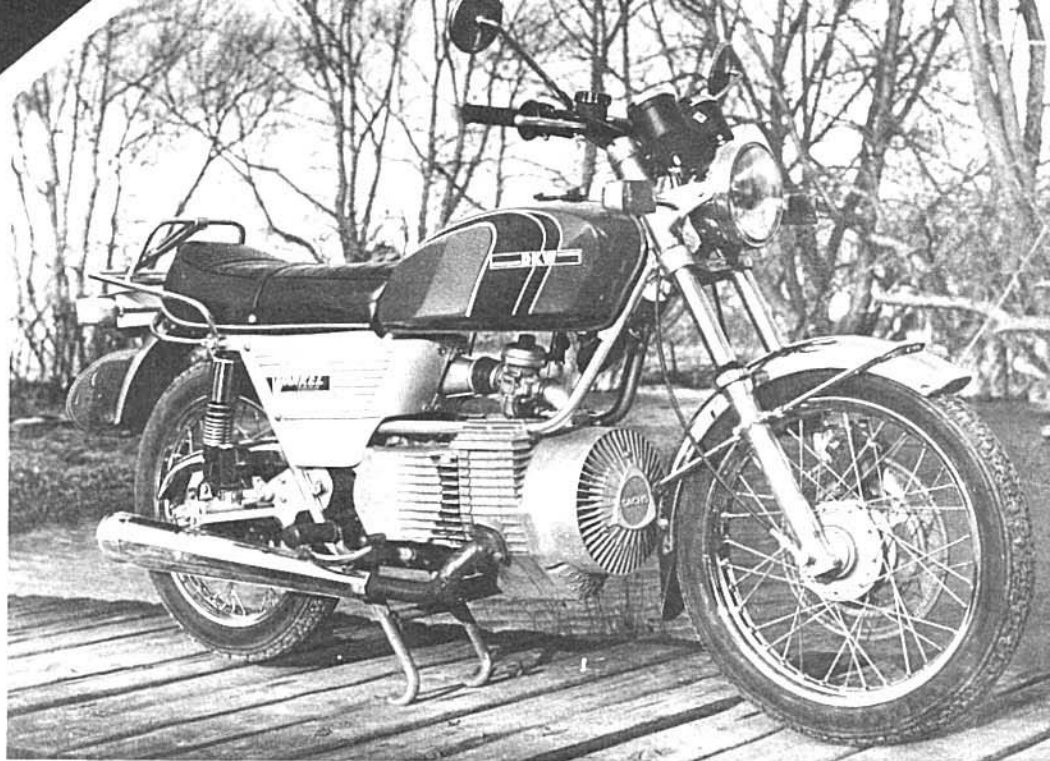


GIANT
TEST
WANKELS

dkw 2000 v suzuki RE-5

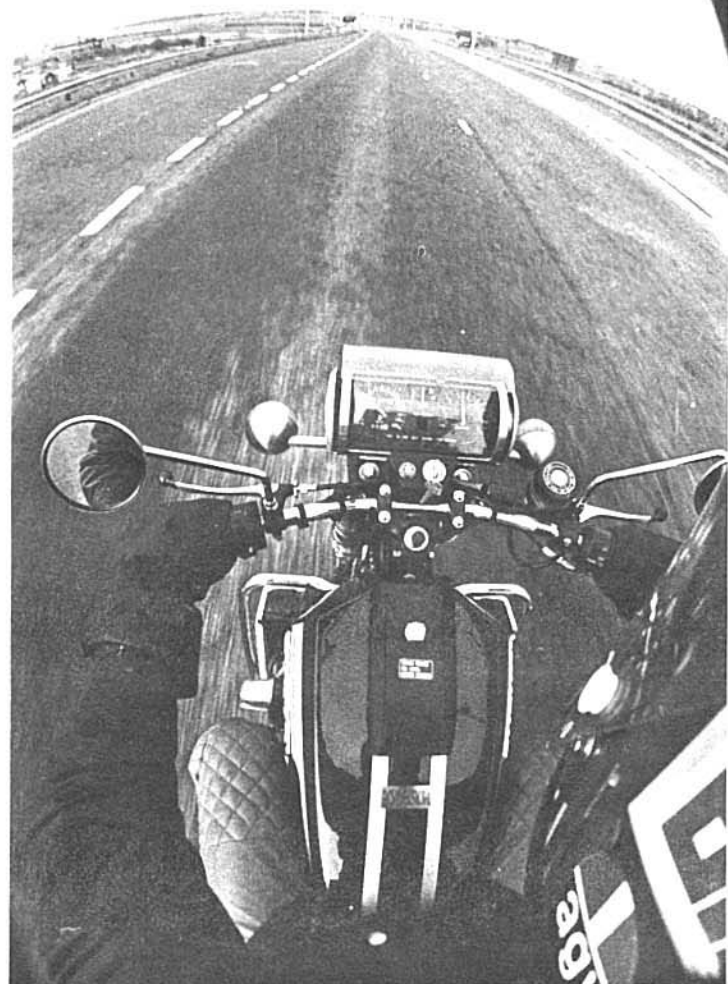


If you wondered whether the rotaries would live up to all the pre-launch publicity — so did we. So when the world's first two production Wankels finally reached the road, Bill Haylock was in the queue to ride them.

IT'S SURPRISING that the Wankel engine has only recently found its way into the frame of a production motorcycle. Right from when NSU announced it as the automotive revolution of the fifties, it seemed that the Wankel could offer great advantages for two wheel application. But while car manufacturers flirted with the new rotary powerplants, and some later regretted it, motorcycle makers continued in their old traditionalist ways. Perhaps it's just as well they did, for at least the Wankel motorcycle's image is not now tarnished by an earlier reputation of unreliability and high fuel consumption, which has made many people unwilling to accept the Wankel powered car.

Then suddenly last year, when the car industry's uncertainty about the Wankel was illustrated by the decision of the American giant General Motors to delay production of their projected rotary, three Wankel powered motorcycles were unveiled in Europe during the same month. The mind-bending 100bhp Van Veen is not available in this country as yet, but when the modest 294cc DKW and the ostentatious 500cc Suzuki RE-5 reached the UK, we sensed a good story taking shape — the world's first Wankel motorcycle comparison test.

The scheme started well when Sachs-DKW's public relations company phoned us, offering a trip to the DKW factory in Germany to ride back one of the first three W2000 Wankels to arrive in the UK. We worked out it would just fit in to the colour





WANKELS

photography schedule for the February issue — so far so good. Then we started on the Suzuki side, and to our eternal gratitude they for once promised to do something for us. By this time we were committed to the plan, and that's when all the nail-biting began. We know only too well that schedules never seem to work out as they should, and the most grandiose schemes have shattered into disillusionment through lack of co-operation and all sorts of other evils which beset the time-obsessed world of publishing.

The sweating became more copious when we were informed the Suzuki wouldn't be available till the middle of December — just when our copy was due to go to the printer's and past the deadline for our colour pages. Suzuki were most co-operative, however, and let us have a bike to photograph before the test, although the machine was then a non-runner which meant static shots only.

Of course, there was no telling what disasters might occur in Germany, but I survived a few hectic days, and got that part of the test completed. We were still very nervous about the Suzuki side of the deal, but to their credit they remembered the promise and delivered the goods.

A little spice was added to the whole plot when we phoned Nortons to see if we could have a brief spin on their precious Wankel prototype, even though we didn't intend to compare it directly to the two production bikes. They stunned us by replying that we could take the bike away for a whole weekend if we liked. Things just seemed to be going too well, but we didn't stop to question our good luck, for we had the makings of an amazing road test.

