

EUROCRUISERS

BMW R100RS and R100CS

Just popping over to Berlin for the day

AND why not? The AA recommended route Zeebrugge-Berlin is only 524 miles, a simple ten-hour blast through Belgium, The Netherlands, West and East Germany. Of course, there were the extra four hours to get from Poole to Felixstowe, but they were an

investment because Townsend Thoresen slow down their night boat from Felixstowe to leave time for a good night's sleep and photographer Roger and I had a cabin booked.

We also had two big BMWs. It's easy to look at performance figures and dismiss

BMWs as slow. It's also easy to search fruitlessly for technological gizmos and dismiss BMWs as old fashioned. But there aren't many machines that can deliver you feeling fresh after cruising at high speed for a day.

Not that there was anything very fresh about Roger and I when we arrived at our

PERFORMANCE CHART

CS figures on white background. RS figures are all best one way, see text.

FLEXIBILITY IN TOP GEAR(sec)

mph	30-50	40-60	50-70	60-80	70-90	80-100
solo	5.43	5.59	5.64	6.46	7.16	9.30
solo	5.15	4.43	4.96	5.79	6.61	7.67

MPG

Best	55	51
Worst	39	43
Overall	47	48

Oil used

Negligible

BRAKES(both)

mph	solo ft	pillion ft	solo ft
30	29	38	31
40	54	66	61
50	102	117	102
60	161	179	142
70	200	221	191

MAXIMUM SPEEDS and SPEED RANGES

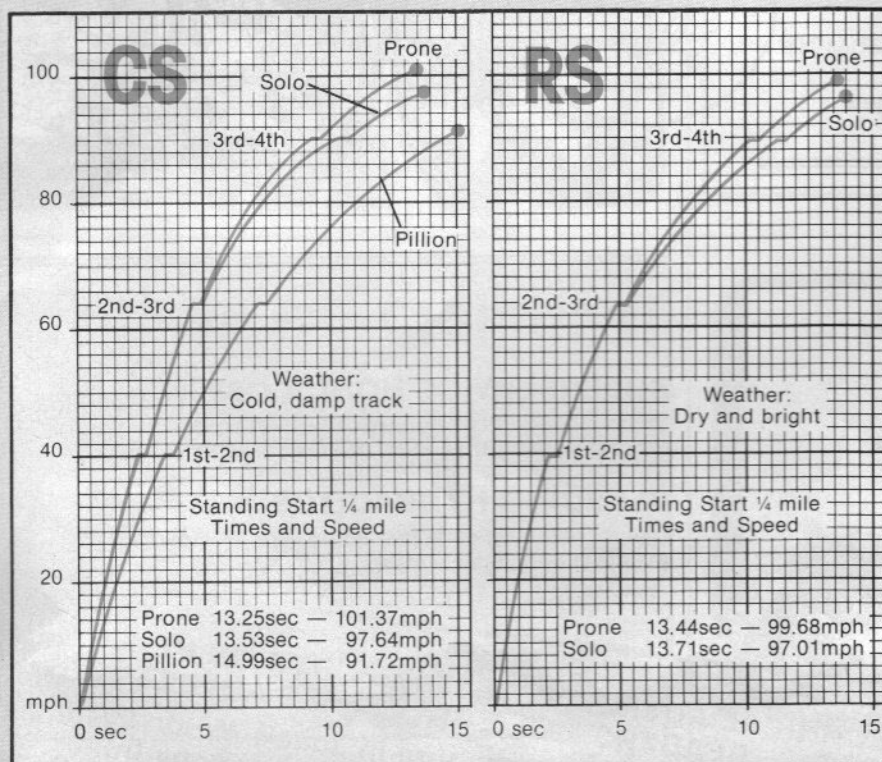
Gear		mph max	mph min	mph 1000rpm	mph max	mph min	mph 1000rpm
1	solo	42.47	6.35	6	44.04	4.63	5
2	solo	66.43	8.58	8	66.63	7.55	8
3	solo	91.47	11.50	12	91.90	10.18	12
4	solo	111.44	15.85	15	114.36	12.32	15
4	pillion	106.67	"	"	—	—	—
4	prone	114.89	"	"	116.34	"	"
5	solo	111.97	17.66	18	118.62	13.48	17
5	pillion	105.25	"	"	—	—	—
5	prone	118.55	"	"	121.19	"	"
Best one way speed		121.99mph		121.19mph			

