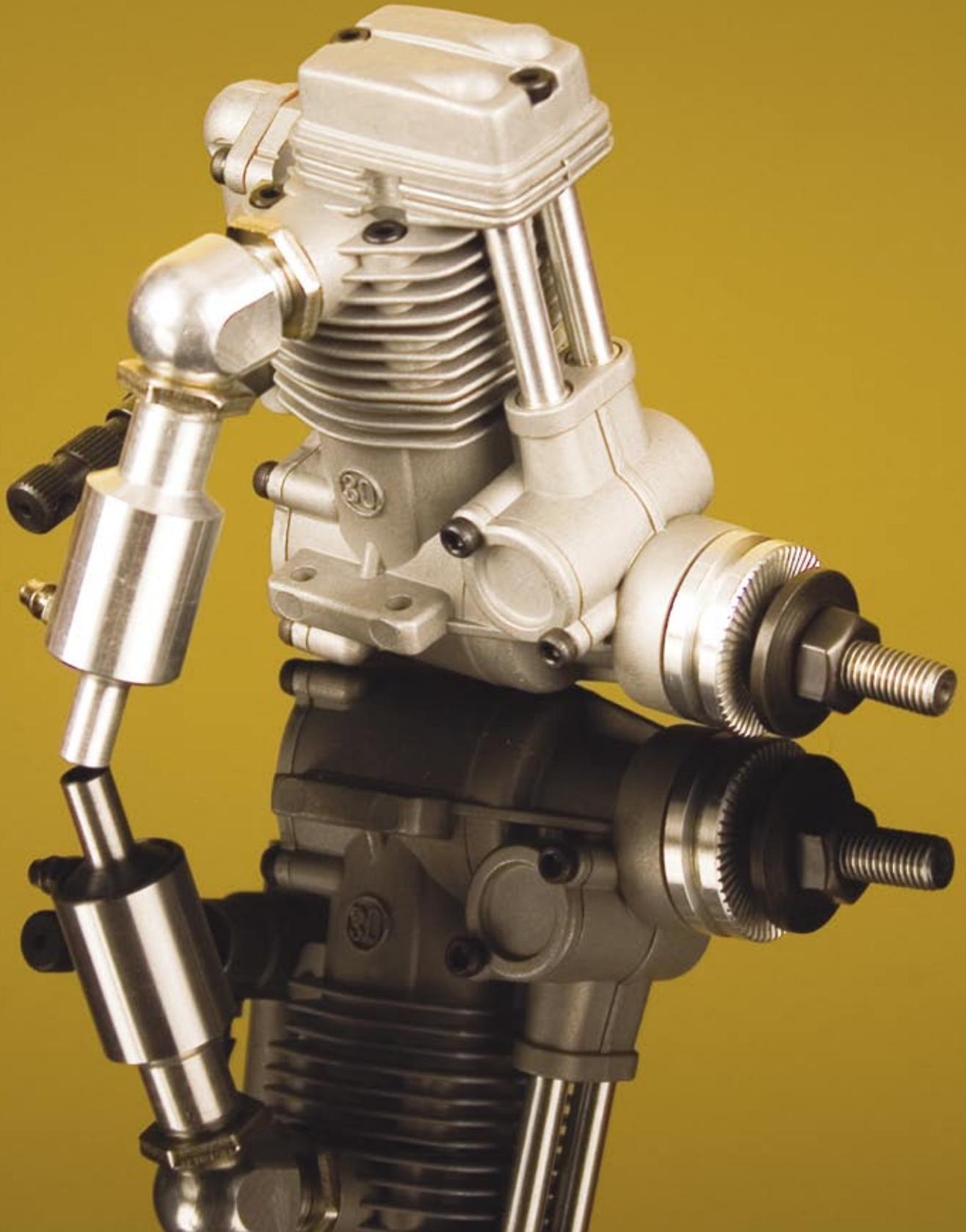


ENGINE REVIEW | Four-stroke glow

# SC 30 4-Stroke

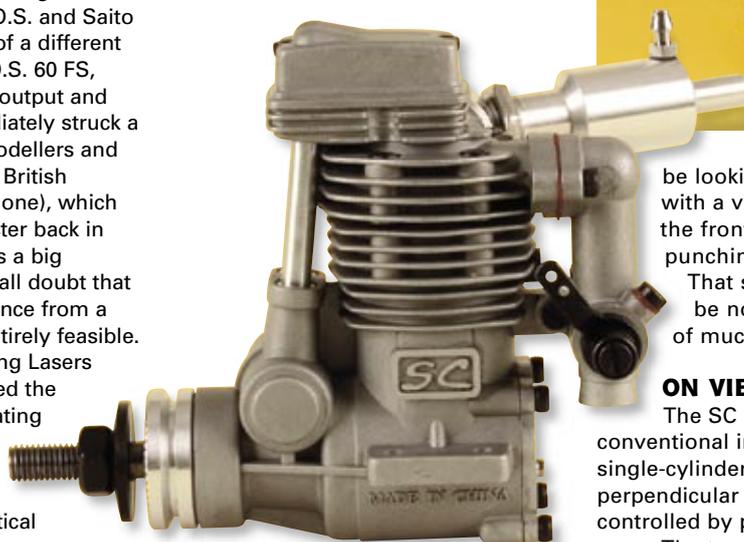
LOOKING FOR YOUR FIRST FOUR-STROKE? STEVE DORLING UNRAVELS A TOP-PERFORMING EXAMPLE THAT'S BOTH USER AND WALLET FRIENDLY



**M**any moons ago, in a bygone era when you got change from a quid at the pub, the idea of using anything other than a two-stroke glow for R/C purposes seemed incomprehensible to most of us. At that time petrol engines were mainly either vintage devices or the odd chainsaw conversion forced into service. There were also dedicated mavericks who could be found hunched over their Myford Super 7s or the like, late into the night, turning out 'specials'. By and large, the idea of a four-stroke model aero engine was at best fanciful, and in practical terms a nonsense, or so it was thought. Fortunately Neil Tidey, O.S. and Saito (amongst others) were of a different opinion, and the early O.S. 60 FS, despite its lowly power output and open valve gear, immediately struck a chord amongst scale modellers and engine lovers alike. The British Magnum 91 (I still have one), which at 15cc was a real monster back in the days when a .60 was a big engine, proved beyond all doubt that gleaming lusty performance from a four-stroke glow was entirely feasible. Neil Tidey's world-beating Lasers joined the fray and upped the stakes again, demonstrating that four-stroke model aero engines were not only highly desirable but also extremely practical devices with real power.

Leaping forward 30 years or so, the huge influx of Chinese engines (many of which are unashamed copies of their Japanese counterparts) continues apace. The SC 30 on review here certainly owes its heritage to the original jewel-like O.S. 20 (still the smallest volume produced four-stroke glow). As that little 20 grew into a 26 and then into a 30, this SC made its appearance.

A very good friend of mine recently started his aeromodelling career at post-retirement age and has enjoyed great success with a succession of SC 30-hauled Junior 60s, despite having an almost total lack of knowledge of the inner workings of the model engine, relying on the sheer user-friendly reliability of this diminutive little four-stroke to carry him through. Moreover, I've seen several other examples of this neat little engine in use, all much-liked by their owners thanks to their low cost, endearing handling qualities, smooth running and clean throttling performance.



