

UltraPortable Apo's – Part 1

Tele Vue 60 and Tak FS-60c

[Tom Trusock](#) – 9/05



WO 66 Petzval (for comparison only - not reviewed in this article), TV 60, Tak FS-60c

I think I'm headed the wrong way.

Seems like I was always told that aperture rules. That's still true, right? Well then why am I looking at all these teeny tiny scopes lately??

Cause they're cool.

Really cool.

Sure, you'll see more with a larger scope – assuming you're using it. But there's a place for the ultra small, ultra portable micro telescope. Last year, I bought an ultra portable 8" dob and reveled in the fact that I could get it and the family in the car.

Well, the family's expanded. I have two daughters to contend with now. In short, I don't have the room I once did. There are three solutions:

- 1) Don't take a telescope
- 2) Get a larger car
- 3) Get a smaller telescope

Number one? Not an option.

Number two? Well, the wallet says no.

Number three? If you read the Starbucket review, it's pretty obvious that it's going to have to be a SMALL telescope – I mean, that 8" takes less room than many 3" telescopes and mount! But – it's do able.

I got hooked with the WO 66ED Petzval – a gorgeous micro telescope, that provides a heck of a bang for the buck. Since then I've had a chance to take a look at the Tak FS60, the WO 66 APO and the Tele Vue 60.

The following review concerns the TV-60 and Tak FS60c, but I'd like to stress it's not really an optical shootout. Unfortunately although I used both of these this summer, I only had a couple of opportunities to examine the two telescopes side by side. I'll cover the WO 66 APO in a different article down the road.

The TV-60 was on loan from our friends at Astronomics while the Tak FS-60c belongs to a good friend of mine.



<i>Tele Vue 60</i>	
Aperture	60mm
Focal Length	360mm
Focal Ratio	f6
Weight	~3lbs
Length	10"
Accepts 2" Eyepieces	No
Included accessories	Slipcover case
Recommended accessories	Padded Case, diagonal, eyepieces
Price	\$795

The Tele Vue 60

With the Tele Vue 60, you are getting one of the smallest, most portable telescopes on the market. The aperture is only 60mm, that's true, but after using this little guy for several months I can tell you that it really seems like it plays in a bigger league. I used to think that anything much under three inches was of dubious use for astronomy. Not anymore.

The TV-60 is a 360mm focal length doublet APO that comes with a sliding dew shield that provides a place for a red dot finder attachment, and a Ranger style focuser. For those of you unfamiliar with it, it's a combination sliding drawtube and 1.25" helical focuser. I personally tend to favor a rack and pinion or crayford style focuser, but there are certain advantages in focus ability and weight. The helical focuser's diameter is much larger than a typical focus knob, thus allowing for much finer control. The TV-60 also is supplied with a mounting block that allows you to slide the scope backwards and forwards in order to balance it. A plastic spring type lens cap is provided.

The 60 comes with a non-padded bag. Please note it's a simple sleeve to hold the scope – not the padded case that's shown in the adverts. That's extra. Neither do you get a diagonal or an eyepiece.

As seen in the photos, the dew shield is pre-drilled to accept the mounting bracket for the TV Quickpoint.

The huge advantage of the TV60 is in its tiny size and ultra light weight. It's a mere 10" long when collapsed, and would fit in just about any suitcase or briefcase.

I found it was acceptably supported by just about any tripod I put it on, including a very, very small, 40+ year old camera tripod that I've had for – well, forever. I've never been able to use that one for anything astro related. Using a tripod this small means that your overall package is absolutely tiny. Don't discount this! In choosing an ultra-small telescope you would do well to remember you are still going to have to mount the thing. What good is a small scope if it requires a massive mount?

I had my first chance to play with the TV60 at NEAF with Al Nagler, and I was floored by the absurd amount of power the image withstood. In extended use I found this to be the rule, not the exception. I used 180x+ on Luna and various other targets without noticing any significant false color, and while there wasn't any more detail than at lower magnifications, the image stayed crisp far longer than I would have expected. That's over 76x per inch folks! Needless to say, viewing Luna is a joy with this scope. The dynamic range is outstanding, and the contrast is exceptional. In normal use on the moon, I found shadows to be pure black with no hint of false color anywhere in the view.

Tak FS60c

<i>Tak FS60c</i>	
Aperture	60mm
Focal Length	355mm
Focal Ratio	f5.9
Weight	~3lbs (w/o clamshell)
Length	15.75"
Accepts 2" Eyepieces	W/ \$179 adapter
Included accessories	Extension tubes
Recommended accessories	Padded Case, diagonal, eyepieces
Price	\$839



Yet another tiny doublet apo, this time in the vaunted Tak fashion (Fluorite!). Fit and finish is first rate. The OTA is nearly as small as the TV60 even though the dew shield is non-collapsible. This is accomplished by design – namely, you need to use an extension tube to bring the telescope to focus.

The Tak came with a lens cap and visual back. Nothing else. All other options are, well, optional. Sort of. At the least, you'll need a diagonal and tube ring if you want to mount it and use it visually.

