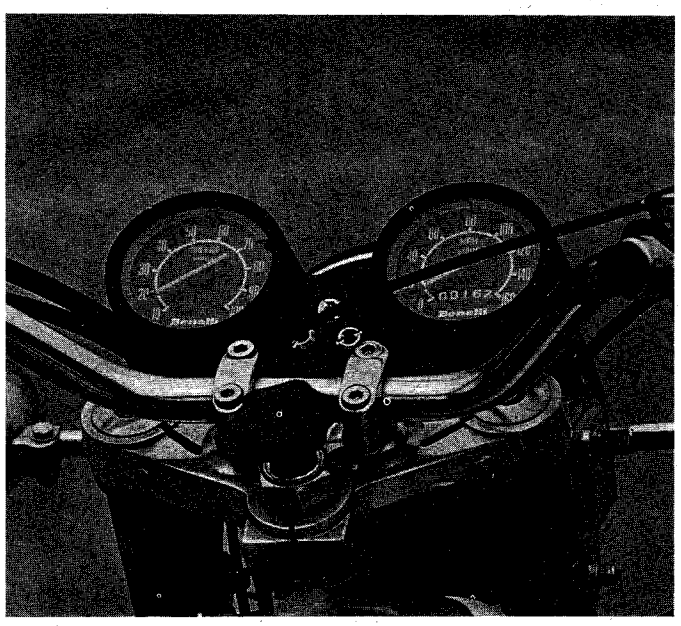
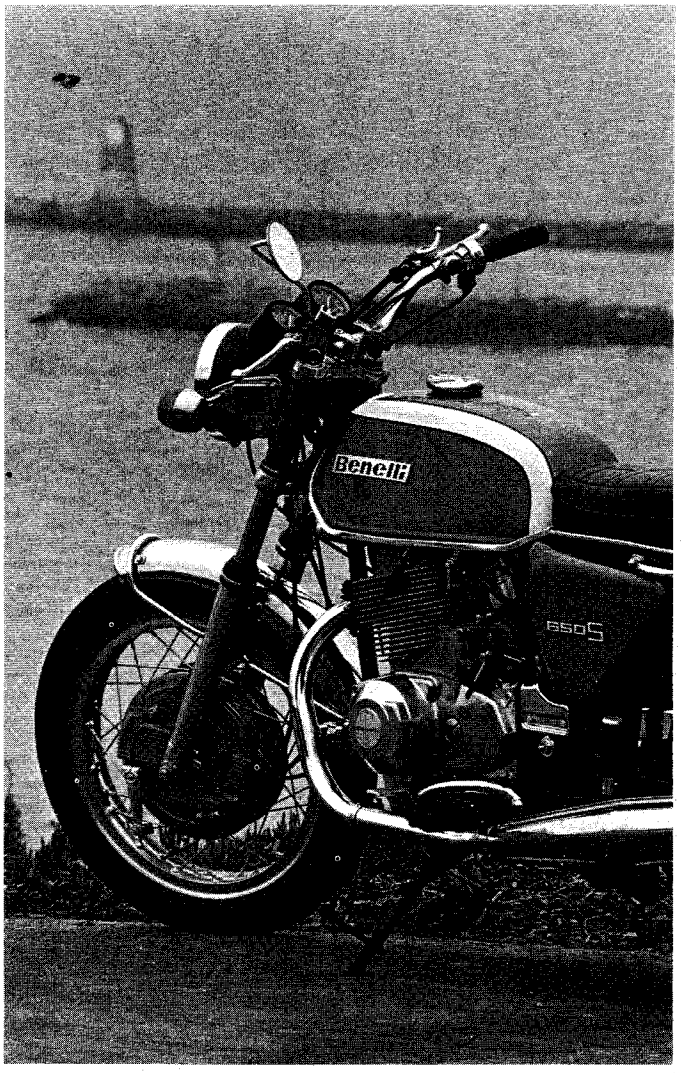
Cycle World Road Test





BENELLI TORNADO 650 S

An Original, From The Country That Specializes In Them

■ THE GOOD THINGS in life don't come cheap these days, especially when they are imports burdened with excise tax. The Benelli 650, a pushrod Twin with electric starting and five-speed gearbox, will cost you more than $2000 by the time it gets here from Italy.

Woe is the rider, then, who would appreciate the intangible beauties and eccentricities of a roadster with a feeling all its own.

The bike is designed against the backdrop of the Italian way of motoring—long miles of double-lane *autostrada* one lane fast and one lane slow. You are in the fast lane, of course, inhibited only by the "motivation/oil leak/valve float/durability/fatigue ratio," watching little Fiats, VWs, and Alfa sedans pull over for you, and you in turn pulling over only for Lambos, Monteverdis and an occasional Dino.

Or you are on the rippling narrow asphalt that winds up the west shore of Lake Como to Riva del Garda, spurting up to 60 or 70, then snapping down for a hair-raising turn through a tunnel blasted out of the steep rock.

If you are on that Benelli, the bike from Pesaro, the forks are working beautifully, and the bike is flashing into those bends with perfectly neutral steering characteristics. Enter the bend, set it, and the bike stays leaned at the angle you picked, even as you shake through a series of humps created by the Alpine winters.

This is the road burner Italian-style: neutral, well-damped, geared high, stiff on the butt, sharp to the ear, fleet and masculine. Italian engineers have a whole different set of priorities, so that this vertical Twin is truly different from other vertical Twins.

