Mamiya 645 35mm f/3.5 Lens Review

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Introduction

Mamiya 645 35mm f/3.5 is a classical medium format manual wide angle lens for the now discontinued Mamiya M645 cameras (the 645 series were not really discontinued but rather replaced by an 645AFD model). The lens itself was available in two formats - the older and newer one, which carried a 'N' designation (I guess standing for New) and had an improved coating. Mamiya later introduced an AF type of this lens, although the N revision of the manual lens is still being manufactured by the company. New copies of the lens are priced at ~US$1,000, however, both older as well as newer versions of the 35mm f/3.5 lens are commonly available on used markets, with good quality copies fetching ~US$300-$400 (as of March 2008). The lens reviewed here is an older, non N version.

The optical construction of the lens consists of 9 elements in 7 groups. The build quality of the lens is outstanding, with an all metal barrel and aperture ring and fully rubberized focus ring. The lens is somewhat bulky and relatively heavy (for a 35mm prime that is), measuring 61 x 80mm (2.4 x 3.2in) and weighing 445g (15.7oz). Of course this is a medium format lens, so this size is not that unusual for this class of lenses (comparing to other medium format wide angle lenses actually reveals that Mamiya 645 35mm f/3.5 is about average in size). Like most manual lenses, Mamiya 645 35mm f/3.5 has a DOF scale engraved on the barrel next to the aperture ring.

Ergonomics of the lens leaves some room for improvement. The lens has an A-M switch on the side of the barrel (which controls auto/manual metering mode) as well as a meter coupling shoe sticking out next to the aperture ring. This makes rotating the aperture ring a little bit awkward. The minimum focusing distance is 45cm (1.5ft) and the minimum supported aperture is f/22 (aperture moves in one full f-stop increments). The lens accepts 77mm screw-in type filters.

I used a generic Mamiya 645 to Canon EOS adapter when testing this lens on Canon's APS-C and FF cameras. When used on the native medium format body, the lens has a field of view equivalent to a 22mm lens on a regular 35mm camera. When adapted to a full frame camera, the lens has a field of view resembling a 35mm, while when adapted to an APS-C camera, its field of view will be similar to that of a 56mm lens.

Summary	
Lens Composition	9 elements in 7 groups
Angular Field	~90 degrees (35mm EFL: 22mm)
Minimum Focus	45cm/1.5ft
Focusing Action	MF
f-stop Scale	f/3.5-f/22, manual
Filter Size	77mm
Lens Hood	N/A
Weight	445g/15.7oz
Dimensions	61x80mm/2.4x3.2"
Lens Case	N/A

Field Tests

Why would anyone use a medium format lens on a traditional 35mm camera? This is not a typical setup even for those adventurous souls, like myself, who like using non-native mount lenses in general. There are obviously cases when you already own a lens, in which case you might as well try to use it (assuming you like its performance of course). But another, probably more common case, is using a medium format lens in combination with a tilt/shift adapter to create a tilt/shift lens. Since tilt/shift adapters are pretty inexpensive (compared to a full blown native tilt/shift lens that is), such a combo can not only save you money, but potentially even outperform a native lens setup. Obviously for a medium format lens to be a good performing tilt/shift, it has to demonstrate solid performance in its default, non tilted/shifted mode to begin with. And unfortunately, Mamiya 645 35mm f/3.5 did not seem to quite match this criteria, as the lens showed somewhat mixed performance in the field. Image quality was pretty decent with stopped down apertures, however, quality around borders seemed to suffer quite noticeably at f/3.5.



Vignetting @ f/3.5 - full frame vs 1.6x crop

The lens showed minimal level of vignetting at f/3.5 on a full frame camera, and once stopped down to about f/5.6, vignetting is pretty much gone. The fact that vignetting is quite low here can be attributed to the relatively small maximum aperture and larger imaging circle which extends beyond the coverage of a full frame sensor. Naturally, on an APS-C body, the lens shows practically no vignetting throughout the aperture range.

Color reproduction was quite good, with images carrying good amount of contrast, but unfortunately the lens fell prone to both lateral as well as axial chromatic aberration. Lateral CA was noticeable to the naked eye primarily around borders pretty much throughout the aperture range. Halation was quite minimal at f/3.5 and disappeared with stopped down apertures.


ISO 100, 1/1250, f/3.5, 35mm (100% crop)

View the embedded image gallery online at:
http://slrlensreview.com/web/reviews/misc/mamiya/mamiya-wide-angle-645/470-mamiya-645-35mm-f35-lens-review#sigProGalleria304e8f373c

Lab Tests

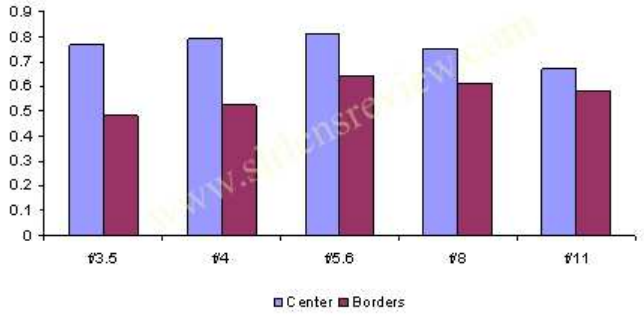
Please note that MTF50 results for APS-C and Full-Frame cameras as well as cameras from different manufacturers are not cross-comparable despite the same normalized [0:1] range used to report results for all types of cameras.

