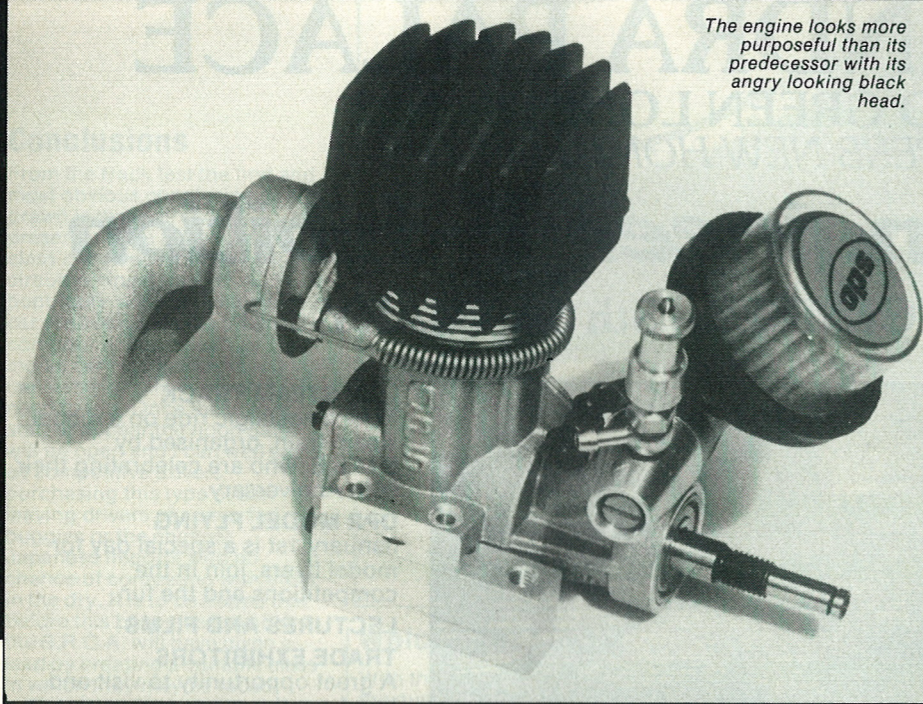


The engine looks more purposeful than its predecessor with its angry looking black head.



OPS PRO

A new black head multi-port is available – here's how it goes

Mr. Muzio of OPS has always maintained, in the face of increasingly-complex designs from rival manufacturers, that his company's classically-simple design of three port engine was the best solution. What's more he backed up his claim with continuing success around the World. He would, he said, never change simply for the sake of changing. While his company was committed to continual research they would only launch a new engine when they were convinced that it would be a very real improvement over the existing design.

Those of you who read my review of last year's engine will no doubt have realised that I was very impressed with it. So when I began to hear rumours of a new engine appearing at the World Championships I was more than a little interested. I wrote immediately to OPS soliciting details. As usual with OPS no response was forthcoming. Actions it appears speak louder than words and when they were good and ready an engine suddenly appeared out of the blue for review. No specific claims were made, no covering letter was included and obviously no hype seemed necessary. Just an engine provided in the confident belief that I would find it an improvement over last year's model.

When I stripped the engine to photograph it I was immediately confused. The official description OPS give is that the engine is a three-port design with two by-pass ports through the piston. In out

liner there were five induction ports. A telephone call to OPS engine importers *McGreggor Industries* revealed that this is indeed the correct specification of the latest engines and we had not been provided with an engine that differed from those currently on sale.

Perhaps the best way to think of the new engine is as being a classic three-port design with two by-pass or boost ports situate below the two outer induction ports operating through two ports that have been incorporated into the pistons.

The idea of this new arrangement is to increase the power output of the engine, especially at high revs. without losing any of the previous model's legendary bottom end power. Although it is not the primary intention of the design change I suspect also that it will help keep the underside of the piston cooler and improve the lubrication of the small end bearing.

The other significant change is in the design of the crankshaft. As before it is still chrome plated and the throat outlet has been reworked by hand to improve gas flow at high revs. It is at the other end that OPS have been particularly smart. It has been machined in such a way that it is able to take SG, Mantua, Siccom and the new short *Serpent* clutches. No mention is made of PB but since I am told that the PB clutch can be fitted over an SG shaft no doubt it can take that as well. I have no *Associated* clutches left to try on the engine but as far as I can see and remember these should fit with no trouble at all.

The only other modifications made to the engine are very minor ones. So minor in fact that the new parts can be fitted to last year's engines to bring them up to the 1988 specification. Useful this, if you have a tired engine left over from last year, with the bearing and carburettor in good order, it can provide an economical way to arrive at a competitive engine.

