

BMW R100RS

If you have to ask the price, you can't afford it.

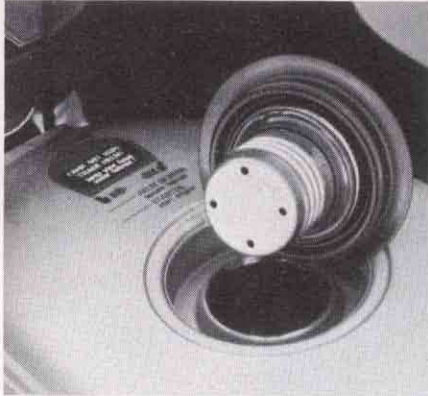


When the energy crunch bared its fangs a couple years ago and the world's economic situation went to lunch, the only non-essential items that could be counted on to sell well were big, expensive cars, the biggest-buck boats, the sky-high-priced motor homes, and the top-dollar houses. Logic says that since the poor and middle-class guys didn't have any money, the wealthy guys must have gotten it, and they were going to buy only the best.

Perhaps BMW foresees another economic crisis during which only the highest-priced products will sell briskly again. We were led to this conjecture when we learned the price of the 1978 BMW R100RS. Before we reveal its price, look at the pictures and try to guess how much this motorcycle costs. Do we hear \$4000? How about \$4500? Will anybody bid \$4800? \$5000?



The BMW's locking gas cap can't be over-tightened. A new drain hose carries overflowing fuel to the ground instead of allowing it to run all over the engine.



What's that you say? Five grand is too much to pay for most cars and for *any* motorcycle, save perhaps a full-on, ultra-limited production racer intended for some professional to earn his living on? Well then, you better sit down, because this sleek silver number here is going to dismantle its buyer's budget to the tune of over 5500 bucks by the time tax and license are paid. And we don't even want to talk about insurance.

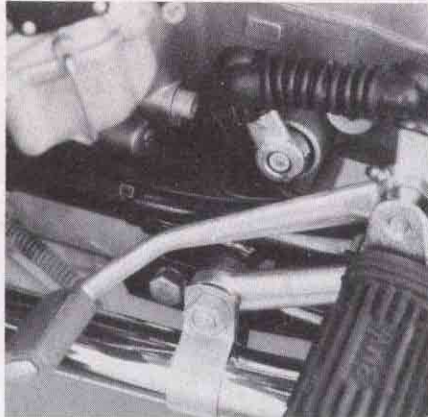
BMW's weren't always priced so horrifically. Back in the late sixties they were right in the ball park with the rest of the guys. But somewhere in the shifting currency exchange rates, the changing costs of materials and energy and the price of hay, BMW's prices—at least in relation to the prices of goods manufactured outside West Germany—began to climb. At first prices seemed to reflect the cost of the famous German craftsmanship. Then BMWs became viewed as elegant motorcycles, more expensive but classy enough to deserve the price. But when we heard the price of our 1978 R100RS test bike, our first question was, "What have they done to make it worth *that* much?"

THE BIKE: BMW has always confined itself to making yearly small refinements to its machines instead of introducing all-new models, and in keeping with that tradition, the 1978 R100RS has received no drastic changes. The engine and chassis are the same as those on the '77 model—the '78 differs only in minor accoutrements and in price.

The biggest physical change to the R100RS is its rear brake, which now uses a perforated disc the same size as the two brake discs on the front wheel. Instead of the blue-anodized, single-action hydraulic caliper used up front, however, the rear wheel is fitted with an Italian-made Brembo double-action hydraulic caliper anchored by a large alloy casting.

A new, one-piece, intricately-spoked, cast alloy wheel comes as standard equipment with the disc brake, and is matched by a similar cast front wheel. Although they are slightly heavier than BMW's al-

By pivoting at the same point as the rider's foot, the new shift linkage makes for smoother, more positive shifting.



loy-rimmed spoke wheels, the cast wheels are much more rigid.

Eye-catching refinements aside, the 1978 R100RS soldiers on in the BMW tradition. The 979.9-cc four-stroke, horizontally-opposed twin is based on the same design as, and uses parts mostly interchangeable with, other modern BMW engines. All BMWs within memory have used pushrods to operate their valves and have had 70.6 mm piston strokes, although the 1977 machines were the first with alloy pushrods and redesigned cylinders with shorter fins to reduce mechanical noise. The '77 R100 series was also the first with 94 mm bore sizes, which, combined with a higher 9.5:1 compression ratio, boosted power over the R90 series. To keep fuel consumption and emissions down, BMW chose 40-mm Bing constant-velocity carbs.