The SC 30 is very well engineered using quality materials, and with good distributor-based customer back-up it would appear to be a sound investment even before strapping it to the bench.

The absolute power output of an engine like this is probably of secondary interest to most readers, given that you're most unlikely to



be looking at one of these with a view to strapping it to the front of a 3D ship and punching holes in the sky.

That said, I discovered it to be no slouch and capable of much!

#### ON VIEW

The SC 30 is very conventional in its makeup, being a single-cylinder device with two perpendicular overhead valves controlled by pushrods and rocker arms. The transverse forward-mounted single camshaft, which is carried on twin ball race bearings and driven at half crankshaft speed via a worm gear, has a pair of lobes impinging on a pair of solid followers that subsequently lift the pushrods. The latter are fully enclosed in chrome plated tubes (O-ring sealed at either end), operating twin rockers that open the spring-loaded valves. In common with

*There's no doubt about it, the SC 30 owes its heritage to the original jewel-like O.S. 20.*



*Dismantling any engine should always be a matter of need rather than curiosity, and I strongly recommend that you leave yours alone.*

*Like most model four-stroke engines the carburettor is a rear-mounted downdraught device with no choke facility.*



*The twin rockers that operate the two perpendicular, spring-loaded, overhead valves.*



disturbing one that's been run can only accelerate wear. That said, in this instance things were done the other way around because upon affixing a propeller, I was most disappointed by the feel of the engine. There was absolutely no compression and the thing felt pretty lousy. This being the case I decided to take the rocker cover off to see if there were any clues to be gleaned - perhaps a valve had stuck? Anyway, as the cover was released, an audible click confirmed that to be almost certainly the problem. The engine then felt fine, if a little tight, which is to be expected with any new unit. I selected a Bolly 9 1/2 x 6" prop for the first run and made off to the test shop to confirm that all was well.

most model four-strokes the carburettor is a rear-mounted downdraught device, and whilst there's no choke facility, using exhaust pressure to inflate the tank by placing a finger over the efflux and cranking the engine will push sufficient fuel into the carburettor for starting.