So we'd got all the machinery lined up, all brand spanking new, and promising to be very different to anything we'd ridden before. The question was, could we overcome the Freudian syndrome that makes us prefer things that thrust in and out rather than things that thrash round and round? Well, the Wankel works alright, but we had to ask ourselves, does it have soul?

dkw 2000

OH GOD, NOT ANOTHER expenses-paid PR trip! Ugh, where's the Alka Seltzer? It's getting too much, always rushing across the globe, getting sick on all that rich, greasy food and ruining my liver with free booze. Five days in Germany? I can't stand their fizzy beer, and the champagne gives me an even worse hangover. Ride a bike back? You really *must* be joking! It's winter over there you know and nobody with sense rides motorcycles in winter, you could freeze to death. Anyway they drive on the wrong side of the road. A night in Hamburg? OK, but the live sex shows get so boring. Do I want to know about the bike? Well if you must. A DKW Wankel? Those rotary engine things'll never catch on y'know.

Desperately trying to control myself and not appear too enthusiastic (well we've got to work hard to keep up that world weary image — could never admit that the last

opportunity we had for freeloading was a dry cheese sarni and cuppa tea on the Francis-Barnett stand at the '63 Earls Court Show) I agreed to go to the DKW factory at Nuremberg and ride back one of the first three W2000 Wankels in Britain.

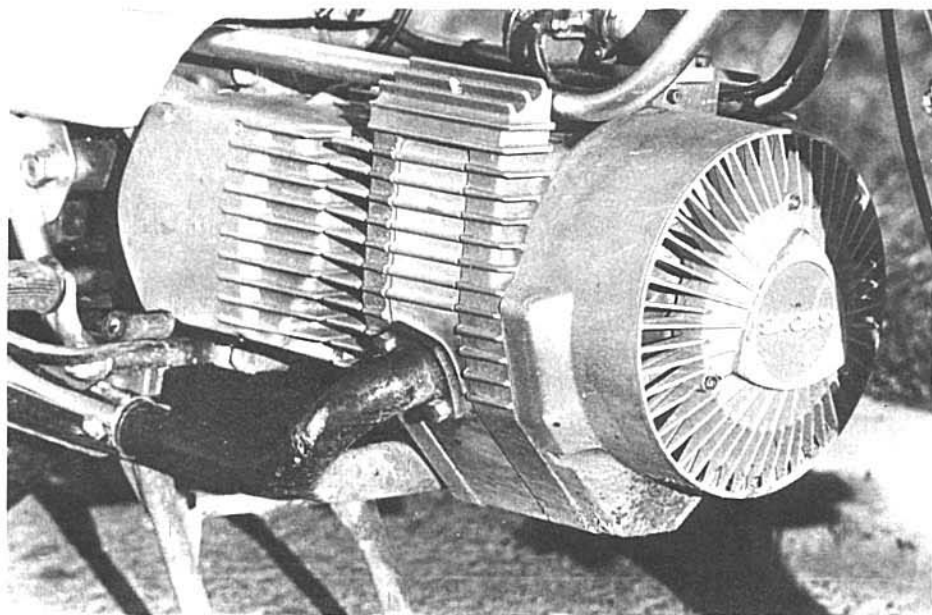
The cynical among you will now be thinking that by accepting such PR bribery we had compromised *Bike's* honourable principle of totally fair minded and unbiased reportage. Yeah, you're dead right, but you don't think we'd miss a chance like this when the rest of the motorcycle trade is so notoriously tight fisted? Anyhow, after all the wining and dining was over there'd be nothing to stop us saying what a load of crap it all was if that's how it turned out. We just wouldn't get invited again, that's all.

As it happens I don't have to say any such thing, cos the Deek turned out to be a rather tasty piece of machinery. For not only does it display the beguiling virtues of the Wankel that inspire the literary praises of technical experts like our own LJK Setright, it's also a very well made and exciting bike in other respects.

The offer was made by Sachs DKW (UK) Ltd through their sales manager Dennis 'Doc' Johnson. When word came from the factory that the first of the batch of bikes for the UK were ready for despatch, Doc and public relations man Peter Grove had the sort of brainwave that rarely washes through the inertia-bound bike industry. Why not let the hacks from the motorcycle press ride the first bikes back and thus achieve maximum publicity for the bikes' introduction into the UK? So that's how Doc and Peter Grove, four journalists and photographer Frank Reynolds, came to arrive in Nuremberg in a Transit minibus.

After tracing a tortuous route of ever decreasing circles we finally came to our hotel, and met two of the factory executives over dinner. In the usual despicable manner of freeloading journalists, we wanted to get out and see where the action was among the nightclubs. The factory execs, Karl and Mick, led the way as rather unenthusiastic guides, and after scowling at the tarts in a couple of sleazy joints and muttering about the price of drinks, left us with the apology that they had to get up early in the morning.

After black coffee for breakfast next morning we crept out blinking into the daylight to drive to the Nuremberger Hercules-Werke, the factory where the DKW Wankels are built. Bicycles and mopeds under the trade names Hercules and Victoria



Cooling air is ducted round the rotor housing from a forward mounted fan and then expelled just behind the exhaust manifold. Engine/gearbox unit hangs in tubular backbone frame.

make up the majority of the factory's production, and for the moment Wankels are being built on a temporary production line in one corner of the works. However a new factory was being built during our visit which is due to be opened early this year and will enable Wankel production to start

on a larger scale. For the continental and American market the W2000 will bear the Hercules title, which trade mark laws do not allow over here as we already have a British bicycle firm with the same name. So the Hercules W2000 becomes a DKW for Britain.

We were taken for a tour round the works to watch parts being stamped, ground and welded in the sort of noisy organised chaos that typifies factories of any kind. But the quality of the work was impressive, particularly the electric welding of the W2000 frames which is done by hand at present. Even in their naked unpainted state the frames looked really neat. The Japanese could learn something about welding technique there.

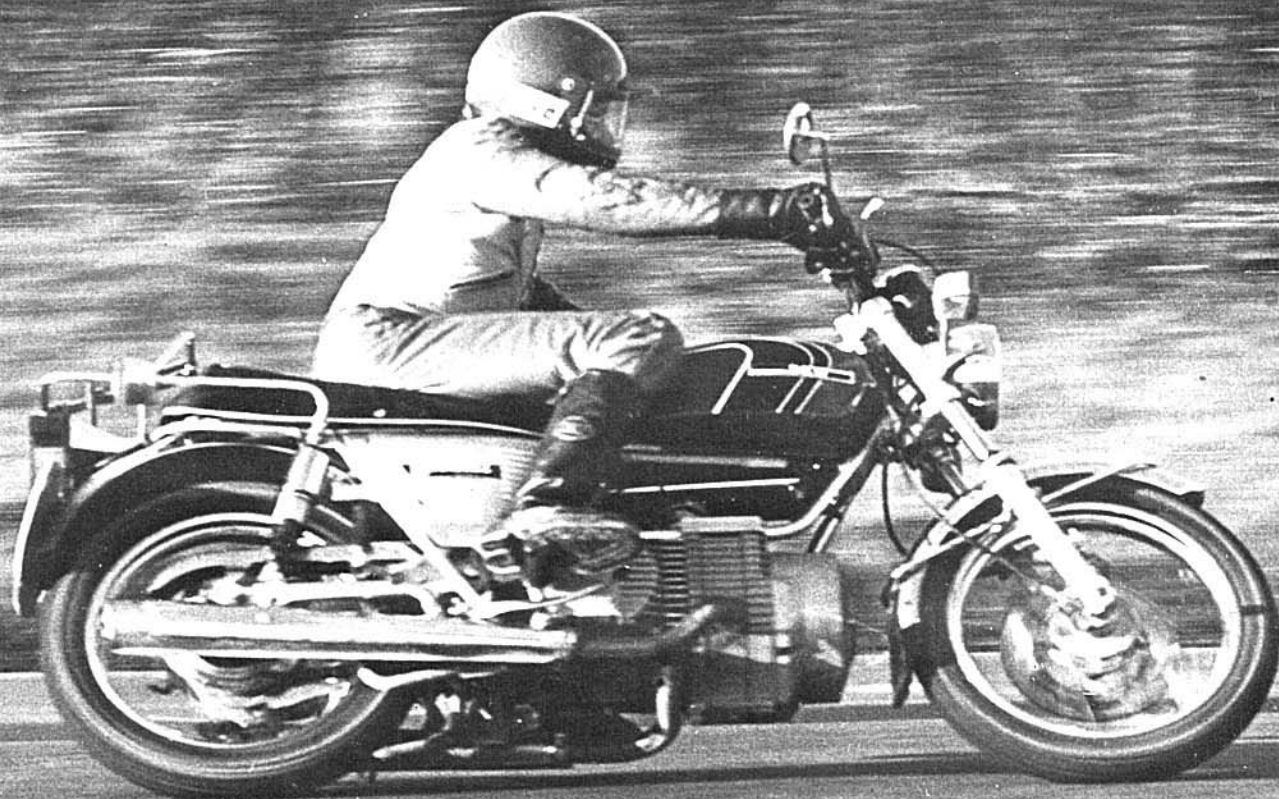
Herr Rudolph Brunner, technical director of the company, briefed us about the factory and the W2000. The oldest two wheeler manufacturing business on the continent, the Hercules factory produces 100,000 mopeds and motorcycles, and 250,000 bicycles a year. But despite being Germany's largest manufacturer their machines are hardly known in Britain. That's because their production has been concentrated on 50cc machines, a very competitive class over there. However, Herr Brunner told us that the company will be aiming at the big bike market once produc-

