Photography Martyn Barnwell. Studio courtesy of The Polytechnic, Wolverhampton.

KRAUSER 8-VALVE

Is this the world's first successful head transplant?

Christian Barnard, eat your heart out.

TO most British riders, Krauser means little more than fairly well made but expensive panniers. Yet Mike Krauser's engineering shop near Munich actually produces mostly mechanical hardware with the luggage as a minor sideline. Where bikes are concerned there is also the Krauser race team and for several years they ran a prototype BMW in long-distance events.

The MKM1000 descended from this venture, in the form of a frame kit which converts the BMW R100 into the sleek sportster shown here. You need a BMW to provide the engine, transmission, suspension, wheels and most of the running gear; the rest, ie anything that's not silver or black, is Krauser.

The wide, triangulated space frame is both strong and light and, as it happens, purple. What it does is to lift the engine 25mm and to extend the wheelbase by 45mm over the stock chassis. The BMW forks are stiffened to reduce their travel by 40mm while the castor is set at 62 degrees and the trail increased by 20mm. The overall result is handling which seems lighter and more flickable than a BM; a taut, rigid feel to the steering and good high-speed stability. The Krauser, so far, works precisely according to the theory. It also has significantly better ground clearance than the R100.

Krauser say that at 198kg dry, it is lighter than the BMW — but not by very much. The impressions relayed by the riding position, steering and weight distribution are far stronger and make the bike seem a lot lighter when it is on the move. But try to manoeuvre it around an awkward parking slot and you will get an equally strong impression that the Krauser is considerably heavier than a BMW.

The remainder of the conversion — an alloy tank, seat/tank unit, fairing and short handlebars give a stretched out riding position which is superb for precise handling but not so comfortable at speeds below 40mph. At higher speeds it improves but this leads us on to the big question mark hanging over the Krauser; for improvements to comfort and light handling, the big BMW is a strange choice. It already excels in these areas.

The irony is that the Krauser *is* an improvement — in the right conditions. On sweeping stretches of open road it offers comfort and control in a way which maximises the bike's performance. It can only do this because it is ▶


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far less of a compromise and consequently there are places where it isn't as good as the stock bike. The R100RS, like most big roadsters, has been developed to be good in town traffic and to suit riders of various sizes.

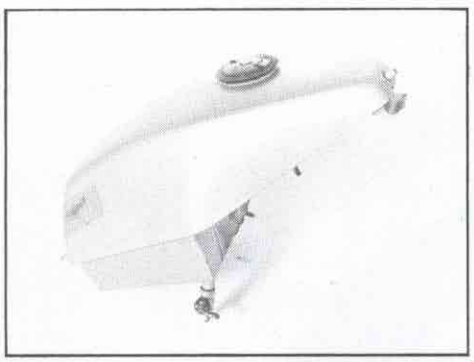
The Krauser doesn't have this flexibility. The further you stray from average dimensions, the less accommodating is the riding position. The narrow steering lock, single seat and lack of a centre stand also have their own restrictions and the Krauser's styling doesn't make it easy to strap luggage on to the bike. In mitigation, the seat pad removes, revealing a small but useful compartment in the tail; a dual seat is available; and a paddock stand is supplied with the kit but even so, the bike is not as adaptable as a conventional machine.

