

Tests: BMW R80 ST, Yamaha IT250
Honda CR125R and Nighthawk 550
24 best tools to fix your bike

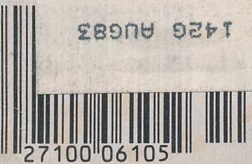
CYCLE WORLD

OCTOBER 1983

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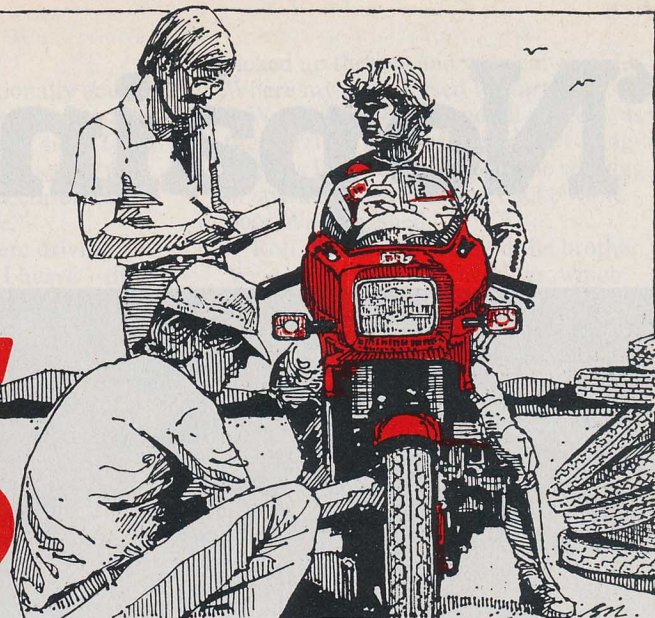
**SPORT
TIRES:
PICKING
THE
BEST**

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READING PA 19606



27100-06105

At the end of a week of testing, four test riders independently found two sets of tires that worked better than the rest.



CYCLE WORLD

OCTOBER 1983

VOL. 22 NO. 10

SPECIAL FEATURE

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COVER

The best tires in the world compared.

Photographed by Jeffrey Zwart

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"The bike, she smiles at"

There are no new BMWs, a friend of ours once observed at the dawning of a new model year, only new numbers and letters, and maybe a new styling touch or two. This observation came toward the end of an exciting, two-hour discussion about all of the breathtaking new models that would soon fill showroom floors. For one hour and 58 min., we waxed enthusiastic over new engines, new frames, new suspensions, new styling—all new bikes—that the Big Four manufacturers were dangling before us.

"What about BMWs?" a tentative voice asked during a pause. Silence. Then our friend stood up, pulled on his jacket, hefted his helmet, nodded wisely and uttered his pronouncement. There were few disagreements.