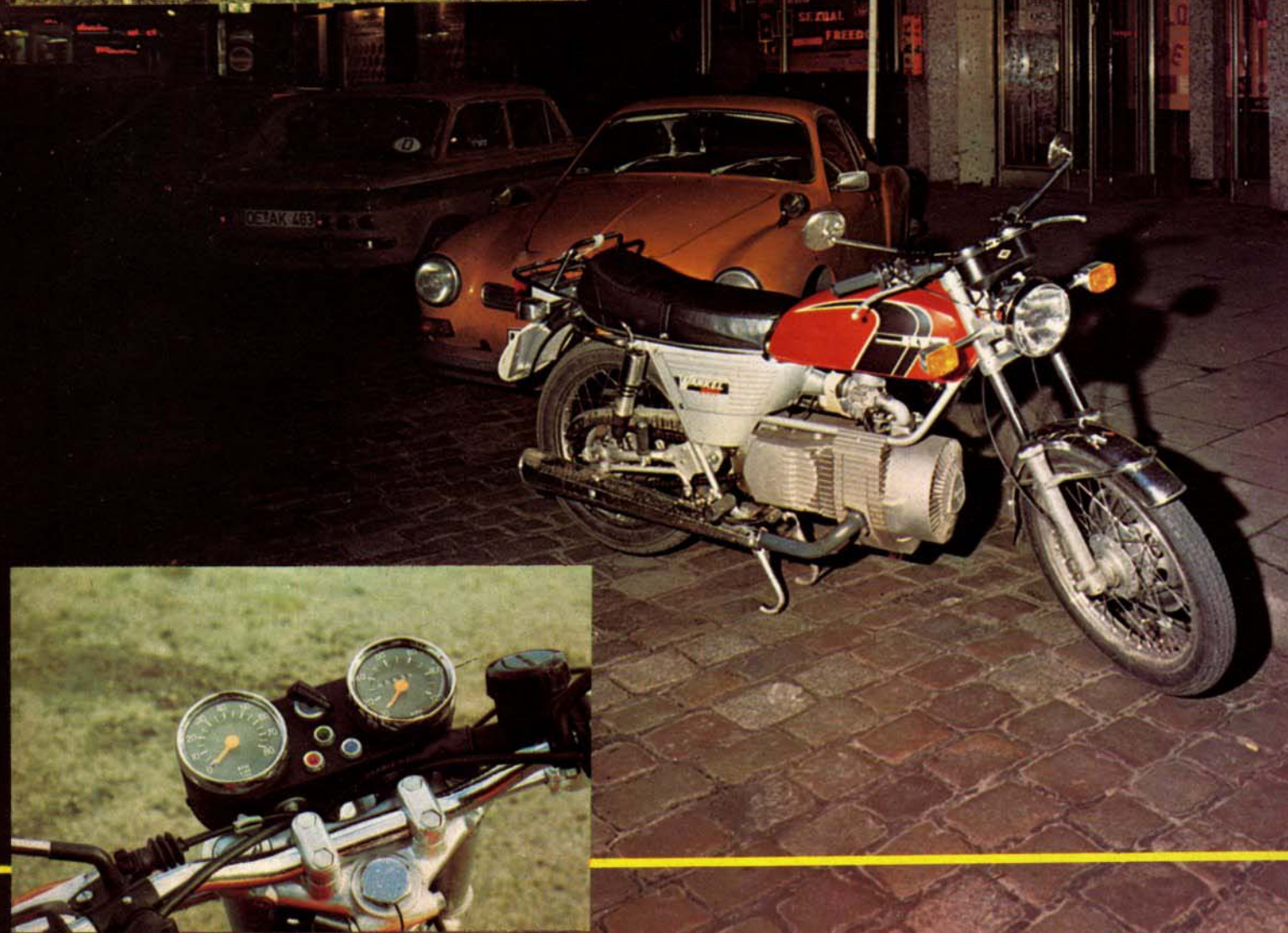
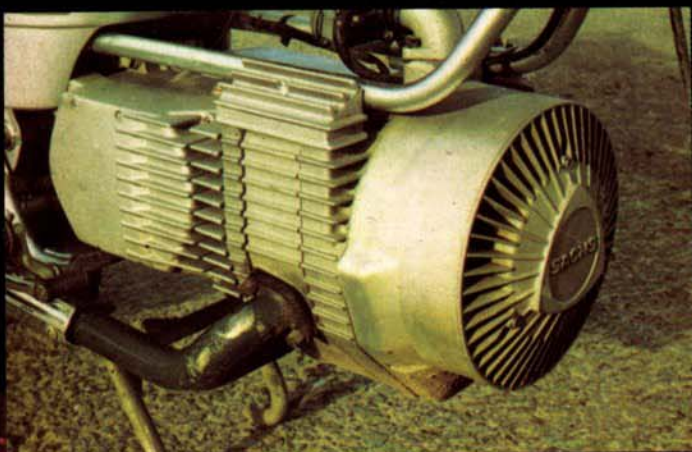
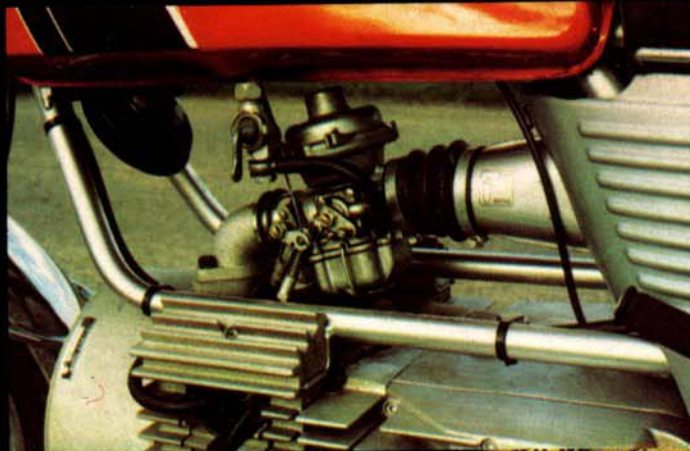
tion is under way in the new factory.

All engines used by Hercules are supplied by the Sachs factory at Schweinfurt. The Wankel power unit had been developed from a snowmobile engine, Herr Brunner explained, and coupled to a new six-speed transmission. Sachs have, in fact, had a lot of experience with small Wankel engines, as they have been producing motors for industrial purposes for several years. We questioned Herr Brunner and other technical staff about problems that other companies have experienced in developing Wankel motors, for the Sachs unit, a single rotor engine of 294cc capacity, is remarkably uncomplicated compared to the Suzuki RE-5 motor.

Cooling is a problem on the hot running Wankels which has complicated development. Suzuki and Van Veen use composite oil/water cooling systems which add to weight, bulk and complexity. But the Sachs unit seems to be adequately cooled by a crankshaft mounted fan blowing air through ducts in the rotor housing, and out of slots halfway along the motor casings. The rotor, which withstands high temperatures over its large surface area, is cooled by passing the mixture from the Bing constant vacuum carburettor through the rotor before it is inducted into the combustion chamber.