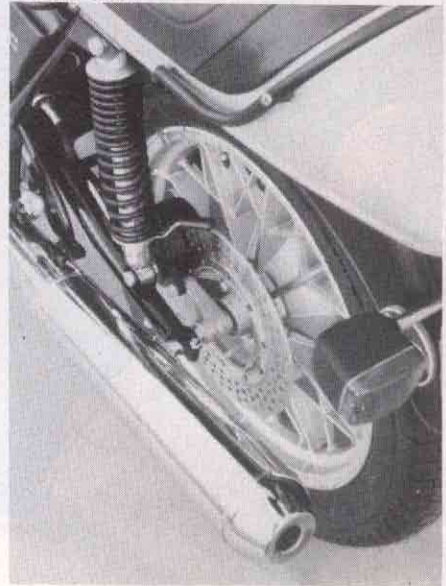
The same plain-bearing crankshaft, lying in a front-to-rear plane, is at the heart of every BMW engine. The added stresses created by the big 1000-cc engine are handled by a beefed-up version of the huge crankcase casting which first appeared on some 1976 models and is now standard on all models. A chain at the front of the crankshaft drives the camshaft below the crank.

A large-diameter, single-plate dry clutch behind the massive flywheel passes power to the five-speed gearbox. A new external shift linkage, which makes the lever pivot at the same point as the rider's foot, has been added this year in the interest of smooth shifting.

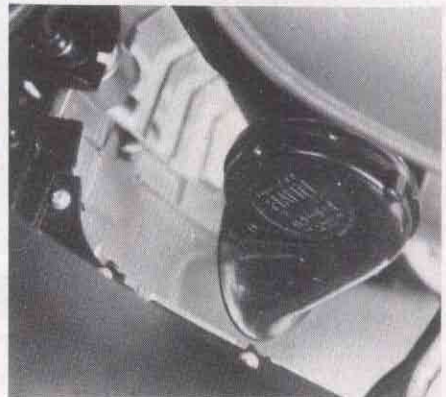
The transmission's output shaft plugs power into a universal joint at the pivot point of the swingarm. A driveshaft inside the swingarm's right leg ends in the pinion gear, which drives the rear wheel's ring gear.

A simple single-backbone frame with a bolt-on rear section ties the machine's components together. A leading axle fork assembly provides 7.2 inches of front wheel travel—a humongous amount far in excess of any other street bike—and the Boge rear shocks allow 4.3 inches of rear wheel movement. Permanent handles on

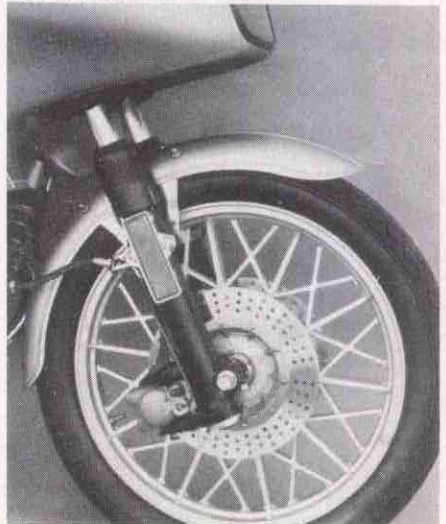
Although the old drum brake was entirely adequate, the new disc brake on the rear wheel is in keeping with current trends. Fortunately, it works as well as the drum did.



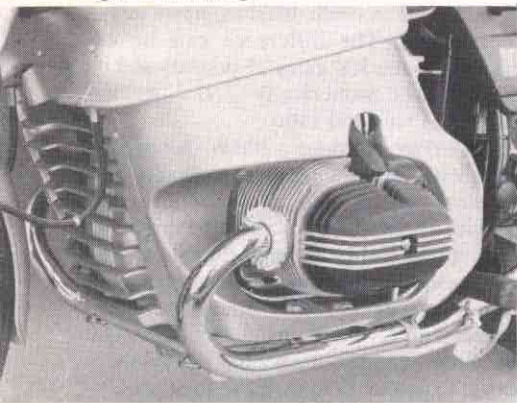
The dual Fiamm horns are loud—especially if you're in the fairing along with them.



A very strong squeeze is required to get the most out of the dual-disc front brake.



