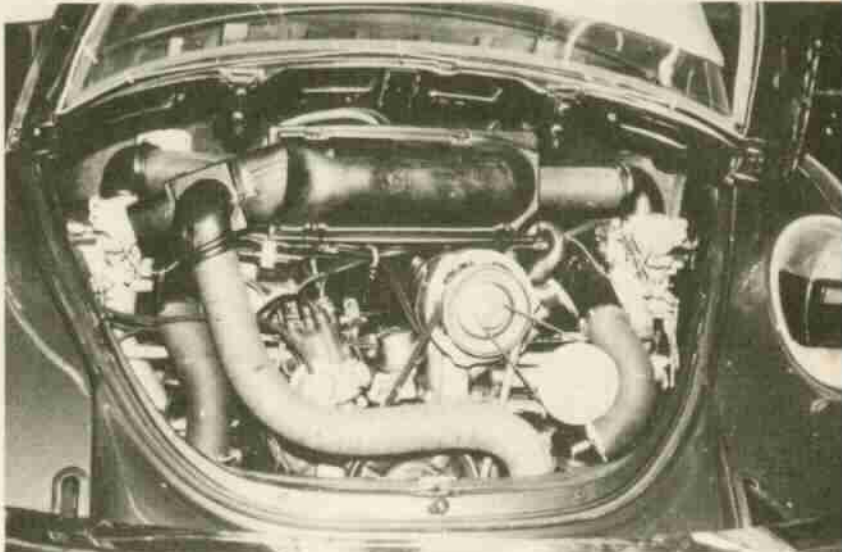


EUROPEAN REPORT: OETTINGER ENGINES



THEY'RE BETTER KNOWN AS OKRASA IN AMERICA

BY CHRIS BARBER

The West German firm of Dipl. Ing. G. Oettinger has been in the Volkswagen tuning business for some 25 years. That's a very, very long time in the car tuning field, and the amount of superb experience that Herr Oettinger has collected over those years is very evident in the products that he sells today.

There have always been tuners in West Germany, as in most other countries, and of those a fair number have specialized in all things VW. This, in spite of a strong "anti" reaction from the VW factory. But, most have fallen by the wayside, and the names are long forgotten. The exceptions to this are few and far between, and Oettinger must take first place. In fact, today it is the only firm in West Germany to have the VW factory blessing, and it's possible to order Oettinger parts and cars through the normal Volkswagen garages, both on the home market and in Switzerland.

The engines are all tested before delivery and they all fulfill the present emission limits in force in the European Common Market, the European Free Trade Area, and in the U.S. The California limits are a bit too low at present, but, Herr Oettinger assures us they could be reached without major problems if it was worth it from the sales point-of-view.

We met "the Boss" at his extensive new premises, on the outskirts of the pleasant small town of Friedrichsdorf, not too far from Frankfurt. Although not so young anymore, Herr Oettinger is still very active and attends to most of the day-to-day happenings of the business. The new buildings allow a certain expansion of business and it is now possible to convert between 30 and 40 VWs per working week. When all runs smoothly, eight cars a day are given the magic treatment, some two-thirds of which are nowadays water-cooled, the other one-third being a mixture of Beetles and Buses.

Oettinger likes to have a car in the workshop for a complete week in order to ensure enough work for his men (a reserve is always then available), and also to ensure enough time for testing the cars afterward. He likes to test all the converted cars himself. Many parts are shipped out to private customers, both at home and abroad, and many of the larger German VW garages buy his parts and install them. This can be done without complication as Oettinger himself guarantees his work, and the original VW warranty plus the Oettinger one are as good as the normal one.

AIR-COOLED ENGINES

Gone are the days when 20 or more different air-cooled conversions were

LEFT, front view of the Cabrio which cost about \$10,000. Spoiler with oil cooler behind it graces the front. RIGHT, Cabrio engine features twin carbs and extra oil pump on the right.

offered! Today, Oettinger works on two basic engines, namely the 1.6-liter, 50hp (DIN) Type I engine, and the 1.7, 1.8 and 2.0-liter Bus engine (Type IV engine). All these engines are suitable for street use and are accepted by the very strict German Transport Ministry tests.