If you do wish to do this the part numbers are OPS 3037 for the piston and liner and OPS 3856 for the crankshaft. The latter of course only being required if you are changing to a make or type of car which necessitates a different type of clutch being used.

No doubt the more observant of you will have noticed that I have not included a picture of the new ported piston. The reason is simple. The big-end bearing was particularly tight to the point that I could not remove it without using excessive force. No bad thing this as there is no reason, other than as in my case to photograph it, that anyone would want to remove the piston on a new engine. Once the engine has been run the bearing will slacked off to the point it could easily be removed from the crank-pin.

One neat way I've come across recently to remove a stubborn conrod with minimal damage is to place a stout cable-tie behind it. If this is formed into a loop a screwdriver can be used to apply leverage against the back of the crankcase. I did in fact try this but found that more fore than I was prepare to apply was needed. Rather than risk damage to a fine engine that we intend to race I gave up.

Interestingly OPS must have read my comments on swarf in engines. I'll never know if I was just lucky with this one or if it had been gone over with a fine tooth comb but I was for once unable to find any swarf in the review engine. However my original comments on the matter, and indeed the advice of OPS given in the instructions, still apply. Always wash out and check a new engine before you run it.

As I have already said the rest of the engine is substantially the same as last year's model. However, for the benefit of those of you who may not have read my review of that engine I will briefly reiterate some of the features I did and did not like on that engine.

The same 9mm OPS carburettor is used. When used with this engine it is a positive delight being very easy and forgiving to set. The mixture control throughout the rev range is spot on. I still do not like the brass ball arrangement they provide to

The new liner complete with extra ports and raising shim.



RADIO CONTROL MODEL CARS

operate the slide, preferring instead to make a bracket to which I can fit a hardened steel ball. If you do follow my example in this respect then do make sure that you have the ball on the centre line of the slide of excessive wear will take place. It grieves me to have to say it, since OPS so kindly provided an engine for review, but I was a little disappointed that they have not taken steps to prevent wear occurring in the carburettor slide. They still use a brass slide in the diecast alloy body of the carburettor. An examination of last year's engine served to confirm that, although it has not yet reached the point where it causes a problem, a great deal of play has developed in that area.

The same trick as previously used of fitting a 0.3mm-thick shim under the lip of the liner to increase the timing has been employed. Presumably it is intended that this can be removed to reduce the timing and take the engine, making it easier to set in the process. Presumably it is intended that this can be removed to reduce the timing and tame the engine, making it easier to set in the process. Personally since the engine delivers its admittedly massive power, with the turbine-like smoothness that cars fitted with this engine are very smooth to drive, and since, even with the shim in place, the engine is very easy to set up I can see no reason why anyone should want to remove this shim. The only possible reason I can think of is that when the engine is past its best some drivers may want to do so and keep the engine for use in the wet. If you do remove the shim it is important to remember to insert a corresponding thickness of shims under the head to restore the squish band clearance.

The only manifold that I was able to find that would fit in out cars was one of the type that are held on over a short round stub with a spring. Not one of my favourite systems as such an arrangement is vulnerable in the sense that it can be knocked backwards in a race. In this case I have minimised the chances of this happening by using one of the very powerful PB springs. Not only are these by far the most powerful springs on the market but they also have the advantage of having long legs that protrude through the holes in the manifold. By contriving to cut these to precisely the right length I was able to arrange that they would locate in the hexagonal sockets of the capbolts used to secure the stub to the engine. This should effectively prevent the manifold rotating backwards in all but the most severe circumstances.

On the track

The actual track test of the engine was somewhat delayed whilst we somewhat impatiently awaited delivery of the new *Serpent* car to which the engine was intended to be fitted. We had some idea what to expect having seen one of the engines in action in Colin Straus's car, and having actually set one up in Phil Archer's.

We were not to be disappointed. Having carefully as per normal for us run the engine in for 15 minutes or so on a rich mixture we gradually leaned it out and the true character of the engine began to emerge. As with the previous engine the smooth progressive way in which it develops its power is deceptive. Running the engine around an empty track one gets the impression that it is not particularly fast. It's only when one starts to use the engine in competition that one begins to realise just how powerful it is. It's hard to put it into words but there is some indefinable element about the smooth-sounding way that OPS engines

run that is comforting. One gets the impression that they are never under any great strain and that they will go on running reliably however long the race. Of course that is just what they do and to a large extent does much to explain why they are still the most consistently successful engines in the World. I rather suspect the fact that the carburettor is able to maintain such consistent and accurate control of the fuel mixture has much to do with this.