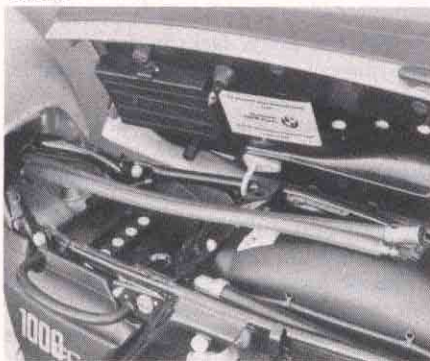
The fairing and cylinders protect the rider's legs and feet from the elements. The grill portion of the fairing must be removed to set the ignition timing.



Those lines on the headlight cover are decorations, not defrosters.



A new feature on the RS is this folding cable lock. When not in use, the system may be folded and slid up into the frame's backbone tube.

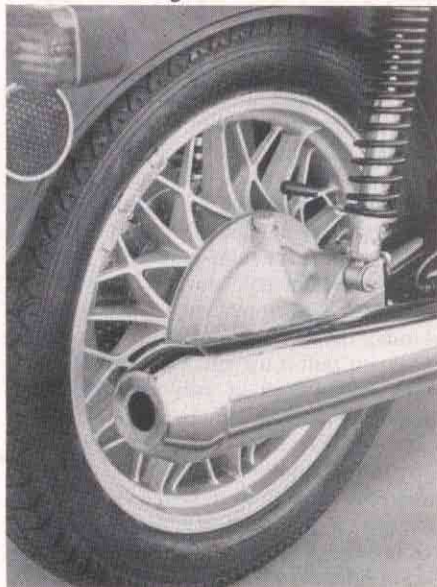


the shock-spring preload collars permit the preload to be set to any of three positions without tools.

What sets the R100RS apart from other BMWs—and other motorcycles—is its unusual wind-tunnel-developed, full-coverage fairing. The plastic fairing surrounds the front of the motorcycle, permitting only the cylinders and fork to protrude. The front turn signals, the headlight and a horizontal bar-shaped parking light above the headlight are built into the fairing's exterior, with the superb quartz-halogen headlight mounted behind a glass cover decorated with five horizontal orange stripes. Mounted to the inside of the fairing are a voltmeter and a new, more accurate quartz clock. The fairing swells a bit to enclose the very flat, narrow handlebars.

The fairing's swoops and angles are more than styling tricks or a comfort consideration because they reduce front wheel

The "mag" wheels are heavier than BMW's wire wheels, but they pay their dues with increased rigidity for better handling.



lift considerably and improve wind penetration slightly. The fairing accounts for 20 of the bike's 492 pounds, making the RS heavier than any BMW we've ever tested, but lighter than any other 1000 and almost all 750s.

Sharing the fairing's satin-finish silver paint job with blue pinstripes (a gold paint scheme will also be available this year) are the huge locking-cap gas tank (which we measured at 6.6 gallons, although 6.3 is the claimed capacity), the fiberglass front fender, the side panels and the back of the locking seat. Our bike was equipped with a dual seat, but a solo seat—which will carry a passenger in a pinch—will be available at no extra cost.

Besides the streamlining, seat choice, mag wheels and rear disc brake, the extra \$730 you pay for an R100RS instead of the R100S (which in turn is \$690 more than the R100/7) also gets you dual Fiamm horns, which are potentially the best in the business. Unfortunately, much of their impact is diminished by their location inside the fairing, which blocks some of their bellow. Still, the Fiamms are effective enough to get the attention of the nerd in the Mercedes who just cut in front of you.

BMW has joined Honda and Kawasaki in installing turn-signal reminder beepers. However, BMW has wired its beeper to the electric starter interlock system, which originally served to insure that the electric starter wouldn't operate unless the gearbox was in neutral or the clutch lever was pulled in. The turn beeper system works just the opposite: If the clutch is pulled or neutral selected, the beeper doesn't sound. So it won't annoy you with its beep while you're sitting at a light, but it will start again when you pull away. To further insure that you won't forget to cancel your signal (you can't always hear the beeper at highway speeds), BMW has

PHOTOGRAPHY: ART FRIEDMAN



moved the turn signal indicator light to a more eye-catching spot at the top of the panel which contains the speedometer and the new electric tachometer.

The on-off switch for the lights is gone this year. The lights on a new BMW will be on whenever the machine is running. We're not particularly fond of the layout of the remaining handlebar switches, especially the right-side turn signal switch which moves up-and-down instead of side-to-side. However, we will admit that the size and feel of BMW's switches makes them much surer-than-average to use with heavy gloves or cold-numbered hands.