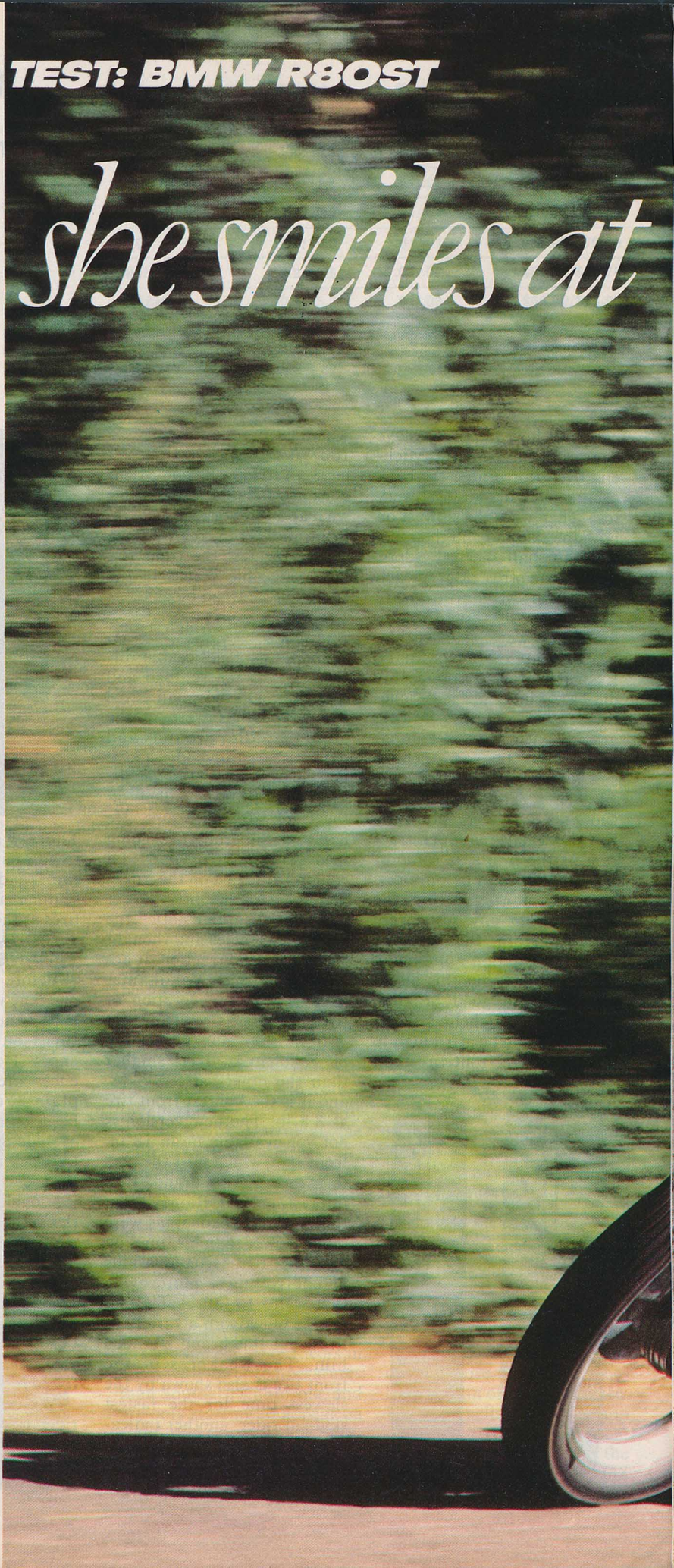
Truth of the matter was, giving in to indifference when discussing BMW was rather easy. It still is. Since 1923, the German make has meant, with a few exceptions, the same thing: opposed Twin engine, two valves per cylinder, pushrods, two carbs and a driveshaft. It's not a great leap from that to "There's no such thing as a new BMW." A BMW is a BMW is a BMW, right?

Wrong, and here's proof: BMW's R80 ST. Okay, it doesn't really qualify for the adjective "brand-new"; it's still steeped in the BMW tradition (see preceding paragraph) and it was born of the go-anywhere R80 G/S. But the R80 ST is so, well, pleasing to ride that it definitely deserves the NEW! IMPROVED! label.

First, a bit of not-so-distant history. In 1980, BMW introduced the R80 G/S, an almost-dual-purpose bike aimed at the exploring market. The G/S (the initials came from the German words for Woods/Street) had an 800cc engine, extra ground clearance, a single rear shock, a single-sided swing arm (which doubled as the drive shaft housing), and a high-rise 2-into-1 exhaust system. "All in all, a great machine for getting away from it all," we judged (*Cycle World*, April 1981).

The G/S sold reasonably well, but there seemed to be more interest in a street-only version. A BMW spokesman recently recalled: "We saw buyers converting the G/S to all-street bikes, and people kept asking where was the street R80." So, the ST—for Street Touring—was a natural.

Of course an 800cc street BMW is not, by itself, anything new. In 1978, BMW expanded the bore of the trusty R75 and created the original R80. At that time the R80 was sandwiched between the bigger and faster R100 models and a slower R60 model that subsequently disappeared and was succeeded by a more sporting R65 model. Somewhere along the line the R80 standard model



me like a pretty girl."





The R80ST is a new version of a well-known bike. The light-weight pieces from the off-road G/S are at home on the road.



faded away when the G/S was introduced. It wasn't that a 800cc BMW was a bad idea, it just needed some kind of distinction from the larger BMWs. That's where the ST comes in.

