



SUPER SIZE SIGMAS

Sigma's latest super zooms, the enormous 300-800mm f/5.6 and the 120-300mm with fast f/2.8 maximum aperture, appear well suited to sports photography. Guy J Brown FRPS put them to the test during a weekend of motorcycle racing at Donington Park

Sports photography is a demanding field that requires specialist equipment for good results. Fast lenses with large maximum apertures are preferred, as they enable the use of high shutter speeds in unfavourable light, and because the camera can focus rapidly using its most sensitive autofocus points. Typically, sports photographers carry zooms in the 70-200mm range, together with a 300mm prime lens, and longer focal lengths for more distant subjects.

Sigma's Apo 120-300mm f/2.8 EX DG covers most of the focal lengths required in a single zoom, and has a constant f/2.8 maximum aperture throughout its zoom range. The Apo 300-800mm f/5.6 EX DG meanwhile, which at more than half a metre long is the largest in Sigma's current range, provides for longer focal lengths. Matched teleconverters, the Apo 1.4x EX DG and Apo 2x EX DG, add further to these lenses' flexibility. When combined with the 300-800mm lens, for instance, the 2x converter provides a maximum focal length of 1600mm.

Sigma's system of acronyms gives some clue as to the characteristics of these lenses. The designation EX indicates that they have a matt black finish and professional build quality, while the DG means they are designed with digital SLRs in mind, but retain

Above: Troy Corser racing in the Superbike World Championship, taken with the Sigma APO 300-800mm EX DG at 687mm, 1/500 sec @ f/8, ISO 800. At this focal length the depth of field is limited, which serves to separate the nearest rider from the one behind.

compatibility with 35mm film cameras. They tend to have a short minimum focusing distance and a large maximum aperture, ensuring good peripheral illumination when used with 35mm format. Apo means they contain apochromatic elements, constructed of special low-dispersion (SLD) glass to minimise colour aberrations.

Some years ago, I had an old Sigma wide-angle lens that, during its attempts at autofocus, buzzed and whirred like a poorly robot. Not so these two lenses, which use hypersonic motors to achieve rapid and almost silent autofocus. Both lenses focus internally by moving inner lens groups, hence the physical length of the lens doesn't change. Conveniently, the focusing ring doesn't move during autofocus either, so that the smaller 120-300mm lens could be rested on a beanbag without fear of it snagging.

Another benefit of internal focusing is that the front element doesn't rotate. This means that the 120-300mm lens can be conveniently used with a polarising filter, although such filters won't come cheap given the large 105mm diameter of the filter thread. This isn't an issue for the 300-800mm lens, which has a compartment at the rear to take 46mm drop-in filters. A circular polarising



filter is supplied, which can be rotated by moving a thin ring in front of the filter compartment. Both lenses have a small switch at the rear to change between automatic and manual focus. However, manual focus is available even when the switch is in the autofocus position.

Both lenses are provided with a tripod collar that doubles as a carrying handle with a good contoured grip. The 120-300mm lens has a detachable collar with a single 1/4ins tripod thread. The 300-800mm has a fixed collar with three 1/4ins threads and a 3/8ins thread – a nice touch that allows the lens to be precisely balanced on a tripod according to the weight of your camera. On both, a locking knob on the collar can be turned to release the lens, allowing it to rotate between landscape and portrait orientation. In the case of the 120-300mm, pulling the knob unlocks the hinged collar so that it can be completely removed. Both lenses come with a padded case and a carrying strap that fixes to a metal pin on the collar.

The 120-300mm is constructed from 18 lens elements in 16 groups, with four SLD elements (two at the front of the lens and two at the rear). There is a large focusing ring nearest to the camera, and an equally large zoom ring with focal length markings at

Top left: Sigma Apo 300-800mm f/5.6 EX DG.

Top right: Apo 120-300mm f/2.8 EX DG.

Above left: 120-300mm + 1.4x converter at 261mm,

1/350 sec @ f/5.6, ISO 400.

Above right: 120-300mm + 1.4x at 261mm,

1/250 sec @ f/5.6, ISO 400.

Above top: APO 1.4x Teleconverter EX DG,

2nd from top: APO 2x Teleconverter EX DG.

3rd from top: James Toseland wins the first Superbike race. 300-800mm at 800mm,

1/500 sec @ f/11, ISO 250.