The RS is equipped with BMW's unique stands: the centerstand that stays down until you pull it up and the sidestand that pops up as soon as you take the bike's weight off it. The centerstand is particularly well designed and placed: It's very easy to rock the bike up on to it, and once there the bike is perfectly balanced and will rest on either wheel so you can spin or remove the other. The sidestand has a large foot, useful on soft surfaces, and the automatic retraction insures that you won't ride off with the stand extended. However, someone unfamiliar with the machine could sit the bike up for a moment or bump it, which would allow the stand to snap up. When this person sought to put

the R100RS back on the stand, not knowing it had retracted, . . . well, a new fairing wouldn't come cheap.

ENGINE AND GEARBOX: The BMW R100RS doesn't come out punching the way some of its superbike competitors do, but what the BMW lacks in tire-smoking, high-rpm power, it makes up for in usable, real-world power.

Easy starting and quick warm-up are part of the appeal of the mildly-tuned BMW engine. Push the crankcase-mounted "choke" lever to its richest setting, start, ride away and within one short block you can turn off the "choke" and forget it.

The pushrod twin is redlined at 7200 rpm, a relatively low figure by the standards of the 9000-rpm multis, but the engine produces strong power right down to 1200 rpm. This permits you to tackle long hills in fifth gear with a passenger and luggage aboard, pass quickly on the highway with no need to downshift and take on city traffic without pumping the shift lever constantly. Although it's only running at about 3300 rpm at 60 mph in fifth, the BMW has more power and acceleration than some big tourers which run a thousand or so rpm higher at the same road speed. Gas mileage also improves with good mid-range power, and our RS averaged 44.7 miles per gallon of premium

during the test.

The R100RS isn't especially quick. In fact, with a best standing-start quarter-mile performance of 13.41 seconds at 98.03 mph, it isn't even as quick as the R100S (13.2 seconds, 101.7 mph) we tested a year ago. The difference can be explained by the RS' extra 27 pounds and its taller (lower numerically—2.91:1 instead of 3.09:1) rear-end ratio.

If we'd never ridden a BMW, our experience with Japanese constant-velocity carburetors would lead us to believe that devices of that design can't be made to respond smoothly to small throttle setting changes. The low speed jump-and-lurch characteristics of other four-stroke machines with CV carbs just aren't there with the Bings, and this makes the BMW much easier to deal with in traffic than other CV-carbureted machines.

The BMW's massive flywheel effect may help smooth out the throttle response, too. Because of the massive crankshaft inertia of the engine, it picks up and drops revs much more slowly than most multis, for example. The flywheel's mass helps the rider in some ways—starting off from a stop, for instance, where the flywheel's stored energy makes the bike hard to bog. The added flywheel also helps the bike run smoothly at very low rpm. The extra flywheel, however, makes some functions—like shifting smoothly—more difficult. Unless the engine speed is closely matched to road speed, the bike will surge ahead or slow down when the clutch is engaged after shifting. Lighter, accessory flywheels are available for BMW owners seeking a quicker-revving engine and less-demanding gear shifting.

The new shift linkage has improved the BMW's shifting, but only slightly, because there really wasn't much to complain about before. The tranny now changes gears more smoothly and positively and with a seemingly smaller movement of the rider's foot. The clanks which previously accompanied gear shifting are still there, notably in the lower gears. The clanking is just a function of the fairly-large gearbox masses which are suddenly pushed together while moving at different speeds; they are not part of the shift linkage. Carefully synchronizing engine speed to rear wheel speed will quiet gear shifts.

The five overall drive ratios are fairly tall, but they are well-staged and useful, with no irrational gaps between consecutive gears. The R100RS' first gear ratio is higher than that of most street bikes, but the heavy flywheel, bounteous low-rpm power and progressive clutch make first gear quite manageable. The RS clutch required a moderately strong pull, but never grabbed or slipped despite the fervent efforts of our dragstrip testers.

HANDLING: Despite some quirks which the rider must adjust to, the R100RS handles easily and well. Internal fork refinements, added frame material and new rear springs, all of which came with the





1977 models, improved chassis performance. And combined with the aerodynamic efficiency of the fairing, these changes make the RS the best-handling Beemer we've ever launched through a fast corner.

Earlier BMWs tended to wander just a little when heeled into, say, a 70-mph sweeper. However, this Five-Grand Flash was dead-steady and perfectly precise in super-fast cornering situations. It never wiggled or wallowed, always went right where it was pointed and steered lightly, even if you wanted to change lines in mid-bend.

We presume that aerodynamics have something to do with the bike's high-speed steadiness. BMW says the fairing reduces front wheel lift by 17 percent over the bikini-fairinged S, and we believe it. The front ends on other machines begin to feel slightly distant from the pavement as speed rises away from the legal limit. However, the faster you go on the RS, the better connected and more stable the bike feels up front.