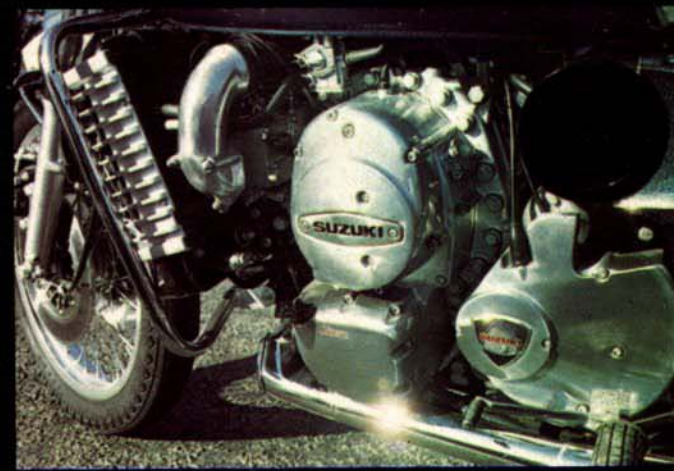
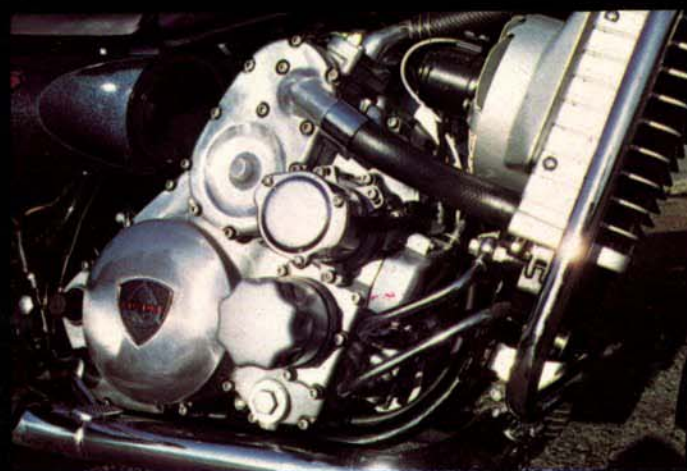
Another major snag that has held back







Photography Dick Scott-Stewart and Robert Scott



WANKEL GIANT TEST

DKW and Suzuki represent two very different approaches to Wankel development. The European attitude is a simplistic one of compromise for the sake of practicality. Sachs have been content with a modest power output to keep the motor simple. The Japanese approach is one of total technology in an attempt to iron out the Wankel's undesirable traits, resulting in mind-boggling complexity.



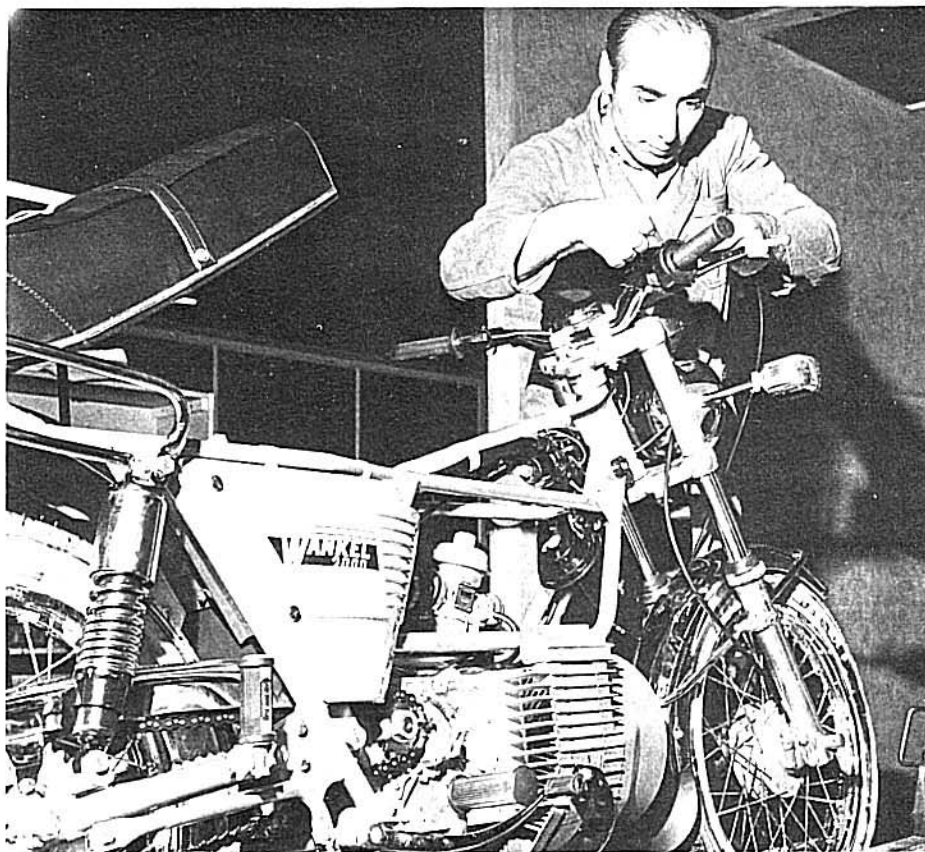
WANKELS

Wankel development in the past is excessive rotor tip seal wear. But the Hercules men insist that the cast iron seals they use have not been at all troublesome in the many thousands of industrial and snowmobile units they have built. They stress this confidence in long term reliability by stating in publicity material intended for America that the motor is good for 100,000 km (about 62,000 miles).

The engine mainshaft has roller bearings right through, and at the front end carries the flywheel magneto that provides sparks, and the 12 volt alternator for lighting. At the other end of the shaft the power is turned through 90 degrees by a spiral bevel gear to the gearbox layshaft, which is at right angles to the axis of the engine shaft. Lubrication is by old fangled petrol mix which is a bit of a drag, but at least it's reliable and keeps the motor nice'n simple.

The DKW's looks instantly brand it as something different. The cycle parts are neat but pretty conventional with a red tank design that looks like it was robbed from Honda. It's the motor that makes everyone out on the street do a double-take. The underslung power pod is styled like some Startrek fantasy, nothing like any conventional motor. It's a stroke of genius on the part of the stylists. The Wankel is different from conventional motors so it should look different, and that difference is going to be one of its strongest selling points. It's just a pity that the designers didn't grab the opportunity to make the rest of the bike look as distinctive, handsome though it is.

Expecting a sort of whining scream to go with the motor's rocketship looks, the sound that actually emerged from the twin megaphones stunned me momentarily. Somehow the deep, crisp bellow wasn't at all what I'd expected. But it was a nice noise, far more pleasant than any two stroke, but at the same time not really like a four stroke. When the bikes were warmed up we were invited to get to know them around the factory yard. Climbing on and blipping the throttle was an instant revelation in just how smooth the Wankel's celebrated smoothness is. You just don't know what smooth is 'till you've felt Wankel power, you don't realise how rough even a two stroke triple is until you feel the complete absence of vibration from the rotary engine. Although we were warned to keep revs down to 5000 for the first couple of hundred miles, it was remarkable how readily the Wankel motor revved, and the lack of vibration which with a conventional motor increases in intensity as the revs go up, made it necessary to keep a close watch on the electronic rev counter to avoid buzzing the engine too much. The fact that the axis of rotation of the motor is in line with the direction of travel, produces a torque



At the time of our visit, DKW Wankels were being assembled on a temporary production line at the Nuremberg factory amidst the bread and butter bicycles and mopeds. A new factory for the big bikes is under construction.

effect as in a BMW, but to a lesser extent.

The DKW is one of the few bikes that feels just right as soon as you climb on and ride off. The riding position is as good as a BMW, with low flat bars and footrests set fairly well back, giving that ideal touring position no Japanese manufacturers seem able to achieve. The bike is light and handling immediately feels precise and secure and the brakes are reassuringly responsive and powerful. The only irritation in what was otherwise a very favourable first impression, was the difficulty in finding neutral. It was almost impossible unless the engine was switched off: clutch drag seemed to be the culprit. Tickover is fast and uneven, and all those hollow alloy castings resonate with a metallic ringing, but even so, it's a lot quieter than the jangling of most two strokes.