Essentially, the ST is a G/S with a narrower mission, changes kept to a minimum. Only things which needed to be redesigned, were. What didn't need changing for the street, wasn't. That's in keeping with another BMW tradition: no change simply for change's sake. The ST got new wheels and tires, shorter forks and rear shock, more instrumentation, a slightly stronger battery, lower handlebars, an improved seat and a set of crash guards. Along the way, it lost the G/S's kick starter.

The engine is the 797.5cc ohv opposed Twin, a small-bore version of BMW's standard big Twin engine. Bore is 84.8mm. Stroke is 70.6mm, the same as that of the 1000cc boxer engines. Valve sizes are 42mm for the intake and 38mm for the exhaust; each is held open for 305°, a BMW standard. They're operated by pushrods and rocker arms. According to the company's rather peculiar way of putting it, the "maximum permissible engine speed" is 7400 rpm, while the "maximum continuous engine speed is 7200 rpm (as is the tachometer red-line). Cylinders are aluminum, with a nickel/silicone-carbide coating. The compression ratio is 8.2:1. Carburetion is by a pair of 32mm Bing CVs. The exhaust pipes join in a collector box below the transmission; a single pipe then sweeps up to a shielded muffler mounted just beneath the seat. Ignition is electronically triggered.

The ST has a single-plate dry clutch with diaphragm spring, and a five-speed transmission. Final drive is (there's that tradition again) by shaft.

The welded-steel, double-cradle frame has widely spaced, giant, 1.25-in. round downtubes that bend under the engine and then curve up to join a single backbone. Steering head junctions are reinforced by extra tubes and gussets. The bolt-on rear subframe, made of smaller-diameter tubing, supports only the seat, rear fender and the muffler.

The right-mounted, cantilevered gas shock has three adjustments for spring preload. Damping is not adjustable. The top of the shock bolts to the main frame; the bottom bolts to the short, wide single-leg swing arm. The telescopic front forks are similar to those of the R65 models. Both the shock and forks have been shortened in the translation from G/S to ST. As a result, travel has been reduced: the ST has 6.9 in. of front travel (compared with the G/S's 8 in.) and 6 in. of rear travel (compared with 7 in.).

A 19-in. front wheel replaces the 21-incher of the G/S, while the 18-in. rear wheel is unchanged; both are spoked, with Akront aluminum rims. Gone are

the Metzeler enduro tires. The ST comes with low-profile Metzlers (100/90H-19 Rille 16 up front, 120/90H-18 Perfect in back). Brakes remain the same: a single, fixed-caliper Brembo 10.2-in. drilled disc in front and a 7.9-in. single leading shoe rear drum.

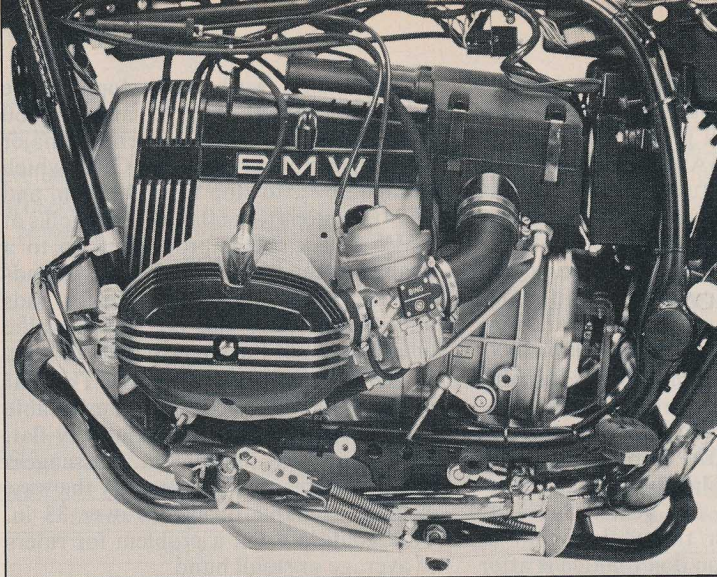
Odds and ends: Instrumentation resides in a little plastic dash that covers the lower, narrower handlebars, and includes speedometer/odometer/trip odometer, tachometer, neutral indicator, high beam light, turn signal indicator and warning lights for generator output and oil pressure. The fork lock, separate from the ignition switch, is on the left side of the steering head. The throttle is a straight-pull Magura. A 16-amp-hour battery replaces the G/S's nine-amp-hour unit. There's a 60/55-watt halogen headlight. The flush-capped gas tank holds 5.5 gal., a half-gallon of that in reserve. The seat is narrower in front, with foam rubber replacing the old plastic foam, and lifts off with the push of a lockable button. A tool kit and tire-patching kit are under the seat; a tire pump is stored in the frame's backbone.