In a low- or medium-speed corner, the R100RS occasionally did a quick little waggle. Adjusting the hydraulic steering damper (which is still standard on the RS but not on other BMWs) for more damping didn't change this at all. This wasn't a threatening sort of thing, and we speculated that with wider bars, the rider's leverage would have prevented it from occurring. In any event, even when leaned way over, the occasional low-speed wiggle in the front end never frightened us or caused any close calls.

The RS' cornering clearance, as with any BMW, is controlled by throttle setting almost as much as by lean angle. As with other shaft-driven machines, the BMW lifts on its suspension at both ends under acceleration and drops down again when the throttle is shut. Since the BMW has

more suspension travel and softer springing than other shafties, it rises and falls in response to throttle change more than other shaft-driven bikes. If you drag a peg or sidestand while negotiating a corner with the throttle closed, rerunning that same bend at the same speed while accelerating will probably permit grind-free passage through the turn. Getting into a corner too hot and shutting off can cause a sudden and drastic loss of cornering clearance.

The Continental tires are willing to cooperate if you want to play racer on the BMW. They never gave us cause to worry, and they wear well, too.

On poorly-maintained roads (a category which includes an increasing number of the nation's Interstate highways), the BMW's suspension does an exceptional job of road-holding over big bumps, because the suspension has enough travel to absorb the large bumps and asphalt patches. And because the BMW suspension has very little preload and is therefore partially compressed when the bike is normally laden, the suspension can *extend* to keep the wheels on the road when dips and holes are encountered. This makes the Beemer an unsurpassed handler in bumpy bends.

Because the BMW has a lower center of gravity and much less weight than other machines of comparable displacement, it is easier to flick into a turn or to fling from side to side in tight esses. The low center of mass also means that braking while cornering is easier than with a heavier, taller multi. The lack of weight also shows up at low speeds where, when combined with very little front wheel trail, it makes steering light and controllable, even with the short handlebars.

BMW says the fairing should make the R100RS less responsive to side-winds, but the testers who rode the bike in halfway

respectable side-gusts reported the bike moved around even more than average and more than other BMWs—which are at a slight disadvantage in side-winds because of their low centers of gravity. All but one tester agreed that the BMW wiggled less than most machines in raingrooves, but the dissenter told of an encounter with a short, unusual piece of raingrooved road that made the bike wiggle so badly he thought the front tire had started to go flat.

COMFORT AND RIDE: To like the R100RS you have to accept the European, leaned-forward riding position, which puts much of your weight on your hands and arms, and the flat, very narrow handlebar, because bars with a significantly different shape cannot be installed without changing the fairing.

Long rides in this posture tired some testers' upper arms slightly and one rider complained of a sore muscle between his shoulder blades after several continuous hours aboard the RS. Also, unless we wore heavy gloves, we were rapidly reminded of the unyielding composition of the Magura handlebar grips, because our hands had a lot of weight on them and became sore.

The fairing does an outstanding job of protecting you from the wind, which hits you only above the neck and around the feet, but your feet are partially protected by the cylinders. This protection reduces rider and passenger fatigue caused by wind-flapped clothing, keeps both riders much warmer on what would normally be cold rides (without seeming to make them hotter on warm days), helps the operator to stay dry in a rainstorm and even reduces wind noise in the Bell Star helmets to favor. Assuming a roadracing-style tuck behind the fairing is possible but not comfortable for long periods, and the plastic windshield creates a very distorted view of the road ahead. However, the fairing protects the rider so well that tucking in is unnecessary.

The RS has the usual BMW low-rpm shudder, but the fairing on our bike was the only part of our test machine that vibrated at normal engine speeds. No one ever touched the fairing, though, unless he was sitting unusually far forward on the bike, in which case his knees sometimes brushed it. The fairing's shakes did blur the mirrors, although both were still usable.

The BMW's dual saddle felt a bit too solid when we first planted ourselves on it, but after a half-dozen hours of continuous riding, it didn't get any harder. We attribute the saddle's success in large part to careful shaping. Passengers also rated their portion of the seat and riding position as better than average. Our only complaint with the saddle is its slick surface, which allows rider and passenger to slide forward easily when the brakes are applied.

Our major comfort gripe about the R100RS is with the suspension, which can't respond to small, sudden bumps. In areas where the roads are smooth asphalt,

this is of no real concern, but here in California and in other areas where the major roads are surfaced with concrete slabs, the constant small bump-bump-bumping at each joint between slabs becomes tiring. On the other hand, the suspension's exceptionally long travel, soft preload and moderate spring rates enable the bike to do an exceptional job of smoothing out large bumps and dips, even harsh irregularities like potholes.