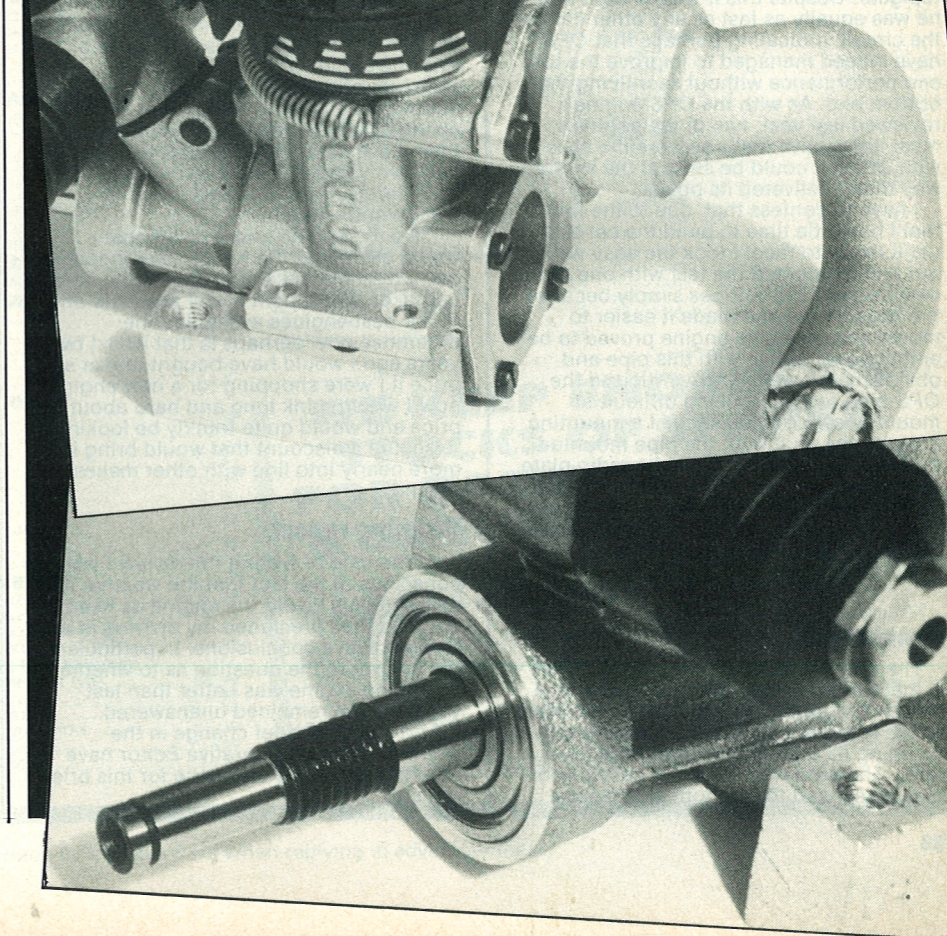
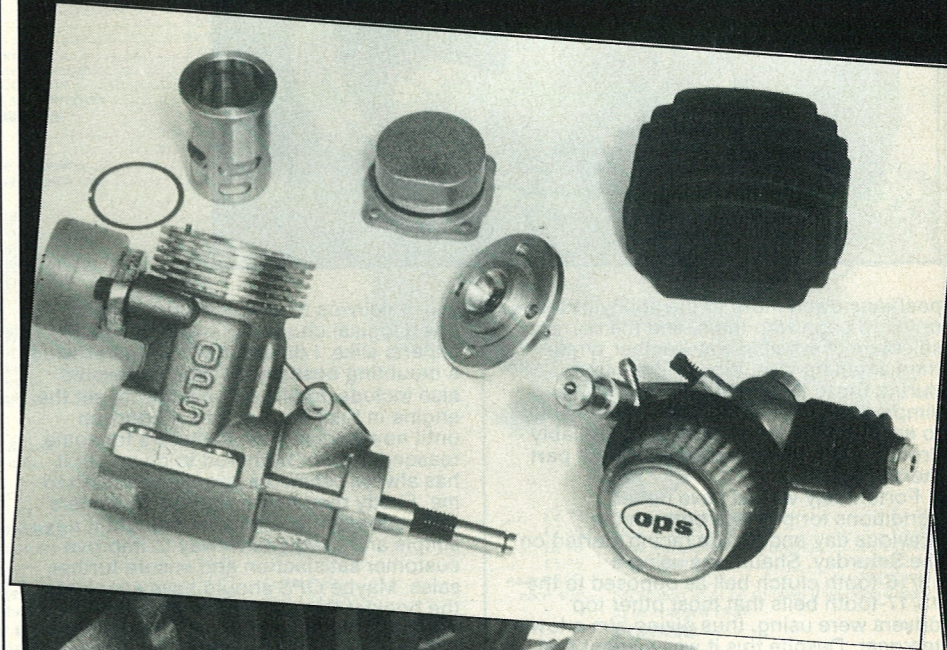
Just how successful these engines are is well illustrated by looking at the results they achieved in 1987.