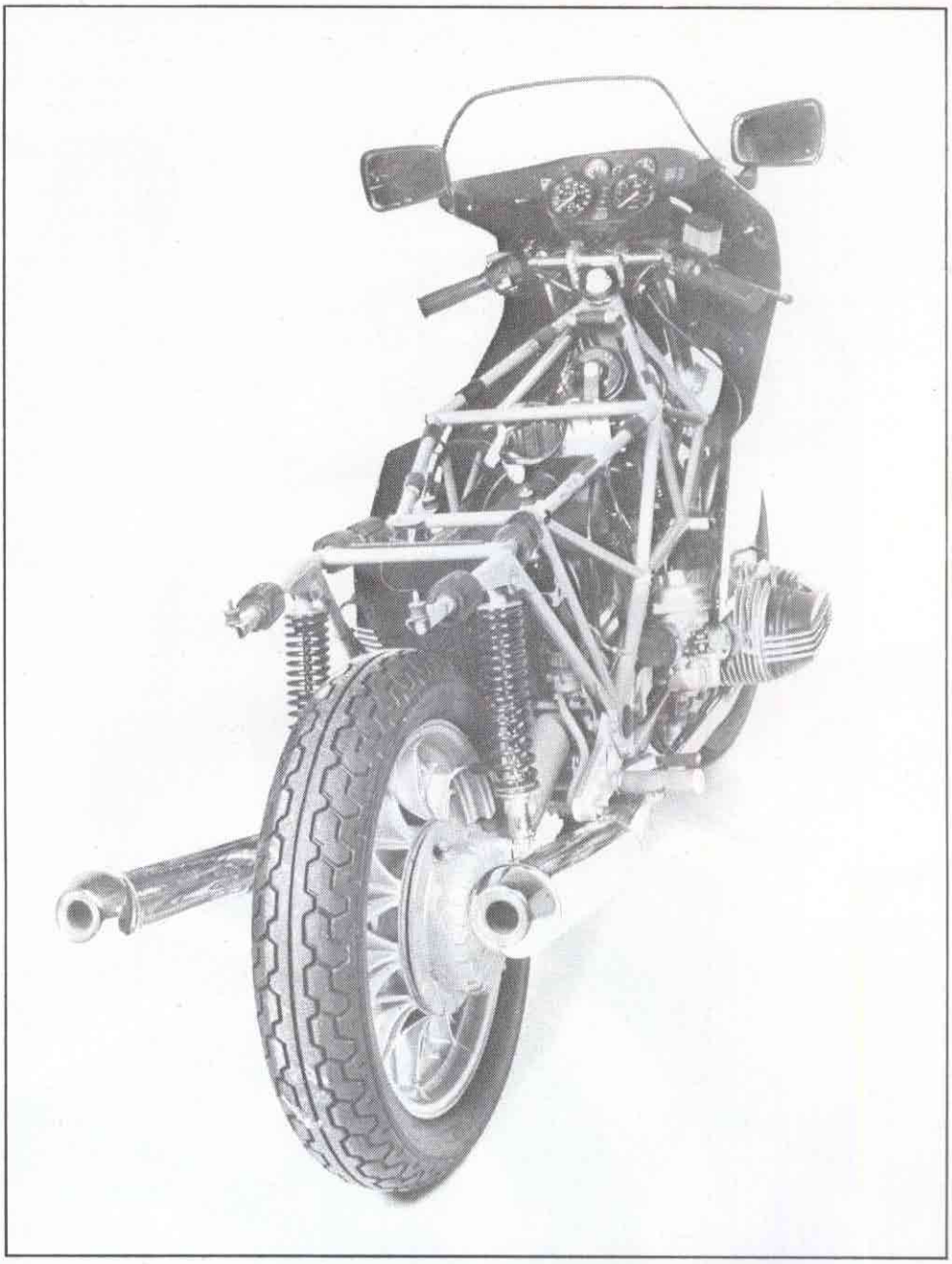
The importance of this depends on where and how you want to use it. Sheer brute performance comes in less expensive packages and in greater quantities elsewhere but, in this respect, the Krauser shows the same, disarming style as the BMWs. Just when you are wondering what all the fuss is about, you find you are consistently knocking 15 per cent off regular journey times.

It is deceptively fast, but not in the way that has you arriving in the middle of corners with an embarrassing surplus of speed.

On top of the general BMW characteristics, there is the sensation of riding a lighter, stiffer frame which is effortless at high speed and easier to flick through a series of corners without any doubt about staying on line. The feeling of lightness is confirmed by the ease in which the bike can be braked down into bends and then accelerated back up to speed again, all with the minimum of delay.

In the same way, the ride is harsh, as if the springs are too stiff for the new chassis. The front end picks up more jolts, especially at low