Milometer

Accurate

SPEEDO

ind	true	true
30	29	29
40	38	39
50	47	49
60	56	59
70	66	68
80	74	78
90	84	87



Performance figures obtained at: M.I.R.A. Test Track, Nr. Atherstone, Warks.
Test Riders: Neil Millen, Charles Deane.



Berlin hotel 29 hours after leaving home. We never saw our cabin because the boat sailed while we were finishing a Chinese meal in what seemed to be Felixstowe's only restaurant. There wasn't another boat from Felixstowe until nine o'clock in the morning, too late to get us to Berlin by the following evening, so we got back on the bikes for three more hours to squeeze on to Townsend's two-thirty a.m. Dover-Zeebrugge boat along with the last few juggernauts.

The super-accurate clocks built into both fairings make tight timing like this easier. You know whether or not you have time to search for toilets or top up with fuel before entering the dock. Five-gallon tanks also help by cutting out a lot of time-consuming fuel stops. Riding fast, though not flat out, we only had to stop every 190 miles or so

with plenty left in reserve. Staying within speed limits could push that figure nearer 300. The sub-50mpg overall figures quoted for the test bikes reflect how much time they spent on motorways.

Four hours after leaving Dover, including a couple of hours' fully-clothed sleep in an almost deserted passenger lounge with a crew: journalist ratio of about 10:1, we rode into sub-zero Belgian fog. Visibility was so bad that our speed was down to 40mph. We rode with our visors open after they froze over, but had to pull into a service area a few kilometres later because our faces were numb and our eyes and mouths were frosted. Yessir, we're all-year-round motorcyclists.

An hour later, the fog started to lift and so we set off again. The day soon blossomed into bright sunshine and dry

roads, so we settled down to making up for lost time.

Both bikes had been fitted with BMW panniers for the trip. A warning inside these cases tells you not to go over 80mph, but we were nudging three figures most of the time and the bikes only tried to weave if something upset them. Shutting off quickly, especially in a bend, was a good way to get the tails weaving, but road markings were the best.

Neither bike liked the big twitches that came whenever the Metzeler tyres were asked to cross lane markings or tarmac joints. In a corner, the tyres would jump straight over anything shiny or painted. Recovery was instant on dry roads, but less secure in the wet.

The occasional let-down from the tyres highlighted another BMW strength. A low



EUROCRUISERS

centre of gravity may make them prone to high-speed weaves when laden in the wrong places, at least that's Honda's excuse for the Gold Wing, but at all other times the bikes feel like kiddies toys that can't be knocked over. Slides can be felt without fear, crosswinds and lorries' slipstreams cease to be a problem, even with the large wind-catching area of the RS fairing.

It is all these subtle things, the things that don't show up on a spin around the block, that make BMWs so good at going a long way in a short time. Roger and I sometimes refuelled and rode straight off again, eager to get another three hours of road behind us as soon as possible. On other bikes there wouldn't be much point in getting 200 miles out of a tankful because you'd need a break every 100 miles or so.

Cold comfort

The seats of the R100s stayed comfortable for every moment of the trip apart from the outside edges of the seat pan digging in underneath my thighs. Longer-legged riders will never get this problem. The first-aid kits have been moved to the tails so they no longer cause an uncomfortable lump at the front of the seat.

After a respectable amount of sleep, the only after-effects were that we both ached between the shoulder blades. This was probably the result of gently pushing our heads against the wind pressure for too long and could happen on almost any bike, although I think it was aggravated by the hunched-forward riding position of the CS and RS. Even so, for me the low bars and rearset footrests are near ideal. On bikes with higher bars, like the BMW R100RT, I trade neckache for backache.