For Beetles with 1.6-liter engines, there are five basic levels of conversion offered. There are two 1.6 versions, one with 60hp, the other with 65hp, and both are available with or without special nickel-silver plated alloy cylinders and forged pistons. The latter, which cost some DM750, are said to reduce or remove any overheating problems normally encountered in fast driving.

The next two conversions are both 1800cc, and combine the 90mm alloy cylinders and forged pistons with the normal crankshaft (70hp) or a special chrome-molybdenum-steel crank to give 75hp. Apart from the raise in capacity, both conversions feature higher compression (8.5:1), gas flowed heads, smoothed intake and exhaust manifolds and twin Solex carbs.

The top of the Type I engine conversions is the so-called TSV 2000 HS. This is similar to the 75hp, 1800cc engine, but features a 78.4mm crankshaft with the 90mm pistons, yielding 1998cc and produces 85hp. For the

DUNE BUGGIES & HOT VWs

enlarged stroker, the crankcase has to be modified, of course. The intake valves are enlarged to 39mm, and these are fed by two Solex 40 PDSIT carbs. There is one centrally placed air cleaner, which eases the problem of supplying ready-warmed air to the intake side.

Also standard on these engines is an extra small oil sump which bolts on underneath the crankcase. It features a lengthened oil pick-up tube, thus insuring against oil surge and the resulting oil pressure fluctuations. It's much cheaper than a dry-sump system, and, for street use, perfectly adequate says Herr Oettinger. This engine conversion is not cheap and quality must be paid for. Recommended on this conversion are a front mounted oil cooler which is driven by a belt-driven pump, various instruments for controlling what's happening to the engine and a longer 4th gear (about 10%). All in all, some \$2500 worth of goodies!

In his showroom, Herr Oettinger showed us a new Beetle Cabriolet which he had recently converted. Wow! The full works, every possible extra, including a very special chocolate brown paint job—seven layers of it! And the price—over DM 20,000—about \$10,000.

TYPE IV ENGINES

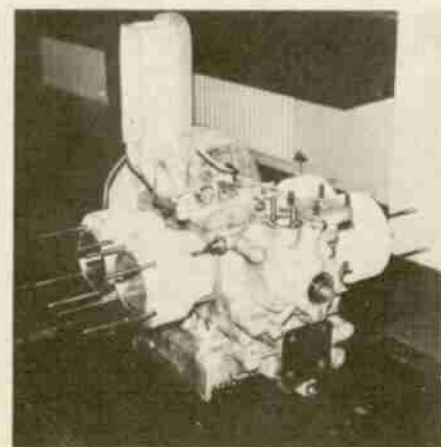
The potential of the VW Type IV engine has generally just not been realized by the vast majority of tuning firms. There are, however, exceptions to that statement and one of those is, luckily, Herr Oettinger! He has offered performance parts for this engine for a number of years now and has gained useful experience on it. Today, there are two conversions offered for this engine which will fit in a 411/412, a Bus or a Volks-Porsche 914. It will also fit into a Beetle, of course, with a bit of squeezing!

The lower powered one displaces 2236cc, which is achieved with a 74mm crankshaft and special nickel-silver plated alloy cylinders and forged pistons, size 98mm. As on the Type I engines, a considerable amount of effort is spent on the flow of intake and exhaust gases in the region in and around the cylinder heads. The compression is also raised a bit to 8.3:1.

The result of all this work is a healthy, but not spectacular, power increase to 90hp. The main advantage of this engine, the TV 2300 F, is the relatively large increase in the engine torque figure.