That evening Hercules had laid on a meal at a restaurant overlooking one of the most picturesque parts of the old city of Nuremberg. They certainly have a way of getting their guests happily wasted — and it can't do their press relations any harm. The Bavarians are renowned for their beer drinking capabilities, and they insisted we tried one

of the very special brews from Nuremberg — smoked beer. Nope — we weren't that smashed, not at that stage of the evening anyway — it really was smoked. The beer is matured in oak casks that are first charred on the inside, and that gives the beer its peculiar flavour.

You might understand after that why we didn't feel too happy about the early start we had to make the next morning to ride to Hamburg — about 400 miles from Nuremberg.

We headed north on the Autobahn holding the bikes at a steady 5,000 rpm, which corresponded to a speedo reading of 80 mph, or a true speed of about 72 mph. Although Wankel engines do not need the same amount of cossetting during the break in period as reciprocating engines, a rev limit of five grand over the first couple of hundred miles makes life easier for the rotor tip seals.

My bike hummed along happily holding the speedo reading of 80 except when climbing inclines as the road rolled over the swell and dips of the undulating countryside. The sound of the three bikes travelling together at the same constant speed pro-

Checkout

duced a humming off-beat reverberation that rose and fell like the drone of the bombers that flew across the same countryside thirty years before to ruin the city we had just left.

Coming from a country where bikers do a lot of serious Autobahn cruising, the DKW is a superb long distance hauler just like its illustrious competitor from the south, the BMW. The DKW's as comfortable as a Bee Em, and even smoother. The slight forward stoop induced by the flat bars leans you into the wind, and the perfect relationship between position of seat, pegs and bars takes the strain out of hard riding, but still makes the bike easy to handle around town.

While my Deek was behaving perfectly, the other two ridden by John Robinson of *Maniacs* and Stewart Boroughs of *Motor Cycle*, suffered mysterious power losses at times over the first part of the journey and straggled behind up hills, probably because of overheating of the tight motors. Then 100 miles or so out of Nuremberg, the one and only mechanical hitch of the whole trip brought Stuart's bike coasting to a halt with a broken chain. The spring link was the culprit either through fracture or careless fitting, and the chain had firmly jammed itself between the gearbox sprocket and the clutch actuating lever. It was then we discovered that the miserly toolkit did not include a key for the Allen screws which secured the side casing (later we also discovered the tools weren't even capable of adjusting the chain). The bike had to be towed in to the next garage where we borrowed Allen keys from the attendant and fitted the spare chain the factory had fortunately provided along with a box of various spares.

That delay of an hour or so, and the fact that our schedule didn't allow enough time anyway, meant that at three in the afternoon when we were supposed to be arriving at our Hotel in Hamburg, we weren't much further than halfway there. That meant riding in the dark, in a foreign country on strange roads, and I wasn't happy at that prospect. But the DKW's lights are another bit of class that put it in the BMW league. The Bosch quartz-halogen headlight gives an intense white beam with a fantastic 60 watts of illumination on main beam, and the only criticism is that the 45W dip cuts off very sharply as continental lights always do.

The dip switch and matching indicator switch look spartan, but are strong and positive in use, although the dipswitch on the right of the bars is a bit of a stretch for the thumb. The starter motor is activated by pressing the centre of the indicator switch, and doing the same to the dipswitch makes people leap out of the way with a blast on the horn.

	DKW W2000	SUZUKI RE-5
Engine Type	Single rotor, fan-cooled Wankel rotary	Single rotor, water & oil cooled Wankel rotary
Capacity	294cc (each lobe)	497cc (each lobe)
Compression ratio	6.5:1	9.4:1
Carburation	Bing 32 mm constant pressure type	18/32 mm Mikuni two- stage
BHP @ RPM	30 @ 6,000	62 @ 6,500
Primary drive	Spiral 90 degree bevel gear	Duplex chain
Clutch	Wet, multiplate	Wet, multiplate
Gear ratios (overall)		
(1)	16.74:1	14.44:1
(2)	11.6:1	8.81:1
(3)	8.66:1	6.91:1
(4)	6.78:1	5.71:1
(5)	5.76:1	4.68:1
(6)	4.89:1	
Electrical system	12v 100w Bosch genera- tor, battery coil ignition 60/55w halogen headlight 5/21w tail/stoplight	280w alternator CDI Ignition 50/40w headlight 8/25w tail/stoplight
Lighting		
DIMENSIONS		
Wheelbase	56 ins	59.1 ins
Seat height	31 ins	32 ins
Ground clearance	6.5 ins	6.7 ins
Handlebar height	40 ins	46.1 ins
Weight	386 lbs (inc 2 galls fuel) Petrol	560 lbs (inc 2 galls fuel) 3.8 pint sump, 3 pint tank 3.7 galls inc reserve
Oil capacity	4 galls inc 1 gall. reserve	
Fuel capacity		
EQUIPMENT		
Steering damper	No	No
Trafficators	Yes	Yes
Electric starter	Yes	Yes
Trip mileometer	No	Yes
Steering lock	Yes	Yes
Helmet lock	No	Yes
Headlamp flasher	No	Yes
Kill button	No	Yes
Toolkit	Yes	Yes
Spare parts	No	No
Others	Mirrors, luggage carrier	Mirrors, engine temp gauge, fuel and oil warn- ing lights, digital gear position indicator.
CYCLE PARTS		
Tyres (front)	Metzeler 3.00 x 18	Inoue 3.25 x 19
(rear)	Metzeler 3.25 x 18	Inoue 4.00 x 18
Brakes (front)	11.8 in. disc	Twin 11.6 in. disc
(rear)	7.1 in. s/s drum	7 in. s/s drum
PERFORMANCE		
Top speed	96.36 mph	110.56 mph
Standing 1 mile	16.25 secs	14.37 secs
0-30 mph	2.5 secs	2.58 secs
0-60 mph	7.4 secs	6.25 secs
Speedometer error		
At indicated 30 mph	25.14 mph	28.71 mph
At indicated 60 mph	53.57 mph	58.02 mph
Braking distance		
from 30 mph	32 ft	—
from 60 mph	156 ft	—
Fuel consumption		
(average)	42 mpg	30 mpg
(driven hard)	40 mpg	26 mpg
PRICE	£917 inc VAT	£1,195
Guarantee	6 months/6,000 miles parts & labour (12 months on the motor)	6 months/6,000 miles parts and labour (12 months on the motor)
Supplied by	Sachs DKW (UK) Ltd., The Nook, Anstey, Leicester.	Suzuki GB, Beddington Lane, Croydon, Surrey.

We finally came into Hamburg at about eight pm with surprisingly few ill-effects, apart from boredom. British motorways are tedious enough, but 400 miles without any corners or roundabouts is boring, boring, boring. Thank God we don't have any motorways that long. Riding in a straight line doesn't give you a great idea of a bike's handling, except to discover that some of the weird concrete motorway surfaces do strange things to a bike's steering.

A cold, grey Thursday morning on the Reeperbahn is like the hangover after a wild party. The cobbled street and wide pavements are dismal and lifeless apart from a few miserable souls shuffling back to their hotels, wondering where all their money went. Hearing the disgruntled grumblings over the breakfast table about getting stung for seven quid a drink, and live sex shows that turned out to be flaccid fiascos, I was glad I'd had an early night.

The rest of the morning was spent frantically dashing about trying to get riding shots around Hamburg, futile efforts that were hampered by the traffic. Then it was time for the ferry and a rest from bikes for 20 hours or so.

Getting back on home territory, and being blessed with a rare patch of decent weather, let me get down to some serious footrest abrasion. The handling had previously felt nice and taut, but it was even better than I'd expected. The Ceriani suspension obviously has a lot to do with it, and the way the low slung motor keeps the centre of gravity down helps too. The frame construction with its large diameter spine tube, duplex upper and lower rails, and hefty gusseting around the steering head, makes for tremendous rigidity. That combined with the excellent grip from the Metzeler tyres (same as fitted to BMWs), the perfect damping qualities of the suspension and the lack of bulk and weight make the DKW one of the most faultless handling bikes I've ridden, on all road surfaces, wet or dry.

