

Nova Rossi GOLD TOP

Nova Rossi C21 Car 6 Travasi Testa ORO Turbo

Translated this mouthful of Italian simply means 6 Port, Gold Head Motor, or as it has come to be known in the UK the Nova Rossi "Gold Top".

We had one of the original Nova Rossi 'Red Head' engines and have been delighted with it. After countless race meetings it is still going strong, in youngest son Shaun's car, and is still winning finals. In all that time we have had one new carburettor and a new conrod. Despite this I had some reservations when it was first suggested that I do a review of the then new Nova Rossi 'Gold Head'. I knew that they had gone through a bad patch in the middle of 1986 with reliability problems in the 'Red Head' Motors and that one or two people had experienced problems with the first of the 'Gold Head' Motors.

Having said that I set out to investigate these problems before embarking on the actual engine review. After all I did not want to be a party to promoting an engine that was going to give trouble to drivers on the track.

With regard to the problems they ran into in the middle of 1986 it seems that these mainly centred on the crankshafts in that one batch of steel used was not up to specification. Once the problem was found matters were very quickly put to rights and engines made towards the back end of that year had all their old reliability back.

In the case of the 'Gold Head' Engines I was puzzled. I had seen for myself no lesser driver than Gary Culver run into trouble with his engine suddenly going lean halfway through a heat, and I knew he had blown a few up. Yet other drivers with the same engine were going very well indeed, and were having no trouble at all. I also knew Gary seemed to have found the answer and that he used one of these engines for the World Championships without problems. Indeed it was a Nova Rossi Engine that broke the previous dominance of OPS and powered the New World Champions car to an impressive victory.

That being the case I rang Gary up to find out what the

problem was. Gary told me it was mainly caused by overheating and that the main reason was that he was not using the tuned pipe recommended by the manufacturers. According to Gary changing the pipe immediately cured the problem. That may be so but I suspect that a little extra development work has gone on with the engine as well as in this area. I notice for instance that the early engines had a separate button for the combustion chamber with the heatsink acting as a clamp. On the latest version of the engine, as submitted for review, they have gone back to their old practice of forming the combustion chamber as an integral part of the heat sink head.

It might appear from the above that I am having a go at

Nova Rossi. I'm not. I mention it because we all know of the problems that occurred, and as such many drivers may be put off purchasing one of these fine motors in the belief that they still exist. Clearly whatever the exact nature and cause of those problems Nova Rossi are well aware of them and all the evidence seems to point to the fact that they have well and truly cured them. Drivers that I have talked to, who have been running engines from the most recent batch, with the correct pipe and manifold have nothing but praise both for the reliability and the performance of the engine.

What is more all potential purchasers can be sure that to the best of my knowledge if they do purchase one of these engines in the UK they will get

one of the very latest specification.

Having got that out of the way I can now move on to a description of the engine itself.

General description

Externally the crankcase looks the same as that used on previous models, though there may well be some internal changes to the passage ways for the extra ports.

The carburettor also looks the same as used on previous models, but no doubt has undergone the continuous process of refinement with respect to jets and needles etc.

Basically it is a very well designed unit which has a reputation for giving long trouble free service. I particularly like the fit and action of the slide and the provisions of a hardened steel ball with a plastic socket ready for connection to the servo.

Previous experience with one of these carburettors has shown that the slide remains free from wear and smooth in action throughout the life of the engine. I also like the way the throttle idle stops can be locked firmly in position. Both the main and idle mixture adjustment screws can be easily reached with the engine installed in a car and hold their position, once set, with no tendency to move in use. Setting the carburettor calls for care and very fine adjustments to get the best out of the engine. That is not to say that it is particularly difficult to set. The carburettor and engine have no peculiar vices such as a tendency to run on etc. It's simply that, with an engine as highly tuned as this one, it is necessary to get the mixtures exactly right to get the best out of it. If you get the settings a little wrong the engine will run but you will not realise it's full potential.

The backplate has an 'O' ring round it's spigot to enable it to make a good airtight seal to the crankcase. A thin hardened steel plate is fixed to the inner face of the back plate to prevent wear and reduce frictional losses occurring between it and the conrod.