Time to ride.

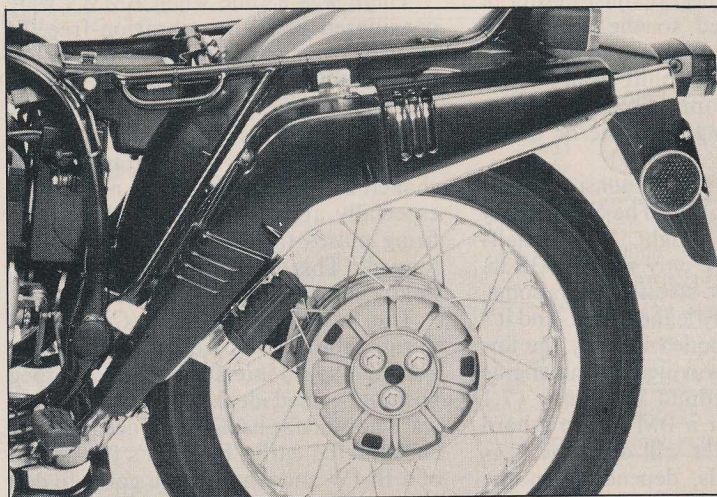
The boxer engine, as always, fires right up. And, again as always, usually dies after a couple of thumps. More tradition. Using full choke and a slight twist of the throttle, it generally takes several firings to coax the Twin into life. And that's when the weather is warm. *Cold*, cold starts are even more precarious. Once the ST is running, you can back off the thumb lever to a click-stop (about three-quarters choke) and ride away. After a few blocks, the choke can be released and the engine settles down to a comfortable, quiet idle, about 950 rpm.

BMW doesn't make horsepower claims anymore, but the original 800cc engine produced 50 bhp for the low compression version. Adequate, but not especially powerful. Just for comparison's sake, the 90° V-Twin in Ducati's 600SL Pantah turns out 58 bhp—and that's an engine three-quarters the size of the ST's. That rather conservative amount of power is reflected in dragstrip performance figures. The R80 ST turned in a 13.80-sec. quarter-mile at 93.26 mph, and posted a half-mile top speed of 105 mph. That's performance that any given Japanese 650—and some 500s—can meet.

But dragstrip figures can be, if not exactly unfair, misleading when it comes to considering some bikes. BMW has not, in recent years, been a pretender to the performance throne. Like its companions in the BMW line-up, the ST isn't a motorcycle that will hurl you across the countryside like a land-locked ICBM. What it will do, is transport you, smoothly; steadily, dependably—even, one could say, classically. BMWs don't blur. They travel.



The ST is powered by BMW's tried-and-true 797.5cc ohv opposed Twin, wrapped in a welded-steel, double-cradle frame constructed of giant 1.25-in. round tubes. The exhaust pipes bend under the frame, where they join in a collector box. A single pipe then sweeps up to the high-mounted muffler. The sidestand, well, if you take away the word "stand," you'll get an idea how functional it is.