I liked the Tak focuser (standard rack and pinion) better than the Tele Vue helical focuser, but then again, I've never really been fond of helical focusers.

In the sample I used, we did have to monkey around with other extension tubes to get our eyepieces to focus at pretty much any distance. We wound up using a Tele Vue 1.25" diagonal, and a Tele Vue 2x Barlow with the optical element removed for an extension tube. Once we were able to bring the scope to focus, we were rewarded with stunning views of both day and night targets.

Like the TV60, false color was simply not an issue.

I judged the optics in the Tak to be spot on, and it delivered fantastic views – again, like the TV60, it seems to play in a bigger league than you would imagine.

This is a truly cool little telescope.



*Tak FS-60c, TV 60, WO 66 Petzval
Note the TV dew shield is extended, the Tak's is fixed, but it requires an extension tube to reach focus, and the 66 Petzval's dew shield is retracted*

What good are they?

To put it bluntly, I'm stunned by what these micro telescopes can show you. Scopes in the 60-66 range obviously excel at low powers and wide fields, but do surprisingly well on Luna too.

These scopes are a bit small to expect anything huge in the way of planetary performance, but I did see

several bands on Jupiter – the two main, and then glimpsed another two here and there dependent on seeing.

Coupled with a Pan 24, you can look forward to a true field of view of around 4.3 deg for each scope, and if you really want wide fields, there is a third party adapter available for the Tak (around \$190) that lets you use 2" eyepieces for even wider fields. Either way you go – wide, or super wide, you've got a little scope for scanning the summer milky way.

But is 60mm big enough for serious astro use?

I have to laugh there – what's serious mean anyway? If you're expecting some serious fun – well, you'll get it – as long as you keep your expectations realistic. If your goal is to go deep, then there are better ways to spend \$800. But if you want the ultimate in portability, then these scopes are excellent choices.



TV 60, WO 66 APO

So, you won't be pulling out the Palomars or Hicksons, but you might be surprised at what they actually can do. From a dark site; I resolved M22 across the face, was treated to a view of the entire Veil nebula, and my observing partner and I had (we both agreed) the best view we've ever had of the North American Nebula. M57 showed as a tiny round dot and hinted at a donut with increased magnification. M27 was a small bright bubble floating in the midst of the summer Milky Way. M13 was a brilliant cotton blob, and M17 even showed its distinctive check mark. You can even pick out some NGC's if you're so inclined. I spent some very enjoyable time this summer chasing down things like NGC 6210 with these tiny creatures.

And then there's the whole daytime / birding option – but since this is an astronomy website, we won't go there except to say I had a lot of fun with these in the daytime too.

But again a little word of warning - if this is going to be your main telescope – then I think you're missing the point. That's not what these telescopes are about. They are for the birder, the extreme wide field imager or the traveler – someone who is always on the go and finds space at a premium. They're the ultimate in grab and go – not a replacement for a larger scope.

Believe it or not, there's a fairly large difference between 80mm and 60mm. (There's also a fairly noticeable difference between 60 and 66.) It might help to think of these things more like variable power binos – less like the other telescopes you might be familiar with. At the same time, their extreme magnification range makes them more useful than the typical bino. Something like *Binocular Astronomy* by Crossen and Tiron makes a perfect atlas for one of these guys. When choosing targets, you've got to play to their

strengths - wide fields and variable magnifications. If you expect them to perform like an 80 or 100mm scope you will probably be disappointed.

Which would I prefer?

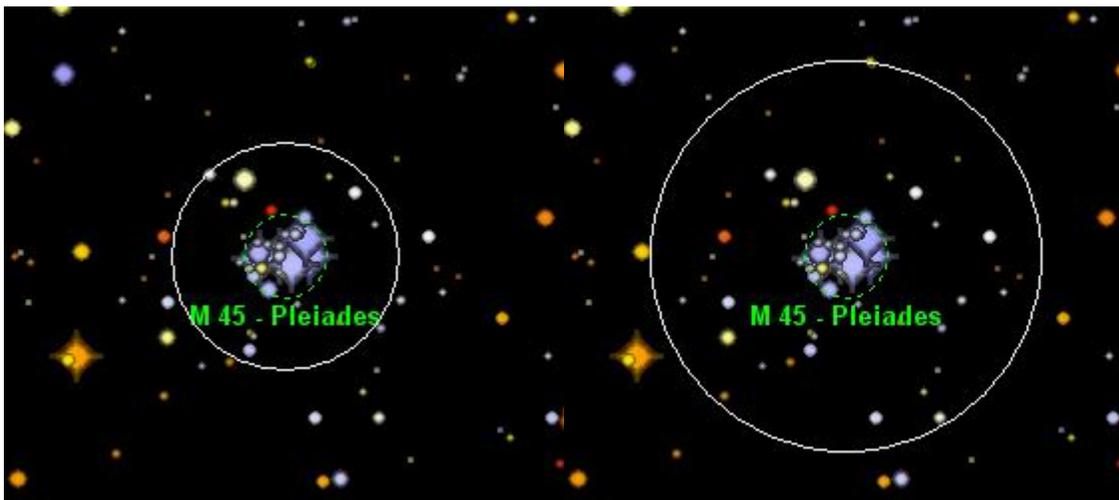
Well, it depends on your application – if it's imaging, then I'd have to recommend the Tak (or perhaps the new TV60IS) – it's focuser is superior for that application. (Advantage Tak). While we're talking focuser, the Tak also has the option to add the micro focuser. Frankly, I'm not sure that's much of an advantage over the TV focuser. Although technically the TV60 does not have a fine focus, the helical focus is so fine I'm not sure it's really needed.