A recurring complaint we've always had with BMWs is the proximity of carburetors to footpegs. Unless the rider wears high-topped boots, the frequent bumping of shins against the carbs and air-intake tubes, especially during braking, can become annoying, even painful, on a long ride in traffic. For our Technical Editor, who has small feet, the carbs/footpeg location actually posed a control problem because his size eights were just barely long enough to work the pedals when his ankles were squashed against the backs of the carbs.

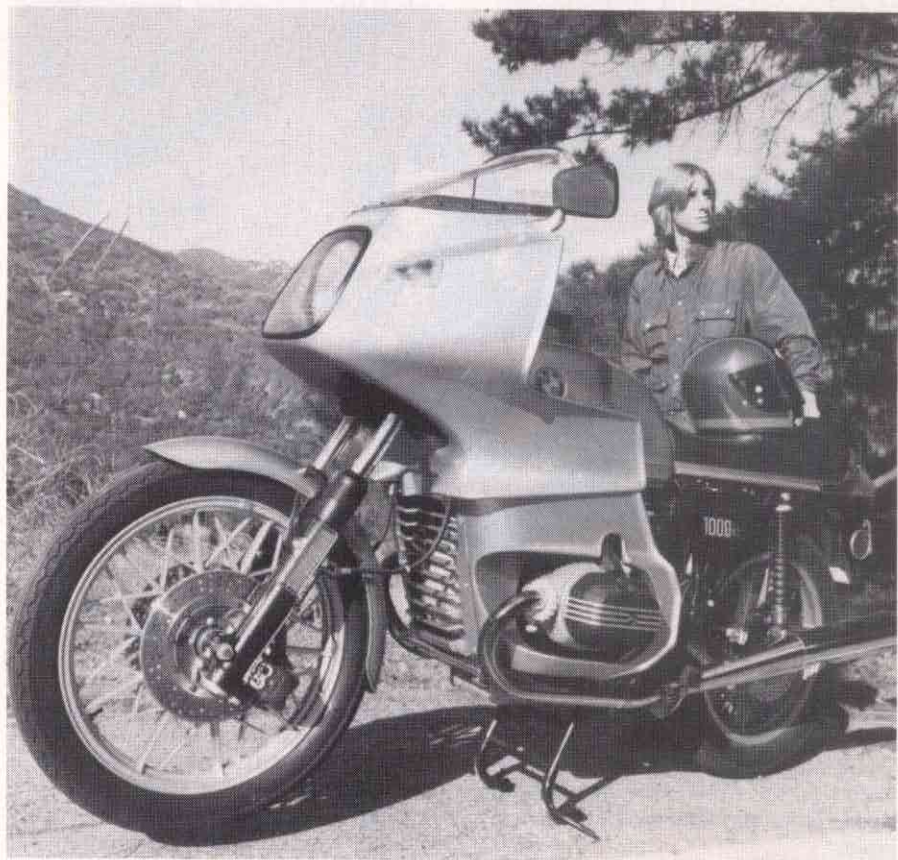
Busybodies at the Department of Transportation made BMW remove the throttle damper screw found on 1976 and earlier Beemers. The '77 models still had the hole for the screw, so owners could easily install the damper, but even the hole is gone on the '78s. But throttle return pressure is much lighter than we remember it being on previous BMWs, although the return pressure increases as the throttle setting nears wide-open. Neither this bike nor the 1977 R750/7 on which one staffer took a trans-continental ride ever gave us cause to complain about throttle-return pressure.

BRAKING: Despite dual hydraulic discs on the front wheel, a single hydraulic disc at the rear and a comparatively-low weight figure for a 1000-cc machine, the RS managed only average panic-stopping performances. The primary reason the big Beemer didn't make better stops during our measured braking tests and in real-life, sudden-stopping situations was the front brake, which required a Herculean effort to lock the wheel. Stopping distance lengthened in the time it took to clench your fist and make the insensitive stopper perform as you wished.

The rear disc brake responded normally and locked the wheel easily and predictably. Since all three discs are perforated, both the front and rear brakes now make quiet whirring noises when applied.

The modified front fork damping—one of the 1977 changes—reduced front end dive when stopping and improved control during braking. The bike doesn't pull to one side when stopping hard and the steering feels steady.

