

## Product Review

### OS Engines 75 AX by Stephen Green.

The OS 75 AX is the latest addition to the range of good value two stroke engines that offer good power with low noise emission and a very reliable idle. The engine is supplied with a baffled muffler and an OS number 8 glo plug. The instruction booklet includes some very basic information that would help a newcomer to operate any glo engine. In metric terms .75 of a cubic inch equals 12.29 ccm.

Just like the 120 AX I reviewed a year ago the cylinder head and upper crankcase on this engine features a greater percentage of cooling area toward the rear. This can be helpful for operation inside an inefficient cowling. Assuming the head material is the same as the 120 the alloys have proven quite tough the chance of stripping the glo-plug thread is minimal.

The muffler has an internal baffle and the exhaust outlet can be swivelled at ninety degree intervals to four different positions. The engine is side mounted on the test model and the exhaust was adjusted to



blow down the middle between the wheels. One could say this is not as convenient as a round muffler but on the plus side; the rear of the muffler won't rotate if the long central bolt works loose. By the way that bolt is very substantial on the engine.

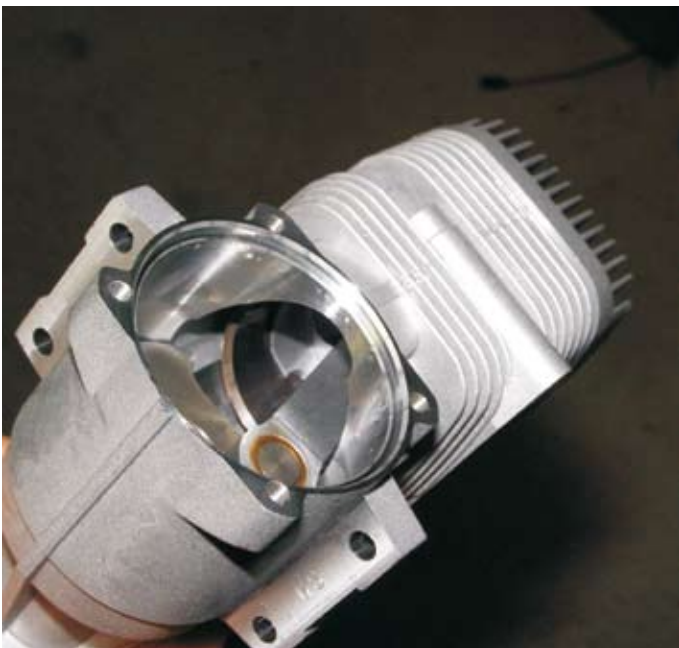
The carburettor has the main needle valve is angle rearward away from the front and a bowden cable extension is included. The idle needle screw is easy to see and locate a screw driver on top, making in cowl adjustments easier. The plastic throttle arm is well clear of the crankcase making straight linkages easier to achieve and of course metal to metal contact won't be an issue. If you are the hand starting type one thing I prefer on the AX series is the front needle valve which in terms of hand starting a hot engine I have found is superior to a rear needle valve. For example if you tip

the model over when taxiing and the engine stops, the fuel runs from the spray bar in the carb back to needle valve at the rear of the engine. This leaves air in the fuel line and the trick is to put a finger over the venturi, flick the prop and remove your finger when the engine fires. This is technique is okay on a sport model but not suited to a cowed installation and the angle of the needle valve on the AX 61a carb still offers increased safety. Another good feature is no throttle stop which further reduces the chance of stalling the servo against an incorrectly set idel stop. Now it is just up to the servo.

Late last year I bought a simple 46 sized arf sport-scale model to punt around the sky. The engine I chose was an OS 61 FX and that engine has all the ease of use characteristics and quality one comes to expect from an OS product. The specifications reveal the similarity of the mounting dimensions of the .75 compared to the .61. The bolt holes are spaced 25 mm apart on each lug and 52mm across the crankcase so as far as the engine mount is concerned the engines are the same. The .75 is 2.5 mm higher but surprisingly is 1.1 mm shorter in length from the backplate to the prop driver. Conveniently it is the same length from the vertical centreline to the prop driver which meant the engine dropped straight into the existing mount in the aeroplane. The .75 weighs 578 gm which is 28 grams heavier than the .61 FX.

A beautiful finish is one thing and naturally this engine sports that also but really what is more important than the quality of components? For review purposes or for those keenly interested in the internals one way to find that what sort of metal is in there would be to pull the engine apart and perhaps pay for a report from a metallur-

Schurle ported with a nickel plated tapered liner and twin ball raced crankshaft. The backplate gasket is an O ring.





Compared to the OS 61 FX on the left the new 75 AX is 2.5mm higher, 1.1 mm shorter and weighs 28 grams more. The distance from the prop driver is identical and the bolt spacing is the same so it will screw straight into the same engine mount.

gist. Removing the backplate you too could see various types of shiny metal inside a crankcase as clean as a whistle.

**CRANKING IT UP.**

With a tank of Glomax 10% nitro fuel and a 14x8 APC propellor on the front the engine I performed the usual routine of hand cranking the engine over to make sure a hydraulic locks would not occur if the cylinder inadvertently been filled with fuel. You will notice the engine feels tight and the piston may even squeak as it approaches top dead centre. This is normal for an alloy piston in a tapered liner.

The book says to set one quarter throttle and open the needle valve two turns. This is a very rich setting so when the engine fires leave the glo-plug clip on to avoid the usual possibility of the plug being doused by a large drop of oil. Open the throttle and let it run for a minute then slowly wind the needle in as per the instructions.

If you have been running a .46 sized motor or less chances are your starter may not turn the engine over particularly if it happens to be a really cold day.