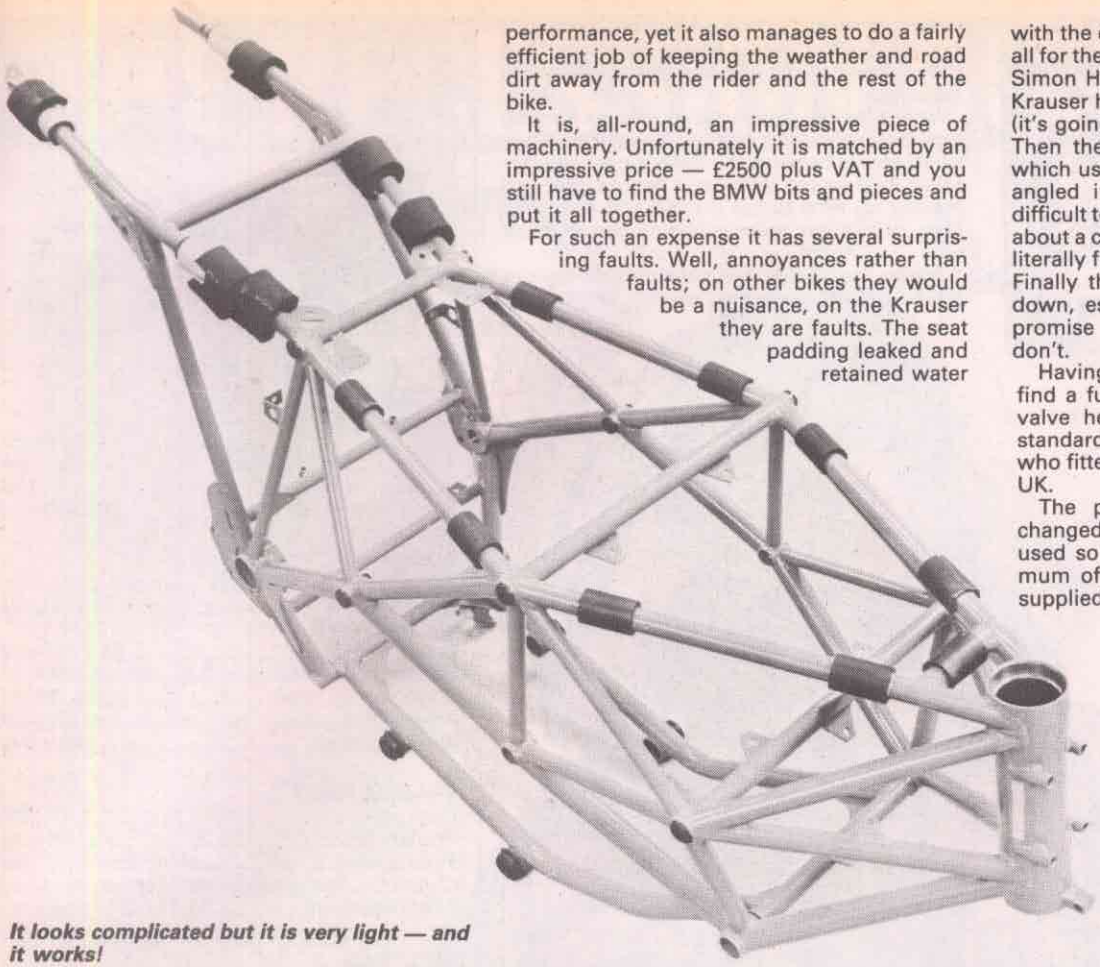


Above: ***the 21 litre alloy tank sits neatly in the frame, but the taps caused problems.*** **Top right:** ***light, low, strong, the Krauser frame is an unlikely but noticeable improvement.*** **Below:** ***the rest of the kit is high quality and fits well.***

speeds, and patters, letting the wheel come off the floor over shortly-spaced, stutter bumps. Hitting a series of these ripples at speed would make the handlebars flutter rapidly from side to side.

The BMW driveline still lifts the tail of the bike when power is put on, and squats under deceleration — but then it would, wouldn't it? It's something which always arouses comment, although it doesn't seem to do any harm — in fact it seems to be beneficial, as a touch of back brake makes the whole bike feel steadier during heavy braking or as it is heeled over into a turn.

The fairing is sleeker than the RS, or maybe it has the rider tucked away more efficiently because the bike with the stock engine reached 125mph. That was 4mph more than we managed on the RS; in fact the top speed sitting up on the Krauser was about the same as the top speed flat on the tank of the RS. Obviously the fairing isn't restricting the bike's



It looks complicated but it is very light — and it works!

performance, yet it also manages to do a fairly efficient job of keeping the weather and road dirt away from the rider and the rest of the bike.

It is, all-round, an impressive piece of machinery. Unfortunately it is matched by an impressive price — £2500 plus VAT and you still have to find the BMW bits and pieces and put it all together.