The second engine based on the Type IV, 2-liter engine is the so-called TV 2400 F, which shares many of the secrets of the TV 2300 F, but has a fully balanced crankshaft with a stroke of 79.5mm. The compression on this engine is also 8.3:1, quite moderate for a 100hp engine. Again, the torque figure is high, giving a very flexible engine. When installed in a Bus, the top speed is quoted as being 140kph (that's about 88mph). The acceleration is 0 to 100kph (62mph) in 15.5 sec., and from 40kph (25mph) to 100kph in top gear in 15 sec. The standard 2-liter Bus does that in 35.7 sec., to give you some idea of the improvement.

Once again, there are extras that are recommended for the 2.4-liter Bus. These include a supplementary oil cooler mounted in the front, extra oil temperature and pressure gauges, a rev counter and a 10% longer 4th gear. Once again, this item is not cheap (some \$3500), but the result is not only an engine with that extra something, it is also an engine with a high life-expectancy.



LEFT, a Type 1 engine on the workbench has just been fitted with large pistons and barrels. CENTER, this convert was shown at a recent auto show equipped with a Perspex engine cover. RIGHT, the old and the new! Compact Oettinger 78.4mm Type 1 crank is on the right, while a 90.5mm Rabbit crank is on the left.

WATER-COOLED ENGINES

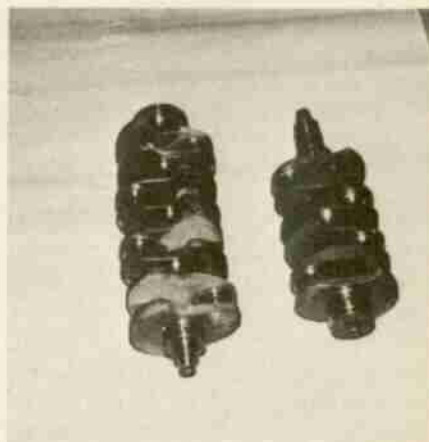
A man who has, for over 20 years, been constructing such powerful VW air-cooled engines with the trade name of "Okrasa" on them is not going to let the grass grow under his feet! When the second generation VW program appeared gradually in 1973 (Dasher), 1974 (Scirocco and Rabbit) and 1975 (polo), Oettinger was one of the first tuners in Western Germany to offer conversions! His first was the installation of the necessary Scirocco TS parts to a 70hp Rabbit to give it 85hp. After that, he developed a Rabbit 100hp engine using a Scirocco TS carburetor, Audi 80 GT pistons and head work.

However, the GTI models came, and that was that, as far as 100hp Golf/Rabbit conversions were concerned! The market disappeared overnight for the tuners.

The situation is similar right up to now. There is quite a good selection of go-faster parts for all the water-cooled 1.5 and 1.6-liter engines, but by far the greatest part of the Oettinger market is comprised of making GTI models even better!

GTI ENGINES WITH 125HP

One of the weaker sides of the standard Golf GTI (Rabbit in the USA) engine is its relatively poor elasticity—even though with a lightweight automobile this is not so noticeable. So Oettinger worked particularly hard on it. The crank is 10.5mm larger than standard, at 90.5mm, and is made of chrome-molybdenum-steel, specially treated and balanced. With the special pistons (normal size) 1796cc is achieved. The crankcase is modified to receive the larger crankshaft. The cylinder head is also modified with the intake valves being increased 2mm to





40mm, and the exhaust valves by 3mm to 34mm. The compression is only a bit higher at 9.7:1, and the Bosch K-Jetronic injection equipment stays the same. Indeed, from the outside the engine looks standard.

The result is an engine which delivers 125hp (DIN), 15hp more than the normal GTI. More important is the increase in torque, particularly in the lower rev range.