What it lacks in performance compared to the Suzuki the DKW more than makes up for in excitement from its hard cornering capabilities. In the dry the speed any corner can be taken at is only limited by the grounding of the centre stand on left handers, and the footrest and silencer on right handers. I'd like to see the stand modified to

prevent that touching down, but you have to be going some to start scraping the silencers.

One thing I noticed back home when I began to really use the gearbox, was the rather long gear pedal travel caused by the length of the pedal. It meant that I missed gears once or twice by inadvertently not allowing the pedal to return to the central position after making a shift. Anybody not cursed with such clodhopping plates as mine would have no problem. Moving the adjustable footrests could have cured the problem, but I didn't bother.

Apart from that, and the previously mentioned difficulty in finding neutral, the six speed gearbox was slick 'n' smooth and as good as any Jap transmission.

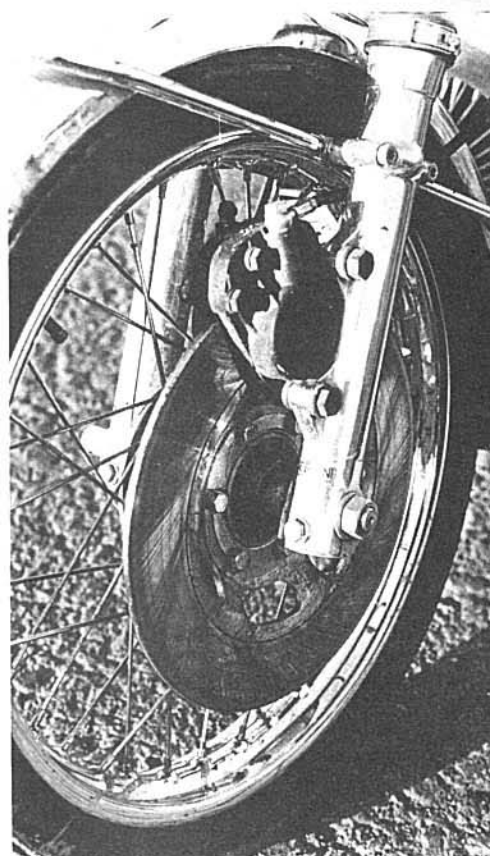
The fast tickover I improved by adjusting the throttle stop, but it remained erratic although slower. The motor's response to the throttle was perfect though, and it never stalled.

The powerful disc brake up front cools things well if you start getting too exuberant in diving into bends. Here again the Germans have gone to Italy to get the best equipment, the front brake is made by Grimeca and consists of a neat one piece 300mm chromed cast iron disc and an unobtrusive caliper.

Through the speed trap the DKW proved to be faster than expected, and bettered the factory's claimed top speed of 93 mph by three miles per. Acceleration wasn't shattering, but wasn't too bad either. At 16.25 secs for the standing quarter mile it compares reasonably with a fairly hot 350, although comparisons in terms of engine size are meaningless. It would be perhaps better to compare the DKW with a BMW R60/6. The W2000 would compete with the BMW on performance, comfort and quality.

Anyone who buys the DKW won't buy it for ultimate performance. One of its attractions obviously is the fact that it is a Wankel, and at present it has prestige because of that fact. But even ignoring the novelty value of the unconventional power unit, it's an outstanding machine in its own right.

From the quartz halogen headlight, to the handy luggage rack, the whole bike displays a quality of craftsmanship which is becoming rarer in these days of mass production. I'm sorry to keep bringing up the name of BMW, but that's the class of bike I keep



Wouldn't you expect to find Italian forks and disc brakes on a German bike that handles like a Featherbed Norton?

thinking of when drawing comparisons with the DKW. Those neat cast alloy indicators even have BMW stamped on the lens! The little touches, like the extensive use of Allen screws, neat alloy castings and an electronic rev counter instead of the more usual mechanically driven instrument confirm the impression of quality.

It's just a shame that the stylists couldn't think up anything more enterprising than a crib of a Honda paint job on the petrol tank, and the choice of colours wasn't exactly stunning. But despite the DKW's stylistic understatement, its combination of simplicity with smoothness and superb handling is enough to make me love it.

SUZUKI

RE-5

THERE you are, clammy hands clutching 1200 crisp notes, ogling the bikes in the dealer's window and feeling quite giddy at the sight of all that beautiful gleaming machinery. And there in the middle of the twins and threes and fours is a mysterious glittering monster of a machine, the magic word "Rotary" on the side panel setting it apart from the familiar superbikes.

So you rush in and get collared by the salesman whose shifty eyes have noticed your feverish brow and the notes fast becoming limp in your sweating hands.

"Yes sir, here it is. The last word in motorcycle technology — the dawn of the new era in motorcycles, a Revolution on the Road — the new Suzuki RE-5 Rotary. Smoothness you've never experienced before, a sophistication only found previously on four wheels and slick styling to impress everyone on the street — what more could you want? What's that sir? How do you set up the carburettor? Oh that's easy sir, just take the machine along to your nearest dealer who's invested in a lot of expensive and sophisticated equipment, and attended a special Suzuki seminar to learn how to service the RE-5. Oh no sir, you can't do it yourself, this is a highly developed machine and it's a skilled job to set it up right. The dealer's also got a stroboscope to set the timing, but if the machine needs more than a routine service you can take it along to the Suzuki service depot where they've got lots more special equipment.

"That 'strange bit of green plastic,' as you describe it sir, is the instrument panel cowl. What's it for? — Well, er, you'll notice sir, how the combination of spherical and straight line design elements conveys a forceful impression of smoothness and speed (he says, quoting from Suzuki's publicity material when stuck for an answer). Sit astride it sir, notice the generous, low seat which minimises rider fatigue even on long journeys, the precisely calculated positioning of the handlebars, the long thin tank



Above: Fan behind GT 750 style radiator is thermostatically controlled. Black hose leads from water pump. Next protrusion down houses the contact breakers.

that does away with the bandy leg phenomenon . . . You can't get it back on the centre stand sir? Well, by way of a cash discount we might see our way clear to throw in a free Bullworker and in no time you'll handle this 560 lbs of beautiful machinery with ease!"

Well, it looks impressive, you're thinking, and you certainly get a lot of machinery for £1200, but weren't you led to believe that a couple of the main advantages of the Wankel engine were its light weight and simplicity? With its two cooling systems, two lubrication systems, two ignition systems, and its maze of plumbing the Suzuki certainly don't look simple. And your puny muscles tell you, light it certainly ain't. So what of the rotary engine's advantage does that leave? Well, smoothness. Yep, it's smooth



alright, smoother even than the Suzuki GT750 triple — but is it £300 worth smoother?

Cynical I may be, jaded by a surfeit of superbikes even. But I begin to get a nagging feeling that the Japanese, who I once regarded in awe as unable to put a tee-square wrong when they set about designing motorcycles, are losing their touch. That's not to say that the Suzuki isn't an incredible machine and an object lesson in putting a design concept into engineering practice. But I feel uneasy about that original design concept. In their obsession with total technology, to prove they can surmount engineering problems no-one else can, I think the Japanese are losing touch with the reality of motorcycling. It's a new phenomenon, although I suppose it was possible to see it



WANKELS

coming, and Suzuki are not the only offenders, because Honda also appear to have wandered off into the same self-absorbed irrelevancy with their Gold Wing water-cooled flat four.

I can't see anything wrong (apart perhaps from matters of fuel consumption) in applying the Wankel engine to motorcycle use. But in their efforts to produce not just a Wankel engined motorcycle, but the *best* Wankel powered motorcycle, Suzuki have taken another step down the slippery road of status technology, in the wake of the car industry. Not that it will stop the RE-5 from selling. It will sell in enormous numbers in the States, a country above all others that loves things brash, plastic and soulless. They will probably sell quite a few over here even, despite the economic gloom and petrol at fifteen bob a gallon. And it will make me sad to think how the British industry, through its lack of direction, has failed to grasp yet another opportunity.