The cases are investment castings, matt finished to a very high standard, with the distinctive 'SC' logo cast in bold relief. All in all, this cute little engine has bags of eye appeal. Let's take a look at it in more detail.

**HANDS OFF**

Dismantling any engine should always be a matter of need rather than curiosity, and I strongly recommend that you leave yours alone, certainly within the warranty

*You could happily poke one of these in the nose of a small warbird or lightweight aerobatic machine and achieve a very respectable level of performance.*



period! I have to take the engines to bits that drop into my reviewers cache, but the old adage 'if it ain't broke, don't fix it' certainly applies to model engines. Four-strokes have more bits and bobs whizzing around inside than two-strokes, and that all-essential valve timing must be noted during disassembly; incorrect reassembly will prevent the engine from running and the valves could tangle, resulting in severe damage.

I usually take engines apart for inspection and photography before embarking upon test runs, given that

**FLIPPING FRUITLESS**

With the beast mounted on the test rig I tried hand-starting it, but to no avail... my only reward for a few minutes of fruitless flipping was just the odd pop and bang. I fitted a larger propeller, which immediately did the trick (courtesy of the flywheel effect from the bigger blade), and whatever had been amiss was clearly no longer an issue, given that the engine was now positively purring away. On the subject of initial starts, please don't be tempted into electric-starting a little engine like this one,



**PROP PERFORMANCE TEST**

Size	Type	RPM (max)	RPM (idle)
12.25 x 3.75"	APC fun fly	7,800	-
10.5 x 6"	Bolly	9,000	-
10.5 x 5"	Bolly	9,900	-
9.5 x 6"	Bolly	10,700	2,100

however recalcitrant it may be. If you flood it then you'll simply wind the end off the crank or bend the rod - you have been warned!

With a 10½ x 5" Bolly glass / nylon blade affixed to the prop driver the engine started really easily, purring away at half throttle at a steady 5 - 6000rpm; it sounded oh so very sweet! One 4oz tank of fuel later the little 30 felt very snappy, and with the merest tweak on the idle needle being needed to finalise carb settings, that was pretty much it. Throttling and idling performance was now as near to perfect as you could wish and peak performance came as a surprise. Even though it was still very early in the proceedings, a healthy 9000rpm was showing on the tachometer, and this running a relatively large Bolly 10½ x 6, which is the sort of propeller you'd normally reserve for a two-stroke 40.

Running a selection of propellers (the largest being a whopping APC 12¼ x 3¾" dedicated 'fun fly' prop, fitted just for fun), I was again surprised by the willingness of this little engine; it turned big propellers without protest and with a convincingly willing throttle response. In truth the 12¼ x 3¾" is probably a 'prop too far' for such a diminutive engine and not really recommended, but it proved how lusty this little SC is. The smallest propeller I tried was a 9½ x 6" Bolly, which saw the rpm peaking at well over 10k, and as you're unlikely to run this engine much above this in anything but a very small, zippy model, there seemed little point in trying anything smaller.



### SHE'S A BEAUT'

I found very little to criticise the SC 30FS for, it's exquisitely finished and built to a far higher standard than its lowly price suggests, and there's seemingly little to choose between this budget four-stroke and the more expensive alternative. Under test conditions starting was nearly always a one-flip affair; the idle performance was exemplary, and throttle response was really snappy and ultra reliable. What more could you want? I never did get to the bottom of that initial lack of compression, maybe it was a stuck valve, but then as rocker clearance to the inside of the cover is slight, perhaps one of the locking nuts on the valve adjusters had caught on the cover during assembly at the factory? Who knows? Certainly there was no evidence of anything incorrect or misaligned when the engine was stripped and checked over during the course of the test, and the internals were extremely clean and well finished throughout.