Another minor discomfort that bothered us both was cold necks. Even the CS fairing was very effective at taking pressure off the body but, like all good fairings, the slipstream pushed air at the rider from behind. Expecting a balaclava and a scarf to keep out the sub-zero draught was expecting too much. After hours of riding with nothing else to think about, my cold neck became the most important thing in my universe.

If we had been unlucky enough to get rained on, there's little doubt that we would have ended up fighting over whose turn it was to ride the R100RS. I know from past experience how effective it is at keeping off most of the water and there's nothing like a constant flow of water to make you cold, even when wearing a Lewis Leathers' Teddy Bear suit under a waterproof oversuit.

As it was, the RS rider could survive in fur-lined gloves with silk liners. We wouldn't have been comfortable on the CS without Audiorama heated inner gloves. The RS bars are very narrow to keep them inside the fairing, but I wasn't conscious of the difference when changing from one bike to the other.

Undoubtedly a masterpiece of aerodynamic design, the RS fairing protects the rider without isolating him from the road like so many huge touring fairings. Neither does it behave like a barn door at speed. Wind pressure is controlled to keep the front wheel firmly on line and the forces are fed through to the specially-designed frame to leave the steering light. The RS also has a three-position steering damper, but altering it didn't seem to have any effect.

For all that, I think I preferred the CS. Having wind whistling around your limbs is

part of the pleasure of motorcycling. And for me the RS's screen was just high enough to dump turbulent air around my helmet, causing a roar that made my ears ring at the end of the day.

Ah, the end of the day. Although we'd got back on schedule by the East German border, there were still 150 miles of transit road to go before we reached West Berlin. Against a background of watchtowers, barbed wire and bulldozed no-man's-land, it's a little worrying to see your passport swallowed by a conveyor belt in a rattling, galvanised tunnel.

After playing pinball around a collection of huts containing crumpled, grey border guards who took money, dispensed transit visas, and instructed us to take our helmets off to make sure we matched our photos, we got the passports back and were waved on.

Dirty weather

Wrapping up again took another quarter of an hour, by which time it was dark. The East German *autobahn* was wet, so I was glad that local authorities out there have plenty of money to spend on salt, even though the filthy spray soon got so thick on our visors that wiping made no difference.

Most of the time we were travelling at 50mph or less, making West Berlin another three-hour slog. When we took our helmets off again for the second set of guards, we discovered that the spray was frozen on our visors. The temperature had dropped to minus eight centigrade.

The CS's headlamp was also obscured, not by ice, but by a quarter-inch thick layer of salt baked on by the heat of the H4 bulb. The window in the RS fairing stayed clear, while the whole fairing also stayed remarkably clean, which shows how smooth the air flow over it must be.

With the help of the Town Plans booklet in the AA Overseas Route Planning Pack navigation in Berlin should have been easy. The problem was that I had mixed up the

TECHNICAL SPECIFICATIONS

Figures for R100RS in square brackets where different.

Engine

Type: Air-cooled, pushrod-operated, horizontally-opposed, twin-cylinder four stroke.
Bore x stroke: 94 x 71mm.
Displacement: 980cc.
Compression ratio: 9.5:1.
Carburettors: Two Bing V94, 40mm CV type.
Max. horsepower: 70bhp @ 7000rpm.
Max. torque: 7.8kg.m (56ft.lb.) @ 6000rpm.
Lubrication: Wet sump, 2.25 litres (3.9 pints) capacity.

Transmission

Type: Five-speed, constant mesh.
Final reduction ratio: 2.91:1 [3.00:1].
Overall gear ratios: 1st 12.80 [13.20], 2nd 8.32 [8.58], 3rd 6.02 [6.21], 4th 4.86 [5.01], 5th (top) 4.37:1 [4.50:1].
Clutch: Dry, single-plate, diaphragm type.