For having ridden the Norton prototype twin-rotor Wankel, I've realised the rotary engine does have a place in motorcycling, and can still be a sophisticated and faultless power unit, without the bulk, weight and complexity of the Suzuki engine. People may feel I'm being vindictive in such harsh criticism of Suzuki, but it's not so. I'm just disappointed they haven't produced a better bike considering the resources in manpower and money they have to put into the development of a radical new machine. I like Suzuki's water-cooled 750-3. It can also be criticised for being ponderous and gimmicky but it's pleasant to ride and tremendous value for money. The trouble with the RE-5 is that it isn't different enough from the 750. It's smoother, but it's also bulkier and slower than the 750 — so how can you justify paying that extra £300?

I hate the looks of the RE-5's motor. It's an untidy mess that looks as though it doesn't belong in a motorcycle frame, like one of those Hillman Imp-engined bodge-ups. The single rotor sits high up in the frame (putting the weight in the wrong place), buried under a mass of appendages. On the right side of the engine is the water pump. Underneath that is the protruding cylinder housing the two contact breakers (for the two ignition circuits designed to give smooth engine deceleration and smooth slow running) and below that the car-type nasty tin oil filter cartridge, and then all the pipes connecting the motor to the radiator and oil cooler mounted on the front downtube.

On the left a large bulge conceals the tremendously powerful generator, below that another protrusion in the alloy casing holds the oil that cools and lubricates the rotor and its shaft. Tacked on the front is



Left: Tank top panel covers filler caps for both petrol and radiator. Right: Design elements do little to detract from the enormity of the motor.



the world's biggest motorcycle carburettor, a whole five pounds of twin choke, two stage, vacuum controlled Mikuni complexity. In front of the engine is the radiator, similar to that on the GT750, but complete with thermostatically controlled electric fan, and an oil cooler mounted beneath the rad.

The Suzuki boffins have done their development homework diligently, and come up with some clever answers to the problems that have bugged the Wankel. Like the dual ignition circuit to make the engine run smoother on the over-run, and to give more powerful engine braking. A vacuum sensor tells when the throttle is rolled off, and switches out the normal dual lobe contact breaker circuit, and switches in a separate contact breaker with a single lobe cam. Hence you only get a spark to alternating rotor faces instead of to every face, and it does give perceptibly smoother and more powerful engine deceleration than the DKW. But it also results in a lot of farting and banging from the silencers every time you shut off. Capacitor discharge ignition (CDI) is used to give the accuracy of sparking that a Wankel needs.

Carburation is another of the Suzuki's clever tricks. A simple single port system on a Wankel can produce either good low speed torque or plenty of poke at the top end, but not both. So the RE-5 has two

small primary ports for slow speed running, and one large secondary port for the top end. That's why it has a two stage carb; the 18-mm primary choke feeds the primary ports, and the secondary port is kept closed by a butterfly valve in the rotor housing until the primary butterfly valve has been opened 36 degrees. The vacuum controlled valve in the 32-mm secondary choke begins to open at 41 degrees, feeding fuel through the secondary port. Of course the primary and secondary chokes both have their pilot and main circuits, and then there's an accelerator pump to give brisk response to the throttle. Perhaps you begin to see why the carb is so big and heavy. The whole thing takes five cables to control it, along with various vacuum controls and linkages.

Moving on we get to clever trick three, the cooling system. The Wankel's long narrow combustion chamber shape means there's a helluva large area of metal exposed to the burning gases, which naturally means the rotor and its housing pick up a lot of heat. What's worse, the heat isn't evenly spread around the rotor housing, and that could cause distortion problems. Deflectors in the water jacket around the rotor housing direct coolant from the hot areas to the cooler ones, keeping the temperature differential as slight as possible. The rotor is cooled by circulating the oil which lubricates the bearings on its shaft, through pas-



Chart shows comparisons between DKW and Suzuki rotaries and random selection of piston engined machines.

	DKW W2000	SUZUKI RE-5	KAWASAKI Z1	BMW 600	HONDA CB360	SUZUKI GT750	YAMAHA RD250
Price.....	£917	£1,195	£1,249	£1,244	£599	£882	£515
Top Speed.....	96 mph	110 mph	133 mph	102 mph	101 mph	115 mph	100 mph
Standing $\frac{1}{4}$ mile.....	16.25 secs	14.37 secs	12.46 secs	15.57 secs	15.56 secs	13.39 secs	15.90 secs
Fuel consumption.....	42 mpg	30 mpg	46 mpg	50 mpg	55 mpg	38 mpg	40 mpg
Weight.....	386 lb	560 lb	542 lb	440 lb	370 lb	556 lb	309 lb

sages in the rotor. The oil returns to the sump and is pumped through the oil cooler before making another circuit through the rotor. This dual cooling system means the engine can produce a higher power output without sacrificing reliability. But it also makes the machine so heavy and bulky that the benefit of the extra power is lost.

The cooling of very hot exhaust gases is another problem of the Wankel. Suzuki solved this by an ingenious double shell exhaust pipe. The gases are passed through the inner pipe, and cooled by a flow of air fed through an intake at the front of the outer pipe.

Problems of seal and rotor housing wear absorbed a lot of development effort. To lubricate the rotor seals a separate lubrication circuit on the CCI principle is employed to feed oil into the combustion chamber via the fuel/air mixture. For producing the extremely accurate and durable surface needed for the inner face of the rotor housing Suzuki developed their own manufacturing and surface plating technology.

This is all very impressive, but Suzuki seem to have been far too clever by half. Sure, they've beaten some very tough problems, but their solutions have turned a simple, compact engineering concept into clumsy complexity. How come Norton Triumph can produce a motorcycle that's faster, lighter, neater and smoother? By compromising maybe. The NVT prototype may work at a lower bmep, but that means it is quite happy to breathe through two Amal concentric carbs, has a simple ignition circuit, only one lubrication system and is cooled entirely by air. The Norton is perfectly smooth on the over-run, and at all other times. It has half the bulk of the Suzuki motor, yet its two rotors displace 100 cc more than the Suzuki's single rotor, and what's more, it is quieter. The complete Norton motorcycle is 125 lbs lighter and, even in its prototype lash-up form, handles better than the Suzuki.

OK, so I've told you why the RE-5 isn't going in the direction that I think biking should be, without telling you what it's like to ride. Pin back yer lugs, cos I'm about to lay it on yuh.

I arrived at Croydon on a cold, but sunny day, on a typically filthy and decrepit Southern Region train. Wandering into the reception lounge at Suzuki's I got the sort

of frosty welcome I've come to expect from the motorcycle trade. It's an almost hostile condescension, like they're doing you a big favour. Waited around for someone who knew something about a test machine for *Bike* magazine to turn up. Someone from the service department did eventually arrive and took me out to the workshop. He gave me a brief run down on how to start the bike, presented me with a can of special RE oil for topping up, and went back to the important task of playing table tennis with the mechanics.

Pictures I'd seen of the RE-5 didn't give an impression of the size of the thing. It looked huge. As soon as I wheeled it out into the yard I realised how damn heavy it was too. The styling struck me as pretty neat, the dark blue silver-flecked paint superb — but God, that engine's a hideous lump. The seat was soft and about the right height. Turned the key and up flipped the instrument panel lid. Huh, bit gimmicky. Pushed down the choke, pressed the starter button, a bit of throttle and she burred smoothly away.

I trundled the bike out of the yard and onto the road, taking it steady because the RE-5 feels as big and heavy as it looks until you get accustomed to it. When the engine's running on the primary choke of the carb, i.e. at light throttle openings, the engine feels decidedly tame. The power characteristics of the Wankel tend to create that impression anyway, but the Suzuki feels really woolly until the big secondary choke comes into play. The exhaust note is flat too, in comparison with the DKW, like a conventional motor running with the ignition retarded.