The SC 30 isn't just a good engine... it's a great engine! It runs extremely well, and my initial thoughts of it being a 'cooking little lump' more suited to a vintage job or small-ish scale model rather than something more exuberant, were proved to be wrong. You could poke this one in the nose of a small warbird or lightweight aerobatic 3D machine and achieve a really respectable level of performance, allied to that lovely four-stroke sound. And all on a thimbleful of

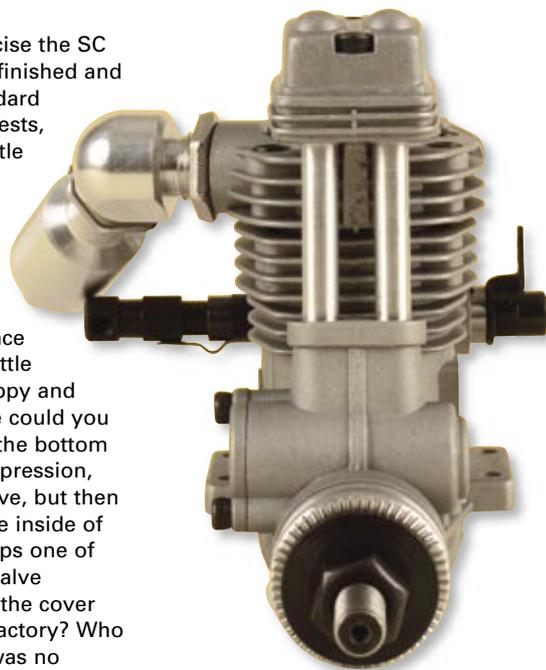
fuel. The SC 30 FS would be the absolute business on the front of Tony Nijhuis' super little Spitfire that's the subject of the free plan in the recent *RCM&E Special*, a model that could have been designed for it. What a neat little engine, I absolutely love it to bits.

### SOUND ADVICE

Just a few pointers to finish with, given that this one will undoubtedly appeal to less experienced modellers wanting their first four-stroke, courtesy of its low price. When it comes to care and maintenance, four-strokes are essentially no different to two-

*The single camshaft is carried on two ball race bearings within its housing and is driven by a worm gear.*

*The cases of the 30FS are investment castings, mott finished to a very high standard.*



*With the backplate removed the quality of the internal components can be clearly seen.*



*The SC 30 is very well engineered using quality materials, and with good distributor-based customer back-up it would appear to be a very sound investment. In performance terms this little gem of a four-stroke is not only a good engine, it's a great engine!*

strokes but there are one or two additional facets worth noting. Valve clearances will need resetting (albeit very infrequently), and be sure to run your SC 30 on fully synthetic lubricant-based fuel with a minimum 10% nitromethane content. Nitro really helps with the idle and throttling on smaller engines, four-strokes in particular, whilst castor-based fuels gum the innards up something rotten. The latter is particularly true with four-strokes and they soon assume that 'dipped in toffee' appearance when subjected to castor oil, so given that the SC 30 is both small and a four-stroke, steer clear of castor and use a bit of nitro in your brew. I know of no better four-stroke plug than the O.S. 'F' type, which is expensive but worth the outlay. Finally, be sure to run the engine absolutely dry at the end of the days play, reconnecting your glow driver and flipping the engine over until it refuses to fire at all with the fuel line off. Disconnecting all fuel lines helps to prevent corrosion problems, and storing your models nose-up so that any 'crud' runs out of the exhaust system rather than back into the engine, is also beneficial.

## DATAFILE

<b>Engine:</b>	SC 30 FS
<b>Configuration:</b>	OHV single cylinder four-stroke
<b>RRP:</b>	£99.99
<b>UK distributor:</b>	J. Perkins Distribution Tel. 01622 854300 <a href="http://www.jperkinsdistribution.co.uk">www.jperkinsdistribution.co.uk</a>
<b>Displacement:</b>	5.0cc
<b>Bore:</b>	19.70mm
<b>Stroke:</b>	16.40mm
<b>Shaft thread:</b>	UNF
<b>Weight:</b>	225g inc. silencer (20g)
<b>Stated power:</b>	Not stated
<b>RPM range:</b>	3000 - 12,000
<b>Prop range:</b>	9.5 x 6" to 12.25 x 3.75" tested
<b>Fuel:</b>	Weston Prosynth 2000 (10% nitromethane)
<b>Supplied with:</b>	Silencer, tools and instructions