Mamiya 645: At this time I do not have plans to conduct tests with any medium format cameras.

Canon APS-C: Mamiya 645 35mm f/3.5 showed mixed performance on an APS-C body. On one hand, image quality in the center was very good throughout the aperture range. On the other hand, border image quality suffered, especially at wider apertures. At f/3.5 and f/4 lens performance was kind of average, improving in the f/5.6-f/11 range. The lens reaches its peak performance around f/5.6, where it is capable of producing outstanding 16in and decent 24in prints. Conclusion? Not what I would call the best performing wide angle lens on the block. Border image quality at wider aperture levels is disappointing - if the lens shows such a weak border performance on an APS-C body, imagine what results it will produce on a medium format camera...

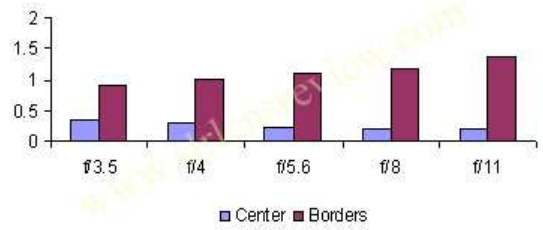
	5	Center	456	472	465	450	401
		Border	288	316	385	367	350
	8	Center	286	295	303	281	251
		Border	180	197	241	229	219
	11	Center	208	215	220	204	182
		Border	131	143	175	167	159
Reference Scale	16	Center	143	148	151	141	125
150+ Excellent		Border	90	99	120	115	109
110+ Good	19	Center	120	124	128	118	106
80+ Fair		Border	76	83	101	97	92
60+ Subpar	24	Center	95	98	101	94	84
<60 Poor		Border	60	66	80	76	73

MTF50 (Line Width/Inch on the Print) @ 35mm



Normalized raw MTF50 @ 35mm

Chromatic aberration on an APS-C type camera under control in the center, where CA averaged measly ~0.3px across the tested aperture settings. Border CA was noticeably higher and was increasing with stopped down apertures, going from ~0.9px at f/3.5 to ~1.4px at f/11.



Chromatic Aberration (APS-C) @ 35mm
Here are 100% crops taken with APS-C type Canon Digital Rebel XTi comparing images at f/3.5 and f/8.

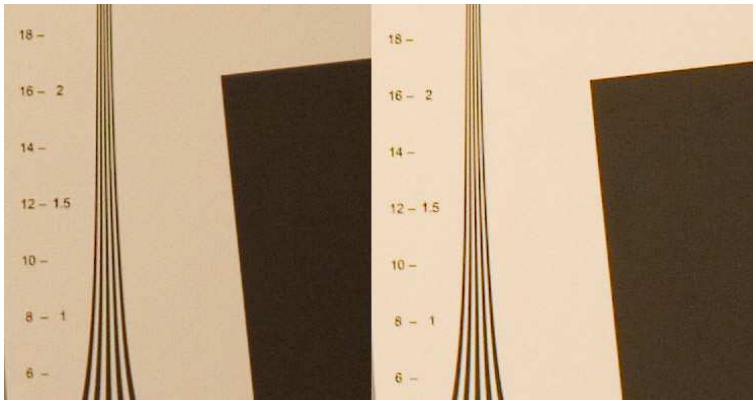
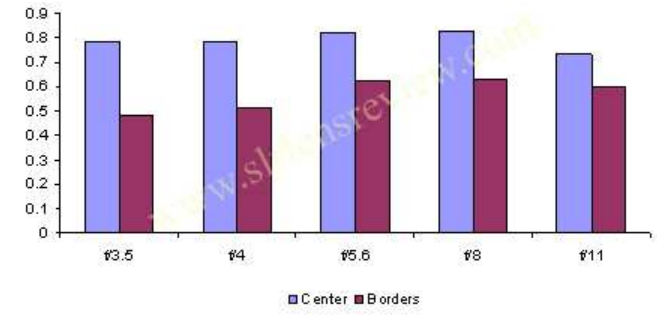


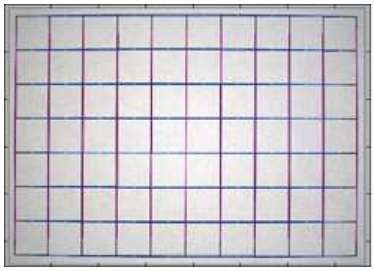
Image borders @ 35mm (100% crop): f/3.5 vs f/8

Canon FF: Image quality on a full frame body was not any better (or worse as a matter of fact) when compared to the image quality the lens achieved on an APS-C camera. Center performance remained very good throughout the tested aperture range, however, border image quality suffered again at f/3.5 and f/4 - performance here was rather average. In the f/5.6-f/11 range border quality reached decent levels, but the gap between the center and the border performance never closed.