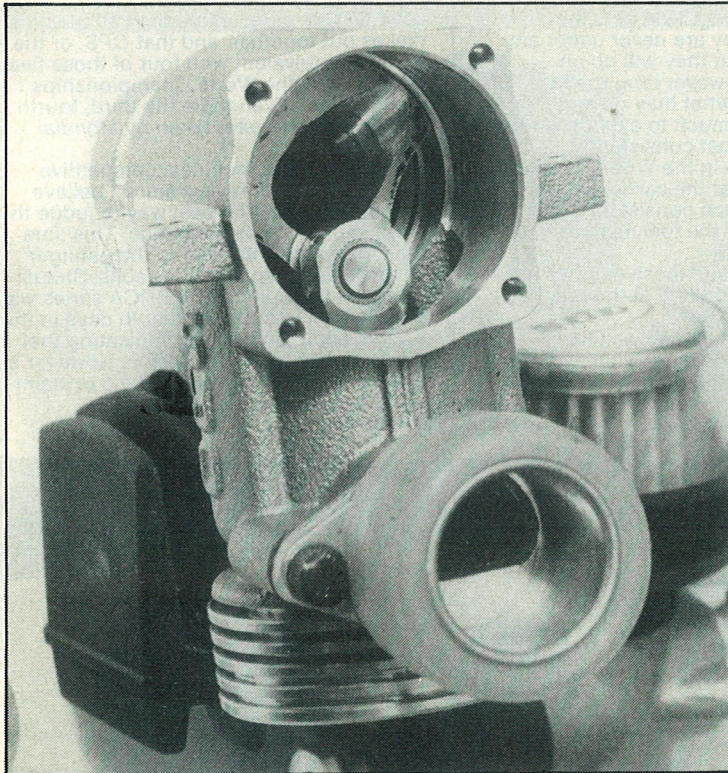
If one looks at what may well be considered the top five international races that took place in The World last year it can be seen that out of the 50 competitors who took part in the finals no less than 26

used OPS engines. More than all the other makes put together, and that OPS, or the *Mondial* equivalent won four of those five events. Only the World Championships eluded them. Even there the third, fourth and fifth places were taken by *Mondial* motors.

I usually try to include a competitive outing in a motor review since I believe that this is by far the best way to judge the motor's ultimate performance. This time the motor was entrusted to the younger and less experienced of my sons, Shaun. The Mendip round of the BRCA series was the venue. Third place on both days in the A Final could be taken as indicating that the engine is very competitive. However it would be less than honest of me to claim this. The fact is that the weather conditions were atrocious. The final

Below: the main parts disassembled. Centre: the manifold held on with a spring fits snugly onto the OPS stub. Bottom: front bearing and SG crank shown up close – a brass cone is supplied.





Inside the backplate showing the hand worked crank. The conrod big end is also visible.

positions owed more to the ability of the driver to cope with them, and the correct selection of suitable wet weather tyres, then anything else. What did emerge during those two finals was that with a simple buggy air filter in place I was able to easily adjust the engine to run reliably around a track that was for the most part literally flooded.

Fortunately we did have better conditions for practice both on the previous day and before racing started on the Saturday. Shaun was using a 13/16-tooth clutch bell as opposed to the 13/17-tooth bells that most other top drivers were using, thus giving him a lower top gear. Despite this it was evident that he was equally as fast as any other car on the circuit, indicating perhaps that OPS have indeed managed to improve the top end performance without sacrificing the bottom end. As with the OPS engine I reviewed last year, two of the engine's most impressive features were the ease with which it could be set and the smooth way that it delivered its power.

I have to confess that, due to the fact that I had little time to build the car and get it ready to race, I took the easy way out and conducted the test with one of the new *Serpent* ERFA Pipes simply because the boss on the end made it easier to mould securely. The engine proved to be entirely compatible with this pipe and obviously ran well. I have criticised the OPS pipe before as being difficult to mount because of the lack of a mounting boss on the end. With the pipe mounted on the chassis, rather than the radio plate, on the new *Serpent* this presents even more of a problem. Perhaps OPS will take this message to heart and produce future pipes with just such a boss on.