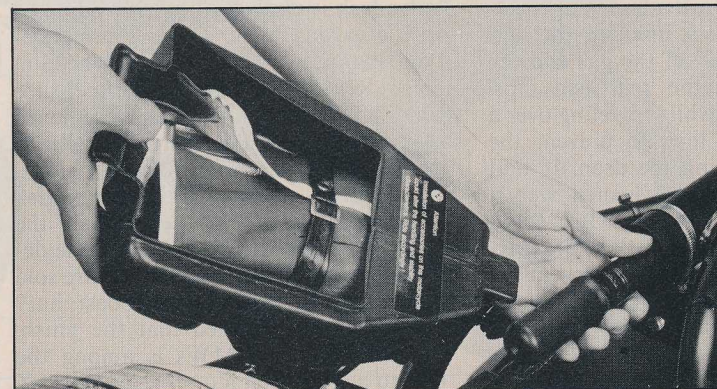


Three automotive-type lug nuts hold the rear wheel in place. Remove them, and the wheel pulls away easily, unhampered by swing arm or shock on the left side. The high-rise muffler, a carry-over from the R80 G/S, is well-shielded. The rear brake is a 7.9-in. single leading shoe drum.



The seat lifts off with the push of a button located on the rear fender. The button can be locked with the ignition key so the seat cannot be removed. Alas, the fork lock, located on the left side of the frame steering junction, is not so easy to use.

Rear suspension is by a right-mounted, cantilevered gas shock, which bolts to the main frame and the short, wide single-leg swing arm. The swing arm also serves as the driveshaft housing. According to BMW, the arrangement cuts weight and increases torsional rigidity.



The excellent BMW tool kit and tire-patching kit reside under the seat. Almost every common maintenance task imaginable can be performed using the tools that come with the ST. A tire pump hides in the frame's backbone tube.

Cruising on the ST is a delight. The engine runs very well above 5000 rpm which, in fifth, will propel you along at extra-legal speeds. At that engine speed, the ST revs powerfully, without hesitation. Low rpm power is sufficient, but not abundant. Still, there's enough fly-wheel to keep things from being too balky; the engine pulls best from about 2000 rpm. Under hard acceleration, there's a flat spot from 4000-5000 rpm, but then, again, BMWs usually aren't pressed into that kind of service.

Clutch pull is light and the clutch is smooth, thanks to the diaphragm spring. The transmission shifts neatly and decisively through all five gears. The shift lever has a longer throw than that of many bikes, but you don't notice it after putting in a few miles. It's just matter of getting accustomed to the bike. One problem. Our test bike exhibited an occasional reluctance to shift from neutral to first while stopped. Slipping the clutch, or clutching a couple of times, remedied that.

On turns, the ST is responsive, steering quickly and lightly. The ST's agility attests to its light weight. With a half-tank of fuel the ST only weighs 432 lb. At highway speeds, steering slows some, but the bike is easily leaned over. And it's supremely stable, aided here by the low center of gravity provided by the engine configuration. Ground clearance (7.1 in.) is generous for a BMW. On a hard tack the brave rider will drag the pegs or the case guards, depending on the attitude of the bike at maximum lean.

Taut is the word that best describes the suspension. There's plenty of travel for chuckholes, mole-sized bumps and deep dips. But the stiff suspension doesn't absorb much of the jolt of small bumps such as highway expansion joints. Traveling over successive small bumps, the ST does a two-wheeled version of the jitterbug. Oh, and you quickly forget about the missing half of the swing arm. There's no sense of flex or imbalance. BMW says that the single leg and mounting point arrangement actually increases resistance to torsional flex.

An important note, although an oft-repeated one about BMWs. The rear end is quite responsive to driveshaft-induced torque reactions. Grab a bunch of throttle and the rear shock unloads; the rear end pushes up. Shut off the gas and the shock compresses; the rear end dips. Keeping the gas on while traveling over a pavement dip will tend to prevent the shock from absorbing the drop. If that happens when the bike is leaned over at the exit of a turn, the rear tire could slide. And closing the throttle while traveling over a bump will tend to prevent the shock from absorbing the rise. Under some conditions, that could cost you ground clearance you might wish you had.

The brakes work well, stopping the bike from 30 mph in 28 ft., and from 60 mph in 121 ft. That represents a major improvement over our 1981 G/S (which needed 36 ft. to stop from 30 mph, and 159 ft. to stop from 60 mph). The folks at BMW chalk the improvement up to a change in the composition of brake pads and shoes; the G/S had asbestos pads and shoes, while the ST has metallic ones. No doubt the street-only tires help.