Above: A wide aperture to separate plastic tubing from a messy background. 120-300mm at 274mm,

1/250 sec @ f/4, ISO 500.

120, 150, 180, 200, 250 and 300mm. Both rings have smooth action with just the right amount of 'give'. The lens has a distance scale marked in metres and feet, but no depth of field scale. The maximum aperture of f/2.8 is constant throughout the zoom range, and the lens has a minimum aperture of f/32. The minimum focusing distance is 1.5m at the short end, and 2.5m at the long end, with an angle of view varying from 20.4° to 8.2°. The lens is about 27cm long and 11cm in diameter, and weighs a hefty 2.6kg.

While the 120-300mm certainly feels heavy, nothing quite prepares you for the weight of the 300-800mm when you first pick it up – it weighs a staggering 5.8kg (and I mean that literally; you stagger when you carry it). Its dimensions are equally impressive - with a length of 54cm and a diameter of about 16cm, you certainly feel as though you are attaching the camera to the lens rather than the other way round.

The lens contains 18 elements in 16 groups, the front two of which are constructed from what Sigma refers to as 'extraordinary low dispersion glass', which it says gives slightly better sharpness and resolution than SLD, but is currently only used in its ultra-telephoto lenses due its high manufacturing cost. The maximum



Top left: The line-up on the grid. 120-300mm at 234mm, 1/500 sec @ f/5.6, ISO 160.

Left: Tyre pattern. 120-300mm at 120mm, 1/90 sec @ f/4, ISO 800.

Above, top: Roberto Rolfo takes a fast corner. 120-300mm plus 2x converter at 494mm, 1/750 sec @ f/8, ISO 400.

Above: Knee down, taking a corner. 300-800mm at 648mm, 1/500 sec @ f/6.7, ISO 800.

aperture is a constant f/5.6, and the minimum aperture is f/32. At 6m, the minimum focusing distance is constant over the zoom range. The angle of view varies between 8.2° and 3.1°. Nearest the camera is a large zoom ring marked in 100mm increments, and beyond that an even larger focus ring. Again, these give just the right amount of resistance when moved.

After handling two such heavyweight lenses, it was a relief to find that the 1.4x and 2x teleconverters weigh a mere 143g and 234g respectively. The 1.4x contains five elements in three groups, and increases the focal length of the lens by a factor of 1.4x, while decreasing the effective aperture by one stop. When combined with the 120-300mm, it gives you a 168-420mm f/4 lens, and autofocus is retained. The 300-800mm f/5.6 becomes a 420-1120mm f/8, but in this case autofocus is lost so the lens can only be focused manually.

The 2x teleconverter contains six elements in five groups, and doubles the focal length of the lens at the cost of two stops of light. When combined with the 2x teleconverter, the 120-300mm f/2.8 becomes 240-600mm f/5.6 lens that retains autofocus, whereas the 300-800mm becomes a 600-1600mm lens with an effective maximum aperture of f/11 that can only be focused manually.

I had the opportunity to test the lenses during a weekend of motorcycle racing at Donington Park, which included the Superbike World Championships.

The lenses were evaluated on a Canon EOS 5D digital SLR, which has a full-frame 35mm sensor and therefore presents a demanding test of edge definition. The pristine matt black APO 300-800mm EX DG caused a certain amount of curiosity among the marshals and professional photographers on the track at Donington, who were apparently more used to seeing battered Canon L-series lenses. "Oh look, you've got a stealth lens", said one marshal, "but I can tell that you're not a real photographer – you haven't got any gaffer tape on it."

Even without the obligatory gaffer tape, the 300-800mm proved to be a very competent performer. The lens was far too heavy to hand-hold, but was nicely balanced when supported by my Manfrotto monopod (although it groaned under the weight).

The ability to continuously vary the focal length of such a long lens was very useful, since it was possible to fill the frame with a single bike at various distances from the track. Autofocus was fast enough to follow moving bikes, which seems particularly impressive when you consider the volume of glass in the lens. The large zoom and focus rings were easy to find, and continuous manual focusing was useful on occasions when the camera lost autofocus and needed a manual tweak to get it back.

