or SHOE for use with pre-AI cameras.

Have this whetted your appetite?

If you do not want to do this yourselves but still miss the option to use old pre-AI lenses with some AI coupled cameras, [John White](#) is the one to call. He does AI modifications commercially (although he leaves out the LENS SPEED INDEXING POST, as far as I know). Another option is to contact [William Sampson](#).

If you would like to share experiences with repairing and modifying Nikon equipment you might find the [NikonRepair mailing list](#) attractive.



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