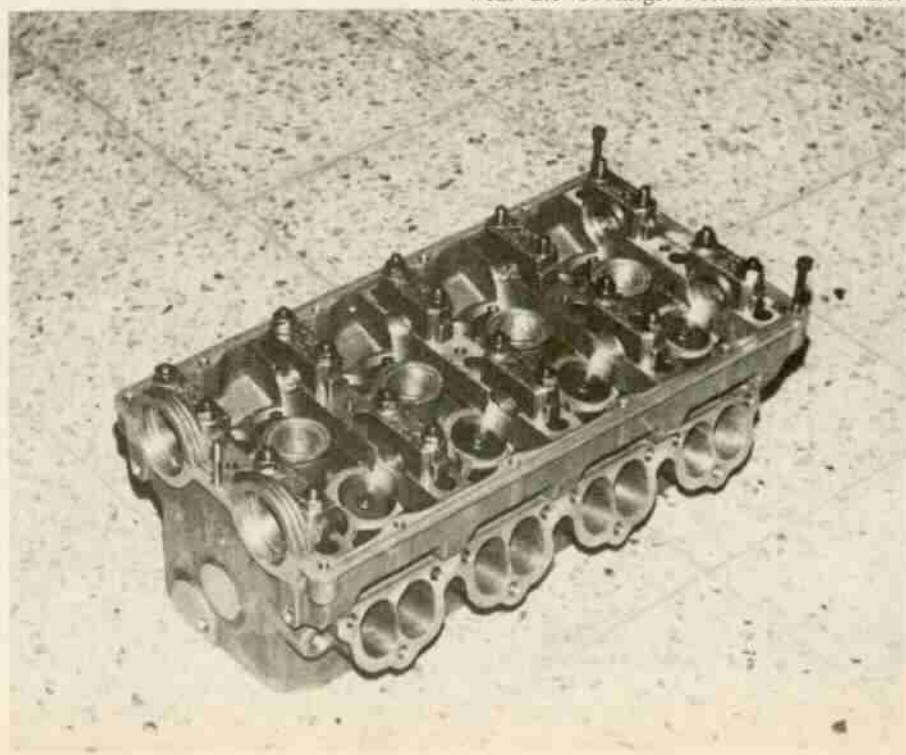
We went for a ride with Herr Oettinger in a demonstration Golf GTI. The smoothness of the engine and the quietness of running were truly impressive, and a major improvement over the "normal" GTI. The elasticity was admirably demonstrated by accelerating without undue fuss from 25mph right up to almost 120mph in top gear. When using the gearbox to the full, of course, the acceleration was much more rapid, and the standard German comparison (0 to 100kph or 62mph) time was a mere 8.2 sec.—the Wolfsburg GTI needs 9.5 sec., which is already very, very fast.

Oettinger does nothing at all to the brakes and the suspension of the cars that he converts. He recommends that better shock absorbers be installed, along with a stronger clutch.

Because of the German Transport Ministry, the limit for the Golf without suspension modifications (too expensive, says Herr Oettinger) is given as 125hp, although 130 or even 140hp is easily available. In fact, Oettinger has a 94.5mm crankshaft and a "big bore" kit (82mm pistons) ready, giving 1995cc, but it is not yet on the market.

ABOVE, brand new Rabbit engines just delivered from the VW engine factory at Salzgitter, some 30 miles from Wolfsburg. These will be turned into 125hp racers.

BELOW, a top view of the Oettinger 16-valve head looks very complicated, but Herr Oettinger assured us that it would produce 210 reliable horses within a year.



RACING ENGINES

There is quite a bit of interest in Group II racing in Europe at present, and the Golf/Rabbit and Sciroccos are making themselves felt by the Fords, BMWs, etc. The Oettinger firm is at present running a Scirocco in Group II for the German championship with some success. They have recently developed a 16-valve cylinder head for the engine, and at the time of our visit was producing some 175hp. However, these are early days in the life of the engine and Herr Oettinger assured us within a short time 210hp would be available to make it very competitive, indeed.

In the somewhat subdued (relative) world of Group I racing, the Oettinger engines produce only 121hp, being limited of course to the 1.6-liter capacity, as homologated by the Volkswagenwerk. However, this engine has raced and finished a 24-hour race in Germany—no mean achievement for a relatively new engine.