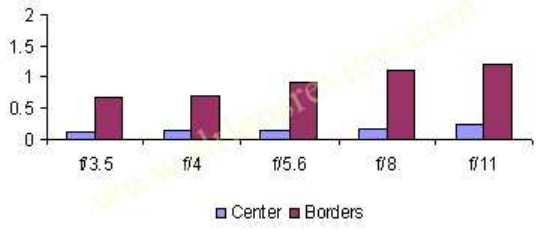
Normalized raw MTF50 @ 35mm

The lens exhibited pretty pronounced barrel distortion. At 1.4%, distortion would be noticeable in general photography, potentially affecting your pictures.



Distortion (FF) @ 35mm

The lens managed to handle chromatic aberration a little bit better on a full frame camera. CA in the center was again pretty low, averaging ~0.3px across the aperture range. Border CA started around ~0.6px at f/3.5 and slowly crept up to ~1.2px by f/11. At these levels CA can become a nuisance and can be quite noticeable in photographs.



Chromatic Aberration (FF) @ 35mm

Here are 100% crops taken with FF Canon 5D comparing images at f/3.5 and f/8.

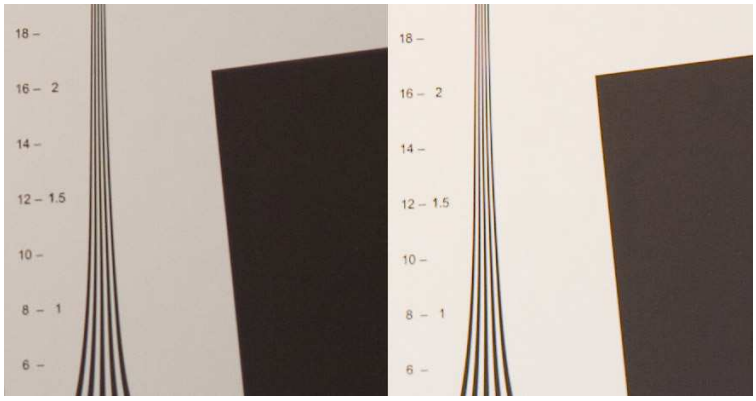


Image borders @ 35mm (100% crop): f/3.5 vs f/8

Alternatives

willing to experiment a little bit, you could adapt other medium format lenses to your Mamiya. The easiest to adapt are lenses from Hasselblad 500 series. Here you could evaluate Distagon T* 40mm f/4, Distagon T* 50mm f/4 and Distagon T* 60mm f/3.5, all three manufactured by Carl Zeiss. If you're willing to spend some time tinkering with your lenses (or at least looking for the appropriate adapter), you could even adapt your Pentax 645 lenses to your Mamiya. Here you should check out Pentax 645 smc 35mm f/3.5 and Pentax 645 smc 45mm f/2.8. Finally, if you are interested in an alternative glass for your traditional 35mm, FF or APS-C digital cameras, then your selection is even wider here and you can include wide-angle primes from a number of manufacturers, including Leica (R system), Carl Zeiss (Contax or ZF lines) and many others.

Recommendation

As mentioned earlier, Mamiya 645 35mm f/3.5 is not your typical play in the 35mm focal range. Being a medium format ultra wide angle, the lens carries an aura of excitement and mystery right up until you put it on your beloved dSLR and start shooting. Ten minutes later you will realize that this setup does not really make much sense without a tilt/shift adapter - for a 35mm prime, the lens is too bulky and heavy, looking more like a telephoto then a moderately wide prime lens. Combine that with a relatively poor border performance at wider apertures and the fact that the lens is relatively slow and you will realize that there are better ways to spend your hard earned dollars. You can still achieve good results once you stop down the lens to f/5.6 or better yet f/8, but most lenses would produce quite good performance in this range, so there's nothing really unique about Mamiya 645 35mm f/3.5. Of course if you plan to use the lens with a tilt/shift adapter so you can control your perspective or play with DOF, then this is a different story. In this case, combination of a Mamiya 645 35mm f/3.5 and a tilt/shift adapter might be a cheaper option then a native tilt/shift lens like Canon TS-E 24mm f/3.5L. While this review does not cover performance in the tilted/shifted modes, based on the mediocre border performance on FF as well as APS-C cameras, what are the chances that the lens will perform better around extreme borders when tilted/shifted? Chances are that it won't (but again, without the actual tests done, this is just a speculation at this time).