Before you rush off to try a bigger starter or battery remove the plug, squirt some fuel in then spin it on the starter for

thirty seconds. Put the plug back in then try again. If the starter still doesn't have the grunt disconnect the glo clip and turn the prop till the piston is at top dead centre. That should do it.

My starter a portable set-up, an old CY 46-60 size with two six cell 1300 mAh nicad packs. With the packs full charged

On the second tank and a heavy prop it maintained this idle for three minutes.

and the engine on top dead centre it will turn the engine over as previously described. If the packs have not been charged it struggles just like it did with my

120AX and 61 FX until they had an hours running. One interesting note in the instructions was that OS recommend electric starting and so do I, particularly for the that first cold start.

**PROPS AND NOISE.**

Although what is on the inside on an engine is directly related to the way the engine runs and lasts but rather than worry about all that stuff I just put it in a plane and went flying. This is all I have ever done with any OS engine.

If this product is any guide; engine sizes seem to be evolving but aircraft sizes have not necessarily followed suit. Thirty years ago OS released the Schnurle ported .40 FSR which produce a quantum leap in horsepower over the loop scavenged 40 R/C. A few years later the .45 was released. Now there is a .46 AX and earlier this year with the OS 55 AX modellers could use the extra horsepower to either go faster or haul a larger model. Similar choices are



The first run.



now available in the so called next level of model size.

This engine would be suitable for up to a 120 four-stroke powered model or for those wanting an increase in performance for sport -aerobatic models designed for .60 power. The extra grunt might also be appreciated in a float plane. With the exception of the aerobatic fraternity, over the years one thing that does not seemed to have evolved our the fields is an increase in the prop sizes. Any two stroke can make power with high rpm, but with this engine you are wasting it by running at high rpm with a sixty sized prop, ie in the 12x6 or 11x7 range.

These engines are designed to operate at lower rpm and the book suggests an initial range of 13 to 14-8 plus or minus the diameter with an corresponding increase or decrease in pitch. When you move up

to larger size model the old six inch pitch theory doesn't always work that well.

Now the light and small Harmon Rocket may not seem a real work out for this engine but there are practical ways to test it. One way is to pull vertical and hang it off the prop then open the tap and another way to judge pulling power (torque) is the thousand foot loop test. Engines with wilder These two manouvers do show up if the engine has peaky timing as the rpm really decays and both times the rpm did decay a little as you would expect but it the engine does hang on quite well.

RPM	Propellor	Noise Level at 3 metres
11,600	11x10 Master Airscrew	96*
14,400	11.5x10.2 Yoshioka	97*
9,400	12x10W APC	94
10,800	12x11APC	93
11,200	13x6 Zinger wood	98 *
11,400	13x6 APC	98 *
10,800	13x8 APC	95
8,800	14x8 APC	91
7,800	13x10 Zinger wood	89

\*Not recommended for noise sensitive areas.

These figure were achieved on brand new engine with a peak needle setting using 10% nitro GloMax two-stroke fuel on a seven degree day in Yarra Valley Victoria which is about three hundred feet above



The angled needle valve makes it much safer and a lot more convenient to tune the engine.

14x8 would be the go. In the air the nose was as expected and anything 95 db or under would be appreciated. One interesting side-note was in overpowered things like the test bed the 14x8 kept the noise to that of an electric model and still provided excessive thrust for the type.

**IDLE**

I haven't crash tested this product (we try not to go that far here) nor have I run it hard lean to see how it handles excess heat but I have punished my own 120AX engine along those lines and I have no complaints.

have used OS engines in many commercial model flying applications and when you are operating out over water or in a valley over huge gum trees high up in the Alps, engine reliability takes on a lot more importance.

The book states the engine is supplied with a factory rich setting and this has been true with every OS engine I have ever run. After an hour's running they suggest the engine should be fully run in and be able to maintain the leaner main needle setting that produces the maximum power. Then you can reset the idle mixture but I usually do it before the first flight.

If you do lean the idle early on, remember to re-check it later when you start to lean the main needle because there is some inter reaction between the two and you could end up with the idle setting too lean. Depending on the prop the engine would maintain a reliable idle from 2000 with the 14x8 and 2,500 with the 14x11. The lower number is due to the flywheel effect of the heavier prop.

**SUMMARY.**

Part of the magic of the relatively uncomplicated two stroke design is that they provide more or less the same power in half the capacity of a four-stroke engine. The engine is a lot lighter and it cost less and simplicity to flying is enhanced because you can take a hot pocket, a starter, hand crank pump and few litres of fuel and do a heap of flying.

The engine is very smooth and quiet with good power. Treat it with good fuel and the occasional new glo-plug should prove to be yet again very reliable. Yet another good engine by OS.

The OS 75 AX engine is distributed to model shops by Model Engines Australia. Tel 03 8793 5555 www.modelengines.com.au



A far as maintenance of an adjustable muffler is concerned if the central screw does work loose the rear end muffler will not no longer rotate. An improvement indeed.

ing field to have a noise issue. Even if the neighbour is a kilometre away. If you have doubts put a couple of under propped forty six sized models in the air and drive a kilometre away. You will be surprised how annoying that sound is.

In sport and aerobatic models I would suggest the 12x 10 through to 13x8 propeller. Lightly loaded floatie types such as a large basic trainers and the likes of a Piper Cub or older style biplanes the 13x8-14-6-

That is certainly one parameter to help determine value for money of an engine, its ability to withstand punishment but to me the true value is in the idle and mid range pick up.

How often have you seen those other potentially expensive factors tested when the engine stops in an awkward place? How often have you seen an engine cough and splutter on a go-round or quit after idling through a few spins or on final? I