RELIABILITY DURING TEST: The only reliability problems we had were rather minor. The original right mirror succumbed to the vibration in the fairing's right side after about 100 miles, allowing its element to come loose, rattle and blur exceptionally. Since the frame-mounted



mirror is a sealed unit, an entirely new mirror had to be installed.

Rubber boots seal the openings where each fork tube passes through the fairing, and the right boot on our bike kept coming loose every few miles and had to be refitted. Our only other maintenance jobs were routine: adding fluid to the front brake system's reservoir and adjusting the clutch cable slightly.

The R100RS' speedometer was slightly pessimistic: 60 mph indicated was actually 62 mph. We were surprised to find that the odometer and tripmeter were ten percent pessimistic. In other words, a ten-mile trip showed only nine miles on the odometer.

The fairing will complicate a few items of the R100RS' maintenance schedule, notably ignition timing. To get to the breaker points at the front of the engine, a piece of the fairing must be removed. (Of course, the timing would not have to be set if the bike had electronic ignition.) And to get to the bike's fuses in the headlight shell, the thumbscrews inside the fairing which secure the glass headlight cover must be loosened. It's no big deal unless you're trying to do it in the dark with no lights. Fortunately, there's plenty of room to store a flashlight with the tool kit.

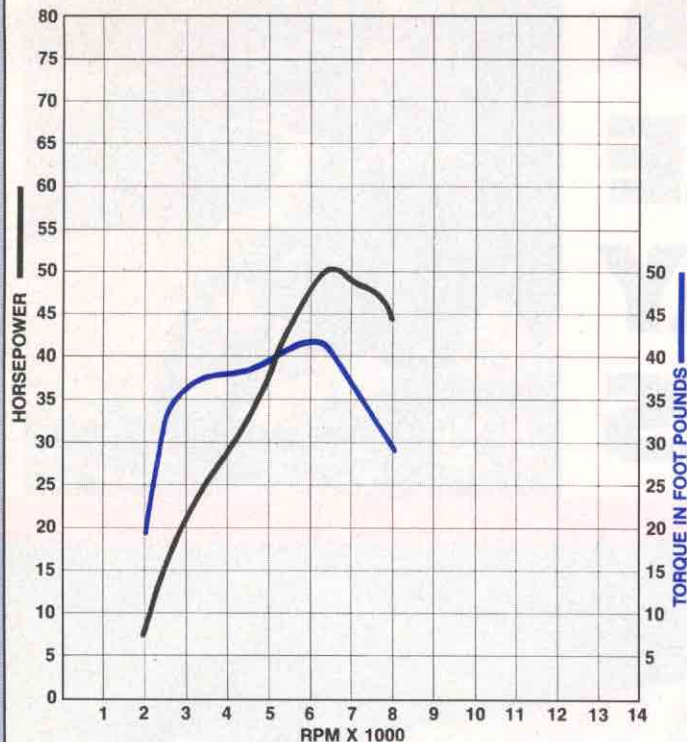
Gas overflow used to drain on to the engines of slash-seven series BMWs, but that problem has been eliminated on this bike. A hose is now attached to the gas-tank-filler cavity's overflow drain, and excess gasoline goes right to the ground next to the front of the rear wheel.

CONCLUSION: There's no objective way to justify the BMW R100RS' \$5300

price tag. The RS is a good, capable, unique motorcycle, but there are equally good and even better—though mostly less unique—motorcycles available for much less money. (Included among those is BMW's R80/7 for \$3595.) With the RS, BMW has priced itself out of the reach and interest of the mainstream motorcycle buyer.

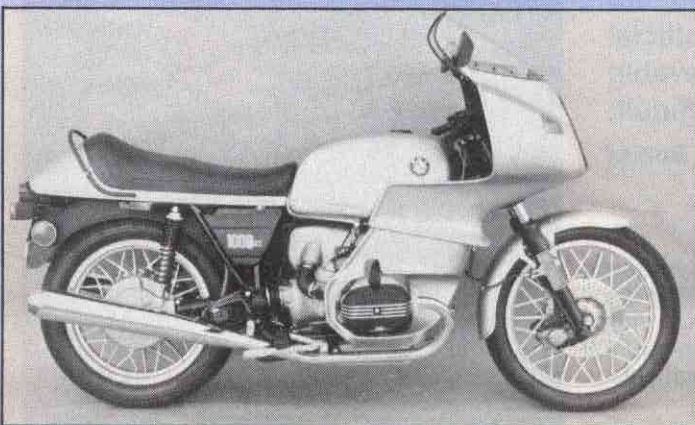
Economics apparently have forced BMW to give up just building the motorcycling counterpart of, well, BMW automobiles—sporting, elegant, practical, slightly snooty and stiffly priced, yet no more expensive than many of their counterparts. Instead, with the 1978 RS, BMW has created the two-wheeled equivalent of a Mercedes or maybe a Rolls Royce—a vehicle which has most of the aforementioned qualities, even though they may have become obscured by the snootiness. Price has ceased to be a barrier, and has become an attraction. The R100RS now transcends the normal standards for motorcycles—sensational excitement and transportation. Instead, it has become a symbol, a demonstration of wealth.