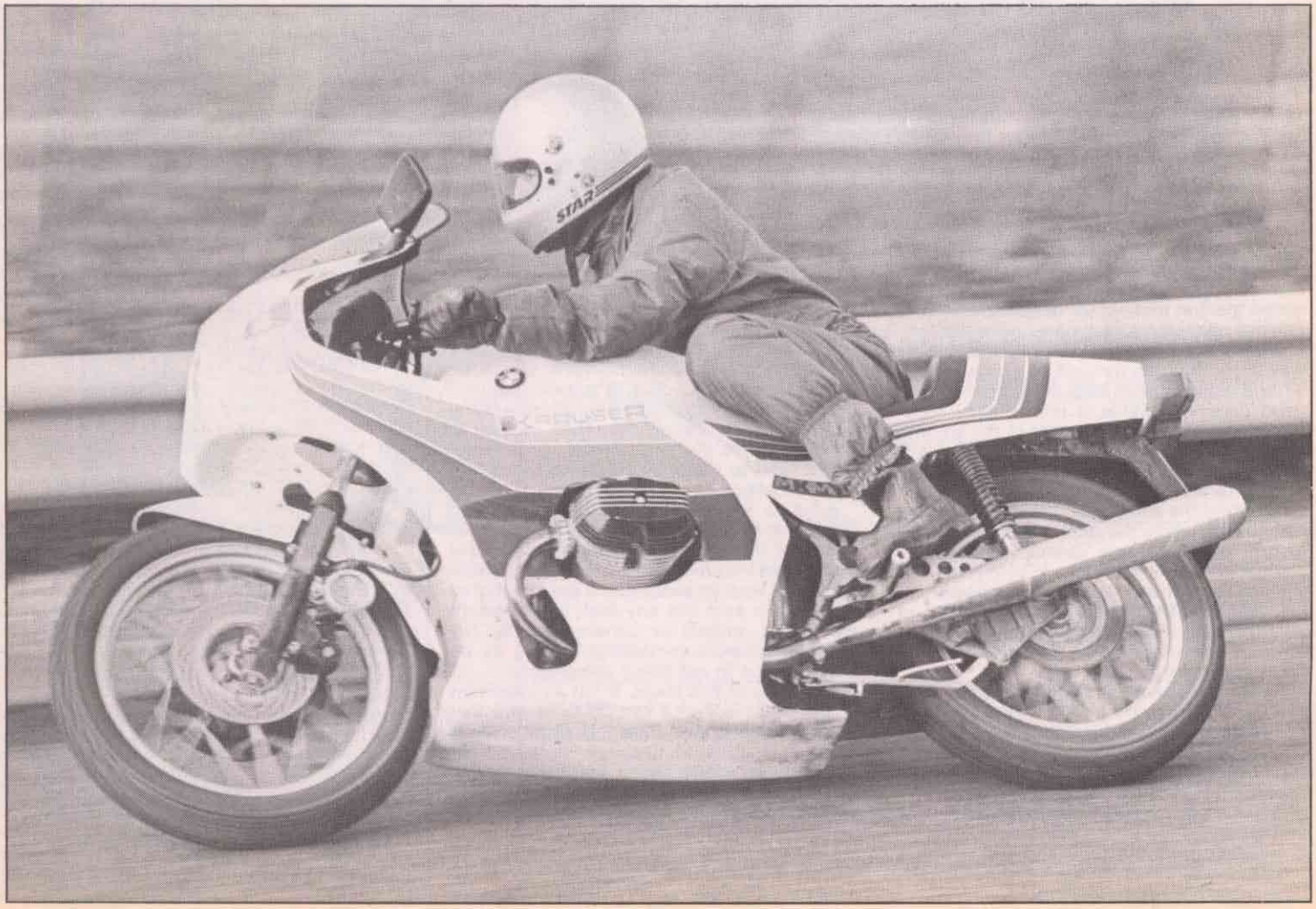
For such an expense it has several surprising faults. Well, annoyances rather than faults; on other bikes they would be a nuisance, on the Krauser they are faults. The seat padding leaked and retained water with the efficiency of a thirsty cactus, saving it all for the first backside to appear on a dry day. Simon Hill, the UK importer, assures us that Krauser have found a way round this problem (it's going to rain every day from now on . . .) Then there's the 4.6 gallon aluminium tank which uses both BMW fuel taps but has them angled in such a way as to be extremely difficult to reach. On top of that they only leave about a cupful of fuel in the reserve position — literally five or six miles worth, if you're lucky. Finally there are the omissions which come down, essentially to the bike's lack of compromise — something you either accept or don't.