You soon begin to draw comparisons with the Suzy GT750, for the RE-5 gives a very similar ride, which isn't surprising as it carries the same forks as the triple. It's got the same twin disc front brake too, one of the best brakes you'll find on a stock bike — fantastically powerful. Very reassuring when you think about the weight there is to stop. The transmission feels very much like the triple — a bit of a clunk between the rather widely separated first and second ratios, but nice 'n' smooth through the rest.

Along the tortuous route of the South Circular, the RE-5 was easier through the traffic than I expected, 'cept when it came to creeping through the middle of the queues at the lights, when the bike felt

about six feet wide. One of the GT750's traits the RE-5 doesn't have is the snatch at low speeds, and that tameness at low speeds is quite an advantage in traffic. But there's still some roughness in the transmission. Unless the chain was adjusted up really tight it set up a bloody awful clattering at certain speeds that could be heard on a bike following ten yards behind. The trouble seems to be the combination of very heavy gauge chain and a tiny engine sprocket. It's annoying, because the Wankel's smoothness emphasises any roughness in the transmission.

I finally reached the M1 and had the chance to wind the grip back. At last the Suzuki was in its element. The speedo needle climbed round to ninety without the slightest effort, and soon I had to slow down again as I caught up with the traffic ahead. Around 3,500 to 4,000 rpm there's a trace of vibration from the motor, felt as a buzz through the foot rests, but above that it's smooth and spins out power like a turbine.

I must lack some authoritative power that Leonard Setright possesses, for unlike the experiences he mentioned a couple of months, back in his Cog-Swapping bit, I discovered a remarkable reluctance by motorists to forsake the fast lane, even though I was approaching them a good 20 mph faster. Most only begrudgingly moved over after a flash of the Suzuki's headlight. I found it annoying, because the bike was obviously capable of cruising at a much higher speed than the 65-70 mph that the traffic kept me down to most of the time.

I left the M1 at the M6 junction, to get the A5 into North Wales. For once a road test coincided with my leisure plans, because I had arranged to spend a weekend building stone walls at the top of Snowdonian mountains (OK, so I've got some weird ways of relaxing, but it makes a change from pounding a typewriter). The traffic began to thin out, but it was also getting dark. However I felt quite happy cruising at 80. The bulk that's so unwieldy at low speeds makes for comfort and confidence on motorway hauls. The high speed straight line stability of the RE-5 is excellent, no doubt helped by that incredibly long 61 inch wheelbase. About the only criticisms of the bike as a long distance



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cruiser are the positioning of the bars, which gives you aching shoulders, and the short fuel range. I found that the fuel warning light began to glow only about 70 miles after a fill-up, by which time the bike had used up something over two gallons. The tank capacity is supposed to be 3.7 gallons, but the motor started misfiring almost as soon as the fuel warning lit up. The carb must be very sensitive to the fuel level in the tank.

On the A5 I had to start relying on the Suzuki's lights to find my way. The headlight is good by normal bike standards, but certainly not as good as the brilliant white beam from the DKW's halogen lamp. The neat cylindrical taillight unit gave up altogether halfway through the test when a fault developed in the wiring, a rare occurrence on Japanese bikes.

The A5 meanders more and more as it approaches Wales, and becomes positively serpentine by the time it reaches Betws-y-Coed. In the dry the Suzuki takes bends surprisingly well. The rear suspension is well damped by Japanese standards, although the frame isn't really anything out of the ordinary, and the rear end does begin to flounder around when you're pushing it hard through fast curves. The weight really begins to tell then and you've got to ease off as the feeling of top heaviness becomes uncomfortable.



In the wet it's horrible. Rain greeted me as I crossed the border, and the way the bike wriggled over catseyes told me it was time to cool it considerably and get to my destination slow but safe. The hefty centrifugal forces imposed by pushing a quarter of a ton of bike plus eleven stone of rider round bends was too much for the nasty Japanese rubberware — and I was beginning to think maybe Jap tyres were improv-

ing. No chance. The pass down from Lake Ogwyn to Bethesda, where I was to stay in the infamous Peterborough Mountaineering Club hut, is a particularly contorted piece of tarmac, and the Suzuki wriggled and squirmed every time I so much as clipped a catseye or crossed a white line. Even the rear brake, which produced a rather feeble braking effort in the dry, had to be used with care in the wet, as I discovered when trying to stop for a junction at the bottom of one very steep hill. A delayed action effect from the front brake when the discs are wet doesn't make riding in the wet any more fun.

The ride home at the end of the weekend was far more pleasant because the roads were dry most of the way, and it was fun to hustle the massive bike through the curves. With the extra confidence inspired by dry roads you can co-ordinate throttle, braking and banking to sweep through bends with a grace you'd hardly expect from such a lump of machinery. But get it wrong and you're in a real mess. If you have to brake hard from high speeds on anything but a smooth surface, the front end starts hopping like a randy buck rabbit. Find yourself on the wrong line and the bike starts bucking and weaving when you try to put things right.

The necessity of stopping frequently to satisfy the beast's 30 mpg thirst got pretty tedious. It was at the second of the three stops I had to make on the 200 mile trip that I was mobbed by a group of keen young Shropshire bikers. They were evidently impressed by the bike's appearance, and eager to know what it really felt like to ride a rotary. I felt a bit foolish when I had to tell 'em it feels like a GT750 only a bit smoother and slower. I suppose, like I did, they expected it to be something excitingly different. That explains my disappointment with it. The RE-5 isn't a bad bike by any means, but it's not really an exciting one either. In fact, it probably looks more impressive than it feels. People seem to equate size with speed, when the opposite is true if anything. There's nothing aesthetic about that untidy motor, but its massive bulk seems to promise mind-ripping power. Then the admirers goggle and shake their heads in wonder at all the silly little gadgets when the instrument cowl flips up as you turn the key and show them the digital gear position indicator.

Out on the straight and open road the RE-5's as good as any of a whole bunch of heavy long distance cruisers, and better than a lot of 'em, but in any other situation it doesn't really live up to expectations. If you get more of a kick out of impressing people when you stop for gas than you do from the thrill of hard riding, then the new RE-5 is the bike to be seen on. But I can't help feeling it's all a bit of a sham.

SUMMARY

FOR TWO machines that represent a new direction in the development of motorcycles, you couldn't find a greater contrast than that between the DKW and the Suzuki. It's the DKW which sticks closer to the original concept of the Wankel as a simple, vibration-free power unit. A few rough edges are left on to avoid the trap of over-complication that Suzuki have fallen into. Low speed running is erratic, and the performance is fairly modest in comparison to the Suzuki, but for my money the DKW is by far the most exciting bike of the two. It has the sort of handling that gives you confidence in any conditions, the bike looks different, and it feels different.

The trouble with the Suzuki is that the engine's pleasant characteristics are buried under the ponderous complexity of the machine. It's almost as comfortable on long distance motorway trips as the DKW, and it has the advantage of being able to sustain a considerably higher cruising speed, but the overall impression is of a nondescript blandness.

On value for money, it's difficult to compare the two bikes. The Suzuki gives you a lot of very complex machinery for your money, which is OK if you want complexity and technical sophistication for its own sake; but when you realise you can buy a GT750 for £300 less, or the performance of a Kawasaki Z1 for around the same price, it perhaps doesn't seem so good.

On the other hand, the DKW may seem expensive for a bike of a mere 294cc. But the capacity rating of both machines is deceptive, so don't let the lack of cubes put you off — the DKW does feel like a much bigger bike. What's more, it's a real quality product. The Suzuki, while it is well built, still has the hallmarks of Japanese mass production techniques, such as untidy welding and nasty bits of pressed steel. The DKW's whole construction, including the ancillary equipment, combines the best of the German and Italian industries, and being totally European, the bike is far more suitable for the type of riding conditions experienced in this country than the Suzuki, which is obviously tailored for the States.

The only thing that mars the DKW's performance is the amount of fuel it uses, and it's a fault which is shared by the Suzuki. Neither are as thirsty as some two-strokes in their respective performance categories, but even so consumption figures of 40 mpg for the DKW and 30 mpg for the Suzuki do not bode well for the future of the Wankel engine in motorcycling. ●