Conclusions

The only conclusion that can be drawn is that this is a finely-made engine with a proven record of longevity and reliability, which is more than able to compete with anything its competitors may have to offer. The ease with which its carburettor may be set and the smooth progressive

way it delivers its power ought to make this a logical choice for beginners and experts alike. I do with OPS would provide a mounting boss on the pipe and would also include details on how best to set the engine in their instructions. I know up until now engine manufacturers for some reason have not bothered to do so but it has always seemed a strange omission to me. Firstly they owe it to their customers and secondly I would have thought it a simple and inexpensive way to improve customer satisfaction and ensure further sales. Maybe OPS should have a look at the booklet *Serpent* pack with their new engine!

The motor is undeniably expensive by today's standards which may well help to account for the relative lack of sales of this fine engine in the U.K. Such a premium price could be readily commanded when OPS engines were far ahead of their competitors but some of them have made rapid advances over the past two years and are beginning to catch up in terms of performance, ease of setting and reliability.

I like the engine and it is one that I would still put at the top of my shopping list. Other engines equal it on some points but taken all round it is still arguable one of the best engines available. The difference now perhaps is that whilst two years ago I would have bought one at any price if I were shopping for a new engine now I would think long and hard about the price and would quite frankly be looking to secure a discount that would bring it more nearly into line with other makes of engine.

Running report

At the time of writing the review I was conscious of the fact that the weather had prevented us giving the engine its head, and had thus precluded my arriving at any really positive conclusions. In particular the answer to the question as to whether or not the engine was better than last year's model remained unanswered.

Fortunately a brief change in the weather and a co-operative Editor have combined to allow me space for this brief update.

West Burton was the venue and however unlikely to may seem we had two dry days racing. The results speak for themselves. My youngest son Shaun, who was using the motor, is not a brilliant qualifying driver. Often he manages to make the final and does well by dint of consistent driving and the fact that his car is usually running at the end of a race. Nor is he very experienced.

This time on the first day he qualified fastest for the A Final and came second in the race, headed only by his elder brother. On the second day he was second fastest qualifier for the A Final and, although he was prevented from achieving a high finishing place by a lead coming adrift from his battery pack at the start, when he did emerge on the track he was clearly a fast as the leaders.

One of the things that particularly impressed me was that I set the mixtures up at the beginning of the meeting and never touched them for the rest of the weekend. I was also impressed by the smooth and progressive way the engine delivered its power. The traction was not as good as it might have been and was in some places a little unpredictable. From where I was standing in the pits it was clear that, whilst many drivers were having to blip their throttle as they came out of the bend onto the straight in front of the rostrum, Shaun was able to feed in the considerable power of his OPS in a steady controlled stream. This made his car look particularly stable round the bend and always left him perfectly lined up for the bumpy straight that followed.

What is more on the second day, having lost so much time at the start I decided to take a chance and call him in for fuel every six minutes rather than every five to save a pit stop and hopefully pick up a place or two. Despite the fact that I had also grossly misjudged the rate of tyre wear on that day, thus causing him to finish on tyres that were much too small, he still finished with over 15cc of fuel in his tank. Nor for that matter did the fact that the small size of his tyres was causing the engine to be undergeared appear to slow him.

Running a car each for two group A drivers is an expensive business and engines provided for review form an important part of making it possible. This explains why we run such a variety of engines and does much to explain my preoccupation with price.

If I were, as it were, better off than I am and were running only one car, this is still on balance the engine I would choose. If I do need to purchase another engine this season then, even though the price would cause me acute mental anguish, I have to admit that in the end I would grit my teeth and pay it. As it is I have one of last year's engines that already has a new crankshaft fitted. What I shall probably do in the end is fit a new type piston and liner and carburettor if the bearings are OK to bring the engine up to this latest specification.

As to the answer to that question about the engines it has to be yes. There is little doubt that this new motor is appreciably faster all round than its predecessor. It also appears to be more economical on fuel, though I must qualify that statement by saying that I have noticed this with other engines we have reviewed this year and the improvement may have something to do with the fact that we have been running the new *Serpent* Cars which appear themselves to be more efficient.

Price: £179.95.

Imported by: MacGregor Industries Ltd., Canal Estate, Langley, Slough, Berkshire SL3 6EQ.
Available from most good model shops.