The 120-300mm lens proved to be adaptable, being equally suited to candid portraits in the paddock and shooting bikes on the track. When combined with the 1.4x teleconverter, it gave a useful range of focal lengths, and autofocus performance was still impressive. When used with the 2x converter, this lens exhibited significant vignetting at its effective maximum aperture of f/5.6, and my subjective impression was that autofocus was lost more frequently, and was generally slower.

Optically, both lenses were impressive. Even wide open at f/2.8, the 120-300mm was sharp across the whole frame, with little deterioration in the corners. Stopping



down to $f/4$, it was even better - on a par with the best prime lenses. Sharpness was still excellent when the lens was combined with the 1.4x converter, and was very good with the 2x converter. The sharpness of the 300-800mm lens was good at $f/5.6$, but significantly improved at $f/8$. Neither lens exhibited noticeable problems with regard to distortion or fringing artefacts, and both produced images with good contrast. Out-of-focus areas (bokeh) were rendered very nicely, due to the circular nine-bladed aperture used in both lenses.

Sturdy bayonet-fixing detachable metal hoods are supplied with both lenses, which are held in place by a single locking knob and fit reversed onto the lens for storage. A favourite trick used by sports photographers is to support the very end of the lens by gripping the edge of the lens hood, in order to achieve maximum control when tracking moving subjects. The hood of the 120-300mm lens was certainly robust enough to be held in this way. I couldn't use the same trick with the 300-800mm lens because my arms weren't long enough!

Neither lens has a conventional lens cap - instead you get a padded fabric hat that fits over the lens hood. A minor niggle is that the cover is secured by wrapping it behind the fixing knob for the lens hood, which is only possible when the hood is in the reverse (storage) position. When the lens hood is attached, there is nothing to hold the cover in place. On several occasions I swung the 120-300mm lens over my shoulder and found the cover on the ground behind me.

The 120-300mm and 300-800mm cost £2000 and £5000 respectively, while the 1.4x and 2x teleconverters are priced at £160 and £200. Although they can hardly be said to be cheap, these prices are reasonable when you consider the specification on offer. Since it is generally true in life that you get what you pay for, some potential purchasers may be put off by the suspicion that these optics are cheaper than equivalent big-name lenses because they are in some way inferior. On the basis of my experience with these

Above: Katsuki Fujiwara racing in the Supersport class, panned with a slow shutter speed. 120-300mm plus 1.4x converter at 346mm, $1/125$ sec @ $f/13$, ISO 125.

Right: Champagne supernova. 120-300mm plus 1.4x converter at 420mm, $1/2000$ sec @ $f/5.6$, ISO 400.

Thanks to Tony Godwin of AGW Electronics Ltd for his hospitality at Donington Park.

Both lenses and teleconverters are available in autofocus mounts for Canon, Nikon (D) and Sigma cameras; additionally, the 300-800mm lens is available in a Four Thirds mount.

Further images from the lens test can be viewed at www.guyjbrown.com/technical.html

lenses, it's hard to justify such a view. In terms of their optical performance, it would be difficult to ask for much more - the 120-300mm in particular delivers stunning performance throughout its zoom range. Whether the lenses are sufficiently reliable for professional use is something that must be judged in the fullness of time, but certainly there is nothing lacking in the build quality. Sigma's confidence in its products can be judged by the fact that it offers a three-year extended warranty on both lenses and both teleconverters.

Finally, are these lenses well suited to motorsport photography? The 120-300mm certainly fits the bill, with an ideal zoom range and fast autofocus due to its hypersonic motor and $f/2.8$ maximum aperture. When combined with the 1.4x converter, it provides focal lengths up to 420mm, still with excellent optical performance and fast autofocus. I would prefer a dedicated lens for longer focal lengths, due to its reduced autofocus speed and vignetting when used with the 2x converter. The lens is heavy, but it's certainly possible to hand-hold it for panning shots and when snooping around the paddock and pits.

The suitability of the 300-800mm for a particular application depends on how far you have to carry it, and hence upon your willingness to trade an aching shoulder for optical quality. Given its enormous weight, the lens is clearly best suited to situations in which the photographer is relatively static - wildlife and long-distance surveillance immediately spring to mind. Motorsport doesn't fit into this category, since it is necessary to move around the track as the light changes, and you regularly have to sprint between the paddock, pits and track in order to cover a whole event. Still, the 300-800mm got me some of the best motorcycle racing images that I've taken so far, and my aching shoulder will heal in time - and as they say in sport, no pain, no gain.

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