The aluminium conrod in this

engine is a special light weight version of the standard conrod with a plain small end bearing and a bronze bearing in the big end lubricated by two transverse oil holes.

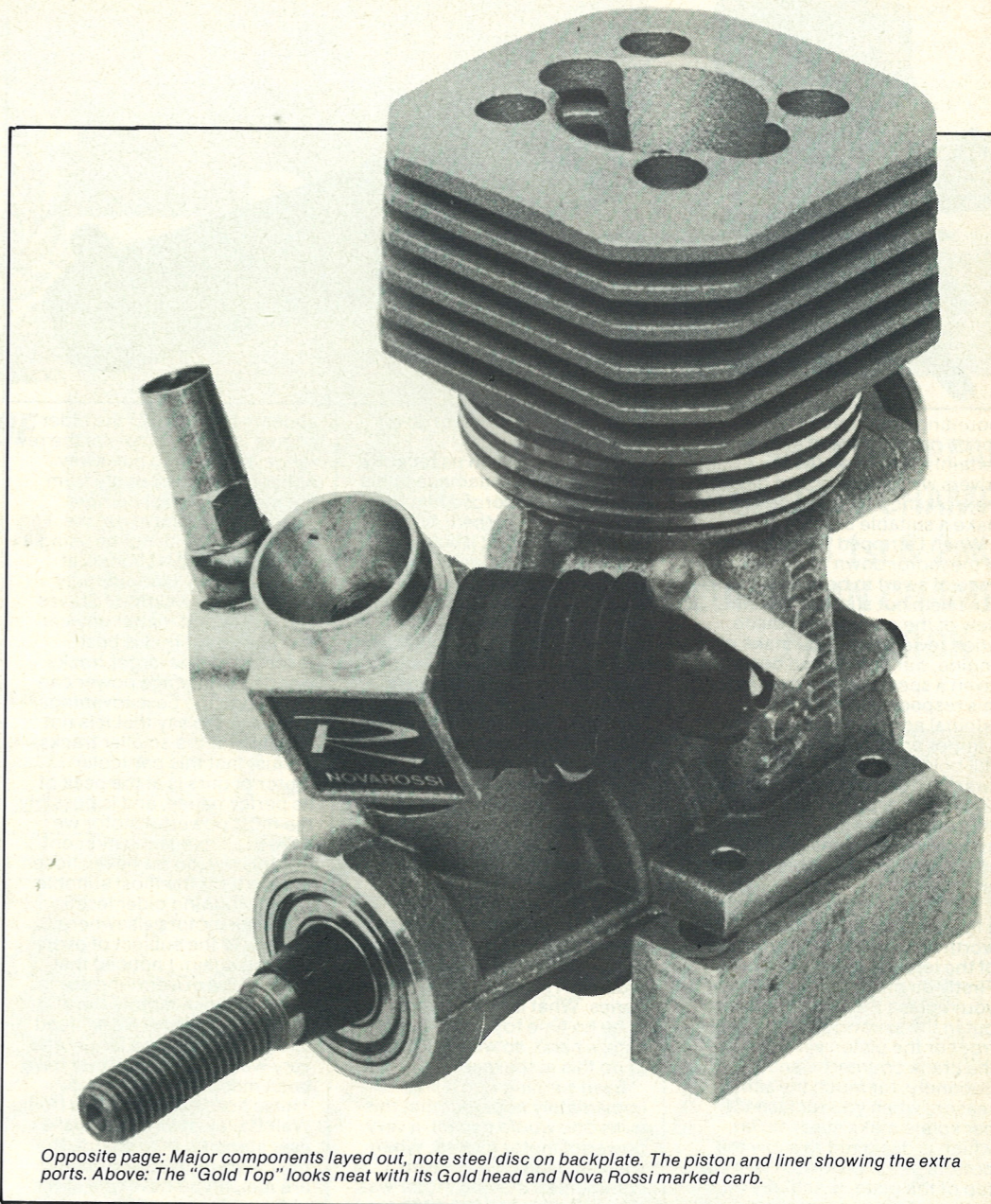
The crankshaft as one would expect with an engine of this quality is chromium plated to reduce wear. I can't help but think that all racing car engines should have plated cranks. It does add to the cost but the savings to be made by way of increased engine life are well worth the extra cost. The familiar swirl in the end of previous Nova Rossi engines crankshaft has now been replaced with two small angled throats that are claimed to give better efficiency at high revs. Nova Rossi claim that this feature of the engine has been patented. To ensure adequate lubrication of the big end bearing there is an angled lubrication hole that runs from just inside the throat of the crankshaft to the crankpin. Naturally the engine may be ordered with a standard or SG type crankshaft.