The ST is a pleasure to ride. The seat is firm, but not hard, and comfortable over a long distance. It's relatively flat, permitting easy movement. Passengers had no complaints. The seat, by the way, is high, a couple of shades over 33 in. That could present a problem for riders of average or small build.

There was a time when BMWs were considered virtually vibration-free, at least in comparison to other bikes. But now that many motorcycles have rubber-mounted engines (BMW's do not), they can no longer be said to be the smoothest bikes around. The ST is far from a shaker, but some vibration is noticeable, especially at low rpm when the engine firing pulses throb throughout the motorcycle. This diminishes to a light buzz, finally dying out at about 3800 rpm.

The lower, narrower bars felt good during both low-speed, in-town riding and high-speed interstate travel. Footpeg position seemed ideal, neither too far forward nor too far back. Shins occasionally encountered carbs, but that's the nature of a BMW and what're you going to do? The instruments are easy to read. The speedometer could be more accurate. When the speedometer read 60 mph, the bike's true speed was 55. And the controls aren't exactly placed in the most convenient locations. The horn button is too high on the left-hand pod. By the time you look to find the button and then accomplish the awkward thumb-stretch necessary to reach it, well, the reason you wanted to honk is usually far behind you. Once located, though, the horn is nice and loud. The kill switch is next to useless in an emergency. You can't operate it with your right hand in normal position on the grip.

Basic maintenance is a breeze. Single bolts fasten the two rocker arm covers. Valve lash is easily and quickly adjusted with everyday tools. Three automotive-type lug nuts hold the rear wheel in place. Remove them and the wheel slips right off. It's the most easily removed rear wheel ever. The word "excellent" doesn't do justice to the BMW tool kit. Almost every common maintenance task imaginable can be completed using the tools that come with the bike. Of the decreasing numbers of models that are sold tool-equipped, how many can boast that?

It's generally agreed that the finish, the detailing, of BMWs is among the best to be found on motorcycles. The ST

is no exception. The bike is available in two colors: a bright, screaming-for-attention red-with-just-a-dollop-of-orange, and a calm, conservative silver-graphite. Our test bike was red; the paint on the graceful gas tank was rich and deep. The frame was the blackest of blacks. The chrome was, hmm, *very* chromed. The finish is nothing short of elegant. Even the plastic fenders seemed, somehow, cultured; if there is a *creme de la creme* of plastic, this is it. The only thing that seems a bit out of character is the high-mounted muffler, but we grew to think of that as an endearing eccentricity.

The ST attracted a lot of attention, that's how stunning its appearance is. Kids stopped in crosswalks to compliment it. Women fawned over it. Old folks nodded friendly in its direction. Even the highway patrolman who stopped us for speeding was moved to deliver a rhapsody on the Beemer. As one beret-sporting gentleman with a foreign accent put it: "The bike, she smiles at me like a pretty girl."

Yes. Now a few nit-picks. There oughta be a law against BMW's one-minute-it's-there-the-next-minute-it's-gone sidestand. It has a hair-trigger spring that retracts it, as we put it in our G/S test, "as soon as you want, if not sooner." It's a public hazard. And don't even think about parking the ST head-first on a downgrade, no matter how slight, or on pavement that slopes to the starboard. You'll have some lifting to do. The locking gas cap will refuse to unscrew, permanently, if it's tightened too much. The fork lock is difficult to use, impossible to find in the dark unless you've had prior experience with Braille, and locks the front wheel in a position that contributes even more to the precariousness of the sidestand. And the bike comes with a silly folding key; you can't keep it on a keyring and it makes using the fork and seat locks even more of a maddening experience. Luckily, the spare is a normal key.

BMW's used to be not just expensive, but *expensive*, priced considerably higher than similar-displacement bikes made by other manufacturers. The gap has narrowed. A couple of years ago, BMW cut prices. Since then, they've gone up, but not as much as those of some of the other makes. At \$4190, the R80 ST is almost priced competitively. And it comes with the longest warranty offered for a motorcycle—three years, unlimited mileage.