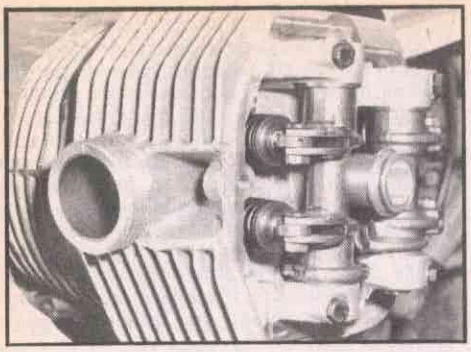
Having got this far, though, you might like to find a further £761.30 and fit Krauser's four-valve heads. After running the bike on its standard engine, we took it back to Simon Hill who fitted the first set of heads to arrive in the UK.

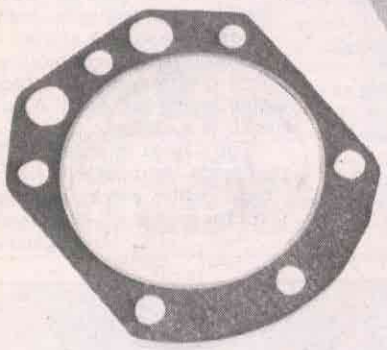
The pistons as well as the heads are changed, although the original camshaft is used so the job can be done with the minimum of mechanical fuss. Mahle pistons are supplied, taking the compression up from 9.5 to 10.2:1 and weighing roughly the same as stock.

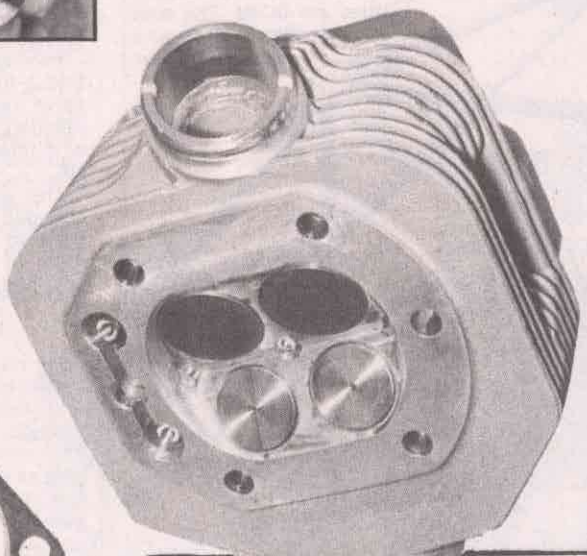
Shorter studs are used to hold the barrel and head, and new pushrods replace the originals. Inside the heads, the valves are set in the classic pent-roof layout with a central 10mm spark plug recessed deeply inside the head. A suitable wrench is supplied.

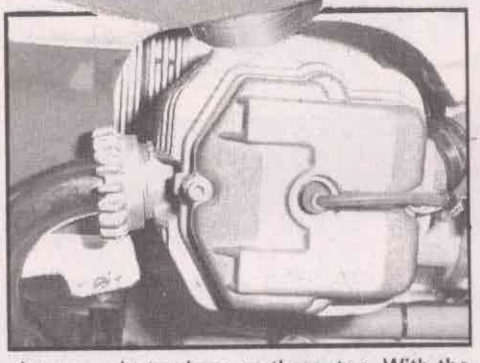
The 37mm intakes and 31mm exhausts are operated by forked rockers (the valves, springs and rocker gear are fully assembled, only the valve ▶











The four-valve kit includes high compression Mahle pistons. Eccentric rollers adjust clearance at the forked rockers.

clearances have to be adjusted.) The gap is set at 0.1mm by moving an eccentric roller which bears against the stem of the valve. Once set, the eccentric lobe is locked in position by tightening the pinch-bolt. This obviously needed doing with some care — after the first two attempts several tappets loosened off within the first thirty miles of riding. The third attempt appeared to be more successful.

Krauser claim an increase in power all the way from 2500 rpm through to a gain of 10 to 12 bhp at peak revs, with no further adjustment necessary. What is immediately apparent is a general improvement in the smooth running of the engine. The flat twin has a natural chunky vibration at low speeds and this, with no significant change in piston mass, stays the same. The difference is in the combustion where the stock motor's tendency to run rough at some speeds is noticeably smoothed out.