The main bearing in which the crankshaft run is a healthy 13mm diameter high speed bearing. The 7mm diameter front bearing is a noticeably high quality Swiss made W/B bearing, and is fully shielded against the ingress of dirt to ensure a long and reliable life.

I have been saving the most notable feature of the new engine until last. The piston and liner is of the normal Aluminium-Brass-Chrome construction with a typically solid Nova Rossi liner. It has the same four inlet ports as is to be found on last years Rossi engines but in addition now has two long thin inlet ports between the main inlet ports and the exhaust port. The manufacturers claim that this patented feature provides "better washing of the combustion chamber and more constant efficiency at higher power". It would appear that the function of these ports may well be to provide a narrow high speed jet of fresh mixture which acts a bit like an air curtain helping to keep the incoming charge of fresh mixture separate from the outgoing spent exhaust. Whatever the theory it does seem to work as we shall see when I come to report on the track performance of the engine.

The piston has an unusually long skirt which should help to increase the life of the piston and liner assembly. Because of this it has been necessary to remove some material from the bottom of the skirt at the back, so that it will clear the crankshaft.

The engine as delivered is set to run on less than 10% nitro fuel, which you are supposed to use for running the engine in with. For above 10% Nitro it is



Opposite page: Major components layed out, note steel disc on backplate. The piston and liner showing the extra ports. Above: The "Gold Top" looks neat with its Gold head and Nova Rossi marked carb.

necessary to add an additional 0.1mm head gasket. One of these is thoughtfully included in with the engine.

Manifold and Pipe

Nova Rossi recommend that their own manifold and pipe be used as they have been specially developed for this engine. With engines becoming ever more highly developed of late this seems to be true for most engines. We have certainly found it to be so on two other engines we have tested recently. Bearing in mind Gary Culver's comments I would suggest that their recommendation be followed.

The manifold has been specially made and is 1cm shorter than previous manifolds. It is of cast construction with heat dissipating fins at the hot end. A spigot for the manifold is securely bolted to the crankcase with three machine screws. This spigot has a groove, in which sits a silicon

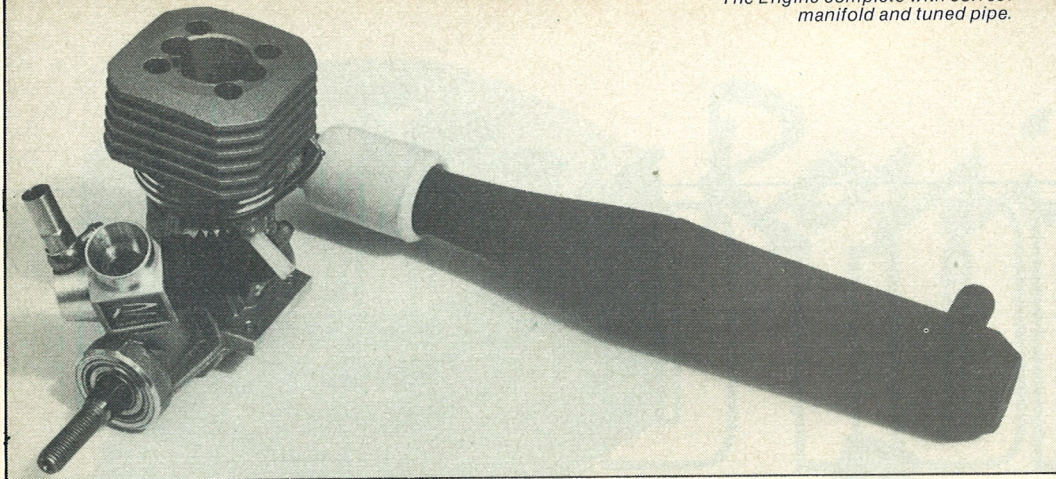
rubber seal, to ensure a gas tight joint. The manifold is held in place with a strong spring that passes round the main body of the crankcase. An integral pressure nipple is cast into the manifold. Some drivers have found with this that it is advisable to use either a long length of fuel tube or a more normal length of very fine bore tube to avoid pressure fluctuations in the fuel tank. Even if you have taken the pressure for the fuel tank from the manifold before on other engines with no trouble, it is still well worth while taking this precaution since this particular combination of pipe, manifold, and engine seem very prone to this problem.