What you get for your money is a light, agile, uncomplicated, clean, attractive motorcycle. A bike that's refined, almost understated, not overbearing like some hell-for-leather machines.

Some bikes, you ride to travel like the wind, to get from Point A to Point B with the greatest of dispatch. The R80 ST, you ride for the simple thrill of riding. ☐

SPECIFICATIONS

GENERAL

List price	\$4190
Importer	BMW of North America BMW Plaza Montvale, N.J. 07645
Customer service phone	(201) 573-2151
Warranty	3 years/unlimited mi.

CHASSIS

Test weight (w/half-tank fuel)	432 lb.
Weight distribution front/rear, percent	48/52
Fuel capacity	5.5 gal.
Wheelbase	57.7 in.
Rake/trail	27.5°/4.9 in.
Handlebar width	28 in.
Seat height	33.4 in.
Seat width	8.5 in.
Footpeg height	13.6 in.
Ground clearance	8.0 in.
Headlight	60/55w halogen
GVWR	881 lb.
Load capacity	449 lb.

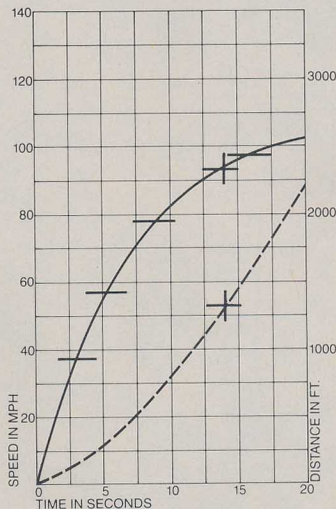
SUSPENSION/ BRAKES/TIRES

Suspension:	
Front	telescopic forks
Travel	6.9 in.
Rear	swing arm, single shock
Travel	6.0 in.
Wheels:	
Front	1.85 x 19 in.
Rear	2.50 x 18 in.
Tires:	
Front	Metzler 100/90-19H Rille 16
Rear	Metzler 120/90-18H ME99A
Rear tire revs. per mi.	795
Brakes:	
Front	10.2 in. disc
Rear	7.9 in. drum
Brake swept area	104 sq. in.
Brake loading (160 lb. rider)	5.7 lb./sq.in.

ENGINE/GEARBOX

Engine	ohv opposed Twin
Bore x stroke	84.8 x 70.6mm
Displacement	797cc
Compression ratio	8.2:1
Carburetion	(2) 32mm Bing CV
Air filter	pleated paper
Ignition	transistorized inductive
Claimed power	na
Claimed torque	na
Lubrication	wet sump
Oil capacity	2.4 qt.
Electrical power	280w alternator
Starter	electric
Battery	12v 16ah
Primary drive	n.a.
Clutch	dry, single plate
Final drive	shaft
Gear ratios, overall:1	
5th	5.04
4th	5.61
3rd	6.96
2nd	9.61
1st	14.78

5th	5.04
4th	5.61
3rd	6.96
2nd	9.61
1st	14.78



PERFORMANCE

ACCELERATION

Time to distance:	
1/4 mi.	13.81 sec @ 93.26 mph
Time to speed, sec.	
0-30 mph	2.0
0-40 mph	3.2
0-50 mph	4.2
0-60 mph	5.6
0-70 mph	6.9
0-80 mph	9.4
0-90 mph	13.2
Top gear time to speed, sec.	
40-60 mph	5.1
60-80 mph	6.7

SPEED IN GEARS

Measured top speed in 1/2 mi.		105 mph
Calculated at 7200 rpm redline:		
1st gear	37 mph	
2nd	57 mph	
3rd	78 mph	
4th	97 mph	
5th	108 mph	

Engine speed at 60 mph	4010 rpm
---------------------------	----------

FUEL CONSUMPTION

Test loop	49 mpg
Range (to reserve)	243 mi.

BRAKING DISTANCE

from 30 mph	28 ft.
from 60 mph	121 ft.

SPEEDOMETER ERROR

30 mph indicated	26 mph
60 mph indicated	55 mph

**CYCLE
WORLD
TEST:
BMW
R80ST**