Frame and Forks

Frame: Welded, tubular, twin-downtube cradle.
Front suspension: Coil-sprung, hydraulically-damped, telescopic forks.
Rear suspension: Swinging arm controlled by twin coil-sprung, hydraulically-damped units with three adjustable pre-load settings.
Front travel: 200mm (7.9in.).

Rear travel: 125mm (4.9in.).
Trail length: 95mm.
Fork oil capacity: 250cc each leg.

Wheels and Brakes

Front tyre size: 3.25H19.
Rear tyre size: 4.00H18.
Front brake: Twin hydraulically-operated discs, 260mm diameter.
Rear brake: SLS, rod-operated drum, 200mm diameter [single hydraulically-operated disc, 260mm diameter].

Electrics

Ignition: Transistorised with battery and coils.
Battery: 12V, 28Ah.
Alternator: 280W @ 1800rpm.
Headlight: 60/55W, H4.
Tail/stop lamp: 5/21W.
Indicators: 21W.
Warning lights: Turn, generator 3.0W; oil pressure, main beam, neutral 1.2W.

Dimensions

Seat height: 820mm (32.3in.).
Length: 2210mm (87.0in.).
Width: 746mm (29.4in.).
Height: 1210mm (47.6in.) [1300mm (51.2in.)].
Wheelbase: 1465mm (57.7in.).
Ground clearance: 150mm (5.9in.).
Dry weight: 200kg (441lb.) [210kg (463lb.)].
Fuel tank: 24 litres (5.3 gallons) including reserve.





COMPARISONS

Make	Speed prone	SS 1/4 mile prone	Dry weight	Claimed bhp	mpg	Price inc. VAT
BMW R100CS	119mph	13.25sec/101mph	441lb.	70 @ 7000rpm	47	£2795
BMW R100RS	121mph*	13.44sec/100mph	463lb.	70 @ 7000rpm	48	£3497
BMW R100RT	110mph	13.51sec/97mph	463lb.	70 @ 7000rpm	52	£3497
Suzuki GS1000GT	124mph	12.76sec/105mph	562lb.	91 @ 8500rpm	46	£2300
Kawasaki Z1000ST	126mph	12.17sec/112mph	566lb.	93 @ 8000rpm	40	£2199
Moto Guzzi Spada	118mph	13.58sec/93mph	460lb.	not quoted	46	£2699

BMW factory address with the hotel address. The factory is in Spandau, not Berlin proper and Spandau isn't included in the Town Plans booklet.

It took an hour of asking, pointing, not understanding, stopping and asking again to find the factory. Having realised my mistake, it only took another 15 minutes to find Kaiserdamm with the Town Plans and stagger gratefully into the Hotel Excellent, which lives up to its name at a reasonable price.

The biggest compliment I can pay the bikes is that, after a day spent at the factory, some food and a good night's sleep, the idea of getting back on the road was quite attractive. The return journey went smoothly and only took ten hours, a 50 percent improvement on the outward trip.

As for reliability, it was total. In the usual BMW way, the electric starters always sounded as though the battery was flat, but always shook the engines to life after a few moments. With no chains to adjust, the beautiful toolkits only came out when the heated glove liners needed attention.

It has become a cliché to describe BMWs

as smooth but it's only sort of true. The two bikes in this test certainly didn't vibrate in the high-frequency, tingling way that can make four-cylinder bikes uncomfortable after an hour or two. Nor did they vibrate in the bracket-fracturing, nut-loosening, bulb-blowing way that lets Triumphs down so badly.

But they shake at tickover and there's a harsh edge to the beat of the engine under acceleration. Mostly this is a harmless sensation that adds to the pleasure of the gutsy power delivery, but the mirrors suffer quite badly. They are only clear enough to be really useful for about half of the rev range and then only on a feathered throttle. The large, fairing-mounted mirrors on the RS suffered less than the small, round, bar-mounted ones on the CS.