The TV60 probably represents a slightly better value since it's less expensive, comes with a case (sort of) and also comes with a mounting method (but there may or may not be a Tak sale going on right now, so check with your favorite dealer).

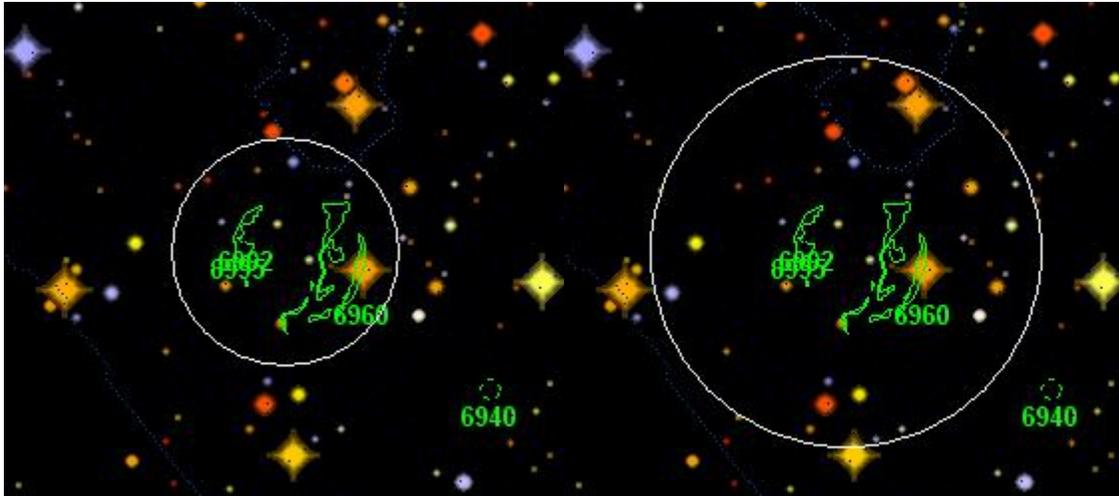
If portability is the end all be all, then look towards the TV60. While the Tak is lightweight, its clamshell ring seemed to weigh nearly as much as the telescope! Given the tiny size, this was more of an issue when mounting the telescope rather than when carrying it somewhere. Al Nagler calls the 60 his briefcase telescope – it's easy to see why. What he doesn't tell you is that a tripod heavy enough to support the TV60 may well fit in that same briefcase right alongside the telescope! I've never seen a telescope this small and light. It worked well on every tripod I had in the house.

As I noted previously it is possible using third party accessories, to use a 2" eyepiece with the Tak – although I didn't see it in that particular configuration, that would be an advantage for me as a visual observer. If I only intended on using 1.25" eyepieces and accessories, I'd really be hard pressed to choose between them.

What's the difference between a 2" eyepiece and 1.25"?



Well – that. Right about there. On the left, you see the 4.3 FOV provided by a 24 pano. On the right, the 7.66 deg FOV provided by the 41 pano. Keep in mind your exit pupil will swell up, (along with any astigmatism you may have) but I think the difference is pretty clear. Here’s one more simulated eyepiece shot.



For most targets, given the extremely short focal length of these telescopes, you probably won’t need the capability to use 2” eyepieces – I mean seriously, there just aren’t that many targets out there that are that large. But if you’re like me, the bulk of your eyepieces may very well be 2” eyepieces. If that’s the case, the ability to use those eyepieces is awfully nice, and there – advantage Tak.

Optically, from the small amount of comparison that I had a chance to do, it was pretty much a draw between the two telescopes – both provided fine contrasty views with pinpoint stars, and tack (no pun intended) sharp views of Luna.



The included cases – WO’s, TV’s and – yup – Tak’s

One final advantage TV has over Tak is in its warranty and service – at least if you live in the US. A 5 year warranty is standard on all Tele Vue telescopes, and you can be certain that you can get it serviced long, long after that warranty period expires.

But the bottom line is that these are both great little telescopes and your choice will depend heavily on your personal preferences.

Wait - you still want me to decide between the two??

Well, if I were traveling and wanted the ultimate in portability, I'd take the TV60. No questions, that's one of the most amazing, tiniest APO's I've seen. Tak also has a reputation for, well, pricy accessories. The TV, on the other hand, uses pretty much standard stuff. BUT - if you are already laying out \$800 for a 60mm telescope, I'm not sure how much you're worried about the cost of some accessories, and frankly, the Tak's traditional style focuser has a great attraction for me. Personally I'd probably opt to go that route if forced to choose between the two. But I don't carry a briefcase.

But seriously, it's hard imagining you could go wrong with either.

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