OTHER WATER-COOLED ENGINES

When we were there the workshop was almost full of Sciroccos and Golfs. But there were also Passats (Dashers) and Audi 80s (Foxes) as well as the other Golfs and Sciroccos (S, LS models). There are three 1600cc conversions available, offering 75, 85 and 100hp with various starting points from the 1500cc engine with 70hp to the 1600cc with 85hp. On top of that, there are two engines of 1800cc displacement with the Oettinger 90.5mm crankshaft.

These two make 110hp or, with a different camshaft and exhaust system, up to 125hp. On most of these engines a Solex 2B2 twin choke carburetor is used. We didn't get the opportunity to drive one of these cars, but we would not expect it to be as smooth as the 125hp fuel injected engine.

CONCLUSION

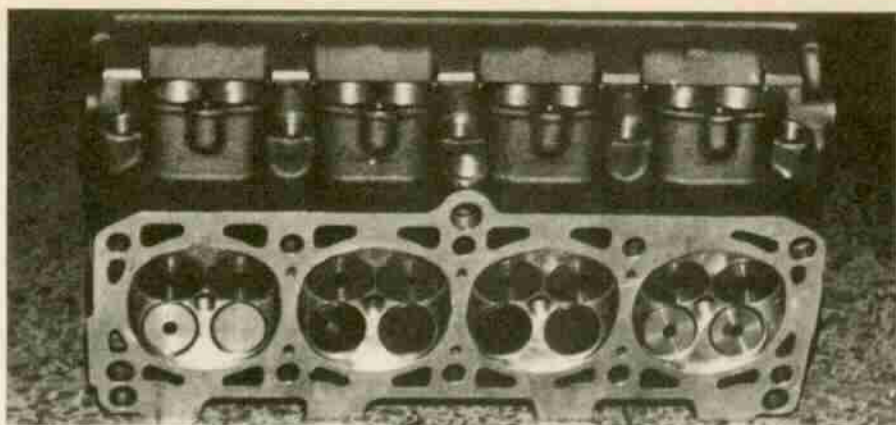
Oettinger does not specialize in making high-revving, untractable engines. He believes in producing extremely flexible, long-living ones. With the small engine capacity increase that he so often uses, the power-to-capacity ratio is not as wild as some of his competitors. But, the proof of the pudding is in the eating, so they say, and, when the German magazine "Sport Auto" named one of the Oettinger engines "the best 4-cylinder engine in the world," it knew what it was talking about!

LATEST UPDATE

In March the Oettinger firm informed us that it had just finished developing a Rabbit for the American market. And some Rabbit it is! The firm started with a "normal" 1978 model Rabbit; a fuel injection one with 71hp (SAE). On the Oettinger engine the bore is the standard (European) 79.5mm and the crankshaft is the chrome-molybdenum-steel ones, with a stroke of 90.5mm, giving a displacement of 1796cc. The compression ratio is 9.7:1, thus making the use of premium grade fuel necessary. Like the European 125hp Golf GTI, Oettinger uses larger valves, 40mm and 34mm, and he re-works the heads and manifolds, giving the optimum gas flow in and out.

The result of the work is a solid 110hp. And now the beauty of the conversion. The extra equipment on the U.S. Rabbits makes for a clean exhaust. This means that even with 110hp the engine is clean. During testing in Germany, the results showed that all the U.S. legislation regarding clean-air are fulfilled. The car (only one has been built so far) is soon to be shipped state-side for further testing. If all goes well, development will continue on a "Californian" model which will produce a few hp less—but still in excess of 100!

Negotiations are continuing between Oettinger and VOA, the result of which may be that you can buy an Oettinger Rabbit at your local VW dealer in the states. So, if you come up behind a Rabbit with the magic word on the tail "Oettinger," be careful—he will be tough to keep up with. ●



TOP, the brand new and experimental 16-valve head. In full Group 2 trim, it should help a 1.6 liter engine produce 210hp. CENTER, the Oettinger Group 2 Scirocco features much of his knowledge. At present it has a normal cylinder head; the 16-valve unit will be used later this year. BOTTOM, the Group 2 car features relatively little advertising on its flanks, but Dunlop tires and Castrol oil have been used by Oettinger for many years.