Because they do all the big things so well, and because of the price, little things become important on BMWs. The tyre pump and puncture repair outfit are a good idea, but the valves are so close to the spokes of the new alloy wheels that there's barely room to squeeze on the pump or a garage air line. Angled adaptors are available. Also, I'd feel safer with tubeless



EUROCRUISERS

tyres on bikes that can so effortlessly cruise at over 100mph.

There's nothing gimmicky about the clock, it's a very useful device. But will someone tell me what I'm supposed to learn from the voltmeter? The generator light already says that the battery is being charged.

It's a pity that the speedos can't always be as accurate as the clocks. Also, the fairings force the dials to be too small to leave room for kph scale, which could be useful for continental touring. The tripmeters and mileometers were the only instruments that couldn't be read at a glance at night.

Secure but not slick

The more cramped cockpit of the CS leaves the ignition key in its traditional BMW place at the side of the headlamp shell, while the RS has room up front. Old-fashioned steering-head mounted locks waste valuable gin and tonic time outside the golf club. Worse still, they tempt you to leave the bike unlocked during quick visits. I would have preferred combined ignition/steering lock switches of the kind that are becoming standard on most Japanese bikes. On the other hand, it would be nice if most Japanese bikes had cable locks of the kind that are tucked into the top frame tubes of all BMWs.

BMW's brief flirtation with bleeping indicators is, mercifully, over but they ought to have been replaced with a self-cancelling system if Yamaha can manage it on competitively-priced 250s.



RS cockpit includes key and damper



New side stands are a big improvement

The new bar-mounted choke levers are delightfully easy to use, but they seem to have forced the dip/flash, turn and horn controls too low and too close together.

Both bikes have new side stands, a big improvement on the old ones that used to spring up whenever the bike was pushed or even sat on. But groping for the tiny prong to put the stand down leaves molten Derriboot all over the exhaust and you need long legs to flick the stand up again while sitting on the bike. The RS has a socket between the side panel and seat for a wanderlight that can be bought as an optional extra. I couldn't find helmet holders on either bike. The fuel tanks and seats can be left unlocked, which I found very convenient on long trips.

Picking holes in these minor areas only serves to emphasise how good the big things were for touring. The long-travel suspension that other manufacturers are only now beginning to match is superb. Perhaps it is to this that the legend refers when the bike is described as smooth. Even the RS with its larger fairing weighs less than most current 750s, yet the bikes float level on almost any road surface. The ride is unequalled.

Sports tourers

Handling is better than it ought to be, too. Those rocker boxes are a lot further from the ground than they look, yet some people (not I) regularly touch them down. The 1000cc BMWs are the culmination of generations of single-minded refinement of the touring motorcycle. As such they make pretty good sports bikes, but not perfect ones.

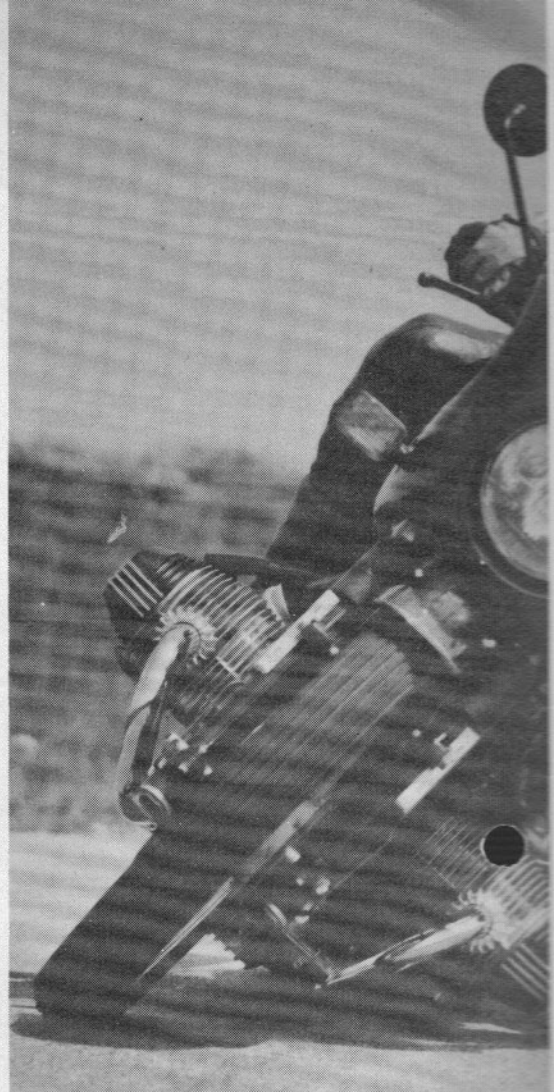
The springs avoid bottoming by having a lot of travel at both ends and a simple-to-use, three-position hand lever to alter pre-load at the back. They have to start very soft to allow them to react so well to the road surface despite the low sprung weight yet, even in bends, the bikes can ride level and soak up bumps without changing line. Problems only start if the rider inputs are less than smooth.