The tuned pipe is unusual in that it is made of steel with a very nice rough black finish. My first reaction on reading that the pipe was made of steel was to try it with a magnet to see if it really was, and the second was to weigh it to see how it compared with the previous Nova Rossi alloy pipe with

regard to weight. The answers are. Yes it is made from steel, and remarkably it weighs exactly the same as the old alloy pipe.

The pipe is a quite different shape from all that have gone before it, is very well made and works well with this engine. Because the pipe and manifold are physically quite short no problem was found in making the combination fit between the front and rear wheels. My only complaint was that once again an engine manufacturer has come up with a pipe that works well, but has made no sensible provision for mounting the pipe in the car. When will the manufacturers wake up to the fact that races are all too often lost because a pipe has come away from the manifold. The provision of a mounting boss on the end with a transverse hole in it and a grub screw would enable the pipe to be securely mounted in any of the existing cars. Many of us have of course made brackets to enable us to secure pipes that have no

The Engine complete with correct manifold and tuned pipe.



mounting boss, but it should not be necessary and it certainly is hard on those drivers who either do not have the workshop facilities or skill to make a suitable bracket.

When I stripped this example of the motor down there was no trace of swarf to be found. I can't help but suspect that, in view of the comments I made when reviewing a rival make of engine, our engine had been given a special going over in this respect. However my original advice, to strip all new engines and check for swarf, still holds good as I have found swarf in other examples of these engines. It is practically impossible for any manufacturer to ensure that no swarf is left in any of his engines.

That being the case there are a few tips that are perhaps worth passing on for the benefit of the less experienced racers. Firstly do make sure that when you replace the piston the cut out in the skirt is towards the front or the piston will catch on the crank counterbalance. Secondly, for much the same reason, when you replace the backplate make sure the flat, which is designed to allow the bottom of the piston to clear the top of the plate, is actually on the top. Thirdly when you replace the cylinder head note that it is important that the air slots in it face the direction of travel to ensure adequate cooling. Failure to do this can mean a ruined engine. Finally the cone on which the flywheel locks is a very tight fit on the shaft. It is important that this is fully back against the inner race of the front bearing to prevent the crank moving backwards. Just tightening the flywheel will only lock it in position. To ensure that it is fully back put a slim screwdriver in the slot and twist it to free the cone on the shaft, then you can easily push it fully back.

On the Track

We have always thought that Steve has a number of engines in his box that are outstandingly powerful. Indeed a number of London Club drivers thought so too and on the strength of that when off early in the season and bought a certain make of engine which appeared to be capable

of taking yards off them down the straight.

It only dawned on us recently, when substantial damage to his *Associated* car forced him to dig out his old *Serpent* for a Club Meeting, that it was the light weight and mechanical efficiency of the *Associated's* two belt HTD drive system that was tending to flatter the motors. Suddenly we found that a motor, which had previously been able to out accelerate the rest of the field and was noticeably quicker down the straight, was little better than those in other A Finalists cars.

With this in mind we were expecting great things of the 'Gold Head' when it was installed in his now repaired *Associated* car. We were not disappointed.

The need to meet a publishing deadline meant that the only track test we were able to give the motor was at the Aldershot round of the BRCA Series. What is more there was to be no time to run the motor in before hand, so we were forced to do this at the meeting.

Even running rich it was immediately apparent that this is, as one would expect, a very powerful motor indeed. When we tested the *OPS* recently I commented that the motor was deceptively powerful. With the *Nova Rossi* there is no such deception. The engine note from the steel pipe sounds crisp and purposeful. The car takes off like a startled rabbit and has ample power all the way through the rev range. Indeed so great was the power that the nose of Steves, admittedly very light, *Associated* was being lifted in the air as it passed over a bump in the middle of the short Aldershot straight. Had we leaned the engine out to obtain all the power it is capable of delivering there would have been a distinct danger of the car flipping over.