There is probably enough of a power increase to let the bike pull a higher gear — if an alternative bevel drive can be found. There are rumours that BMW list an optional high ratio for one of their police specs.

As the four-valve heads give peak power at 7300 rpm, stock gearing will give the same top speed as before, at around 125 mph. The difference is that it will get up there faster, our tests suggesting that it would take about 1½ seconds less to reach top speed. It is the sort of increase you notice in improved acceleration for overtaking, or for high speed cruising. Basically it gives the same top end with the rider sitting up as the standard engine with the rider tucked in behind the fairing.

What it is like on the road is the difference between riding into a strong headwind and then turning round and feeling the effect as a tailwind.

That possibly explains it as well as quoting specific performance figures — which we are unable to do because the BMW's gear selector failed, marooning the bike in second gear and leaving no time to get it fixed and finish the tests before our press schedule closed in on us.

It also meant that fuel consumption figures are less than conclusive, as any gain in efficiency ought to show up there, too. With the stock motor we were getting roughly the same as the R100RS. The best figure with the eight-valve conversion was about 8 mpg better, but this was also under very gentle riding conditions while the new pistons were being run in.

I suspect that to get the full benefits that should theoretically be there, it would be necessary to get the gearing exactly right and spent a fair bit of time fine-tuning the carburation and ignition timing. Even then, most of us would still use the extra power to go faster rather than to travel at the same speed and use less petrol.

After all, you don't lash out the best part of £6000 just to save a few drops of petrol.

Overall, the whole thing about the Krauser is that it is an improvement on the R100RS. And what is so strange about that is that most of us would have said that any such improvement was either unlikely or unnecessary. So the Krauser achieves something, if only as an object lesson in not being complacent.

The price, at this stage, is not so important — the point is that it can be done and that there are people who think it is worthwhile. A frame — and engine design — based on engineering principles rather than pure styling trends, or economic considerations can, perhaps, offer much more scope in both styling and economics.

Mike Krauser already knows it. But most of us will, I guess, just have to wait until the Japanese discover it.

John Robinson

PERFORMANCE

Maximum speed	
sitting up	124.6mph
prone	125.0mph
Standing start ¼-mile	N/A
Fuel consumption	38 to 48mpg

ENGINE

Type: BMW horizontally opposed OHV twin with Krauser four-valve heads and Mahle pistons.

Bore x stroke	94 x 70.6mm
Piston displacement	980ccm
Compression ratio	10.2:1
Fuel system	two Bing CV
Ignition system	electronic

TRANSMISSION

Gear ratios	4.4; 2.86; 2.07; 1.67; 1.50
Primary drive	helical gear
Final drive	shaft and bevel gear
Clutch	dry, single plate, diaphragm spring
Final reduction	33/11 (32/11 optional)

ELECTRICS

Generator	12V, 280VA alternator
Battery	12V, 28Ah
Headlight	12V, 60/55W

CHASSIS

Type: Krauser space frame using BMW forks and rear suspension, BMW brakes and wheels

Front tyre	3.50V-19
Rear tyre	5.10V-18
Front brake	twin disc
Rear brake	single disc
Front suspension	telescopic fork with 160mm travel
Rear suspension	swing arm with 3 position pre-load springs
Castor/trail	62deg/100mm (3.9 inch)

DIMENSIONS

Wheelbase	1510mm (59.4 inch)
Overall length	2220mm (87.4 inch)
Overall width	746mm (29.4 inch)
Dry weight	198kg (436lb)
Fuel capacity	21 litre (4.6gal)

PRICES inc VAT

Krauser frame, seat, tank, fairing, etc. (parts are individually available)	£2875
Krauser 4-valve heads, pistons, etc.	£761.30

WARRANTY: six months, unlimited mileage

IMPORTER: Krauser Imports UK, Unit E1, Grafton Way, West Ham Industrial Estate, Basingstoke, Hants.

TESTER'S VERDICT

Good points	high speed handling and comfort
Bad points	price, lack of compromise
Performance	deceptively quick
Economy	didn't live up to promise
Handling	taut, precise
Comfort	progressively better above 40mph
Braking	improved by light, rigid frame
Equipment	expensive but high quality
Value	strictly in the wallet of the beholder