The fact that BMW has built a competent, comfortable motorcycle with good handling is probably insignificant to what will no doubt be a sell-out crowd of buyers who will choose the RS because of what its distinctive appearance and awesome price tag says: Money! Riding a BMW R100RS appears to be destined to be the equivalent of riding around on a transparent wallet. And that's kind of sad, because we believe that approach misses the whole point of motorcycling. **7**



RPM	HORSEPOWER	TORQUE	RPM	HORSEPOWER	TORQUE
2000	7.5	19.8	5500	43.4	41.4
2500	16.0	33.5	6000	47.9	41.9
3000	21.0	36.8	6500	50.1	40.5
3500	25.2	37.8	7000	48.5	36.4
4000	29.0	38.1	7500	47.6	33.3
4500	33.0	38.5	8000	44.1	28.9
5000	37.8	39.7			

This chart shows engine horsepower and torque calculated from figures taken at the rear wheel and does not account for transmission losses between the engine and rear wheel. These results may differ from manufacturer's claims or from results obtained using a different dynamometer.



- Engine type four-stroke
- Cylinder arrangement horizontally-opposed twin
- Valve arrangement overhead valves, pushrod-operated
- Bore and stroke 94 mm x 70.6 mm
- Displacement 979.9 cc
- Compression ratio 9.5:1
- Ignition battery/single-point/single-coil
- Charging system 12-volt; alternator, rectifier, voltage regulator
- Air filter disposable paper element
- Lubrication wet-sump, 2.4-qt. (2.3 l) sump capacity
- Primary drive helical gear, 1.5:1 ratio
- Clutch dry, 1 drive plate, 1 driven plate
- Starting system electric only
- Final drive spiral bevel gears, 2.91:1 ratio
- Front fork 7.2-in. (183 mm) travel
- Rear shocks Boge, 4.3-in. (109 mm) rear wheel travel, 3-way adjustable spring preload
- Front brake dual single-action hydraulic calipers, dual 10.25-in. (260-mm) perforated discs
- Rear brake Brembo double-action hydraulic caliper, 10.25-in. (260-mm) perforated disc
- Front tire 3.25H19 Continental RB2 rib
- Rear tire 4.00H18 Continental K112A block
- Frame tubular mild steel, double front downtubes
- Steering head angle 28 degrees from vertical
- Front wheel trail 3.5 in. (88.9 mm)
- Wheelbase 57.8 in. (146.8 cm)
- Weight 492 lbs. (223.2 kg)
- Weight distribution 47% front, 53% rear
- Ground clearance 6.3 in. (160 mm), at drain plug
- Seat height 31.5 in. (800.1 mm)
- Handlebar width 22.3 in. (566.4 mm)
- Footpeg height 11.9 in. (302.3 mm)
- Instrumentation speedometer, odometer, tripmeter resettable to zero, electric tachometer, voltmeter, quartz clock
- Speedometer error 30 mph indicated, 29 mph actual; 60 mph indicated, 62 mph actual
- Fuel tank steel, 6.6 gal (25 l) including 1.3 gal. (4.9 l) reserve
- Fuel consumption 38 to 47 mpg (16.2 to 20 km/l)
- Range 201 to 249 miles (323 to 400 km) plus 49 to 61 miles (79 to 98 km) reserve
- Best ¼-mile acceleration 13.41 sec., 98.03 mph (157.7 kph)
- Top speed (calculated) 127 mph (204 kph)
- Stopping distance 30 ft. (9.1 m) from 30 mph, 138 ft. (42.1 m) from 60 mph
- Sound level per SAE J331a 84.5 db(A)
- Available colors matte silver, gold
- Suggested retail price \$5295 East Coast, \$5335 West Coast

All weights and measurements are made with machine unladen and fuel tank empty.

GEAR	1	2	3	4	5
INTERNAL GEAR RATIO	2.93	1.91	1.38	1.11	1.0
OVERALL GEAR RATIO	12.80	8.32	6.02	4.86	4.37
MPH per 1000 RPM	5.9	9.1	12.6	15.6	17.3