Touch the powerful, double-disc front brake and forks dive. Whack open the throttles and shaft drive jacks up the rear end. Close the throttles quickly and it squats. Change down one too many gears and the powerful engine braking can lock the rear wheel. Going into a bend fast, doing all these things as the situation develops, is a messy business.

The same limits apply to the gearbox.



RS with disc on left, CS with drum on right



CS has enough fairing for high-speeds



Valve too close to spoke for access



Over the years the gearchange quality has been improved to the extent that the changes on the test bikes were light, positive, and silent. Yes, silent. In the top three gears relaxed clutchless changes slid through beautifully.

Trying to rush changes brings back all the old crunchiness and false neutrals, but is never necessary. The engines are so flexible that it's hard to be caught out in completely the wrong gear.

Slick and quick

There's no lack of performance for sports riding, however, even though this would seem to be the bikes' weakest point on paper. The spread of power is so wide that anyone can pull away from traffic lights at near-maximum acceleration without fuss. It takes an expert or an idiot to get under 12 seconds on a Jap bike and you can bet that any police within earshot will want to enquire further. Similarly, getting up to 100mph and more on the CS and RS is a top-gear-only surge from 30mph.

Leaving aside the fairings, the practical differences between the RS and CS are few. One of the most obvious ones is that the RS has a disc rear brake in place of the CS's drum. I preferred the disc because the lever had shorter travel and so the lack of space between the footrest and the carb inlet manifold was less of a problem.

All BMWs have the same internal gearbox ratios. The RS has been given the slightly lower final drive ratio of the R100RT but the difference is only one mph/1000rpm in top gear. It isn't noticeable on the road and even the track figures show no practical differences. Due to a shortage of people, we only track-tested the CS this time around. The figures for the RS are reprinted from our May '77 test, so the maximums are best-one-way speeds.

Summary

The qualities of BMWs are subtle. One of the pitfalls of testing is that a part which does its job perfectly it can go unnoticed.

These bikes would pass unobtrusively through most road tests if it wasn't for their prices, coming out of some rather badly after being chucked at favourite stretches of country lane before the riders had become used to the few oddities. Luckily for the R100RS, it's hard to casually dismiss something costing £3497. The R100CS is much less exotic at £2795.

They are not the fastest, the best handling, or even the most comfortable 1000cc plus motorcycles, but they have large doses of each of these qualities in the right proportions for long-distance, high-speed touring. Given the chance to prove themselves they are unequalled.

Neil Millen

STAR RATINGS

Our star system gives a quick reference to the standard reached in performance and engineering. The standard is:-

* = Poor; ** = Below average; *** = Average; **** = Above average; ***** = Outstanding

Performance	***
Handling and Ride	****
Servicing	****
Engine	****
Transmission	***
Frame and Forks	***
Wheels and Brakes	***
Electrics	***
Dimensions	****
Equipment and Finish	****
OVERALL	****

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