The obvious question on everybodys lips is how does this new motor compare with the old 'Red Head'. Well it's very difficult to be specific on this question. Based on our own limited experience, and on watching the same motor perform in other drivers cars, it appears to have the same performance off the line as the 'Red Heads' and possibly slightly more top end performance. Where it really

appears to gain over the older engine is in the middle of the rev range, seeming to pull away noticeably more strongly from the medium to fast corners.

Now that we have run the motor in we shall not be using it again until The Nationals at Southampton. Undoubtedly with the light weight of Steves Car, or for that matter any car, this is a motor that is best reserved for the larger tracks where its immense power can be used to the best advantage. That is not to say that it is not suitable for the smaller tracks, it's just that this particular motor of ours is at the peak of its performance, and is possibly the most powerful motor we have available at the moment. For this reason we have chosen to save it for the most suitable tracks, running older less powerful motors elsewhere.

Back to the subject of over heating again. I noticed that most of the drivers who are running these motors have taken off the *Nova Rossi* head and are using some larger and very well made heads that have been machined from solid. These heads are available from Walt Bailey of *Elite Models*, as ever stepping in to ensure that the needs of model car racers are met. If you have one of the older motors with the separate button then all you need is to order a head and bolt it on. If you do have one of these older motors then I have no hesitation in recommending that this be done. If you have one of the latter series of motors it is necessary to send off the old head so that the button can be machined out for re-use. If you do have one of these latter motors I really don't know what to recommend. I noticed when examining ours that although the head looks the same as that used on the 'Red Head' it is in fact larger across the flats and is taller with greater gaps between the cooling fins. Obviously *Nova Rossi* have found that the engine needs additional cooling and acted on that. Certainly we had no problem with ours overheating, but the weather was not very warm, and we were running it very rich. Fortunately I happened to have an old 'Red Head' heatsink laying about so I have had one of the new heads made as a form of insurance from that. We will run the standard head in cool

conditions and change to the *Elite* head if we find any signs of the engine overheating or the weather is exceptionally hot. Extra cooling is not something that is automatically good. An engine that is over cooled will not reach the peak of its performance.

Conclusions

The big plus with this engine, as with previous engines from *Nova Rossi*, has to be the performance. Quite simply you can buy one of these engines and be assured that, if you have set it correctly, it will be the equal of any motor on the track.

Assuming that *Nova Rossi* really have cured the problems that they recently encountered, the second plus point has to be the life span of the engine. Our experience with previous *Nova Rossi* engines has been that they last for a very long time without the need to replace any parts. Not only do they keep going but they seem to have the ability to do so with hardly any loss of performance. In particular they seem able to go on delivering the power long after loss of compression would have made the purchase of a new piston and liner necessary with other engines. Every time I take the 'Red Head' out of Shauns car I think about purchasing a new Piston and Liner to restore the compression ratio. I've never got round to spending the money yet and the engine is still winning races.

The negative side is, of course, the price. There are other more complicated engines on the market at far lower prices that are just as well made. What it amounts to is that *Nova Rossi* know they can charge this much for the engine and still sell it in substantial numbers. It simply reflects the performance potential and reputation of the engine. In a competitive sport there will always be drivers who are prepared, and able, to pay any price necessary to obtain equipment that can compete with the best. Indeed one can't blame *Nova Rossi* for charging such a high price, after all, the whole point of developing such a desirable engine is to make as much profit as possible out of it. If the BRCA do introduce a price limit on engines next year it will be interesting to see what the manufacturers do about it.

One should take into account before deciding to purchase such engine that the spare parts are also very expensive. If you have to scrape together every last penny to buy the engine you are going to be awfully upset if you manage to blow it up and are faced with a large bill for spare parts!!

Imported by: PB Racing Products Ltd., Downley Road, Havant, Hampshire PO9 2NJ.
Price: Engine £160.00; Manifold £8.76; Steel Pipe £27.47; Piston & Liner £44.64; Crankshaft £36.37.

Reviewed by Colin Leake