Benelli's approach to this classic engine configuration is not particularly exciting, other than that it is well executed and indicates the choice of good alternatives.

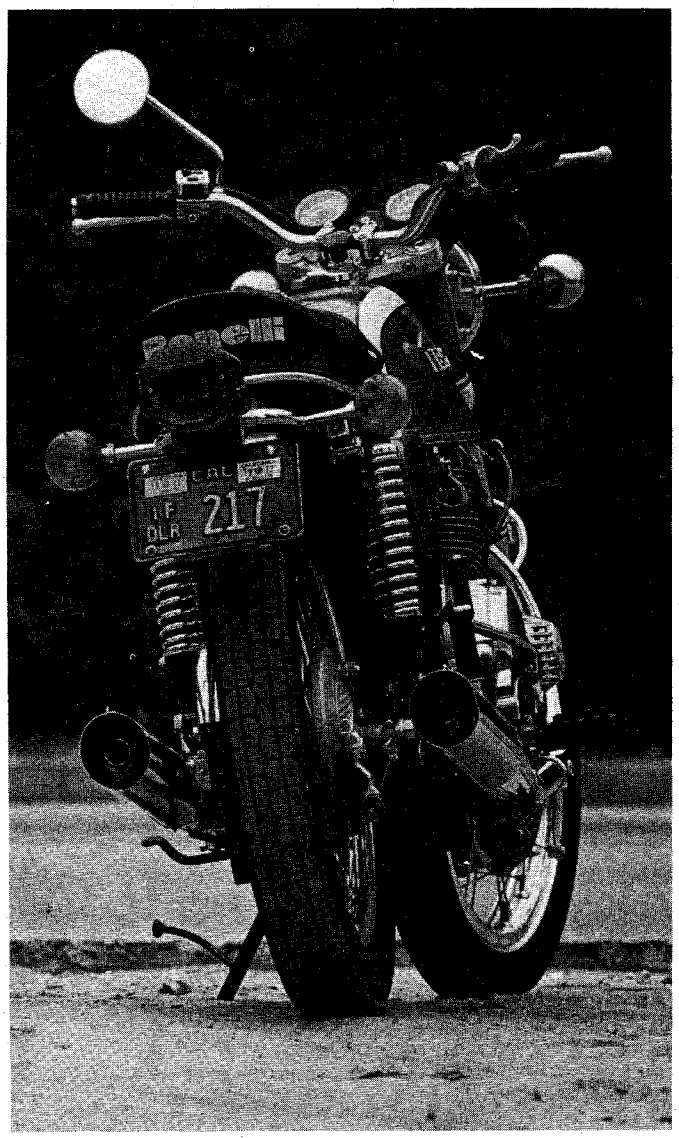
The crankcases are split in the most oil-tight and easily servicable way—horizontally. Yank the engine from the frame, turn it upside down, pull the bottom half to quickly reach the five-bearing, four-flywheel crankshaft. Both pistons run up and down together, firing alternately every 360 degrees of crankshaft rotation like the British Twins.

The exhaust note therefore recalls the British product, but the Benelli has less flywheel effect, giving it the urgent, nervous rush of a racing engine as you snap the throttle. That quickness demands precise timing of clutch throttle and left hand as you run through the gears.

Benelli's claim of 57 bhp at 7400 rpm is somewhat optimistic, to gauge it against its actual straight-line performance. Even taking into account the 60 or 70 lb. of weight it has gained in the last two years, due primarily to the electric starter and related components, an estimate of 45 to 50 bhp, taken at the transmission output, would seem more reasonable. The difference may be in where Benelli measures power output.

The spread of gear ratios was clearly chosen by a man with a very personal view of what motorcycling is all about. Top gear is high for this engine and can almost be considered an overdrive, or cruising ratio. It effectively eliminates the use of one gear if drag racing is your bag, but at the same time makes the 650 an eminently calm high speed tourer.

At 70 mph, for example, the engine is burbling over at a mere 4140 rpm. At 90 (if you are so lucky to be on an uncontrolled autostrada) the engine turns at 5660 rpm, which is barely above the engine speed which most imports for U.S. >



consumption exhibit at 75 mph. So at legal limits in the U.S., the Benelli has an extremely easy-going way about it, producing minimal vibration and noise. This is a particularly important attribute if you do much freeway riding. It's not that the Benelli engine vibrates any less than others in its category, but that its top gear is particularly suitable for long, monotonous stretches of road.

The gear spread from 5th to 2nd is fairly close, allowing precise work through, say, a big sweeping series of mountain turns. Then, in a sudden schizophrenic twist, a great gap appears between 1st and 2nd gears, requiring that you really get the revs up when backshifting to avoid a momentary locking of the back tire. While an Oriental mind would impassively spread all five gears evenly to avoid that squealing rubber, the Italian mind insists on a high and super-tight upper four; and then says, "Ah yes, we keep the bottom gear low for slithering through Milano in the rush hour."

The gear lever is, as you might expect, on the right in a one-up for first, down to upshift, pattern. The people in Italy must think all Americans wear size 13s as both the gear lever and the rear brake lever are a far piece from the footpegs. The folding pegs make shifting and stopping tasks more complex than need be, too, as their upper faces consist of thick rubber whiskers. While these look good on paper from the point of view of vibration damping and self-cleaning qualities, they flex quite easily and therefore offer an insecure rest for the feet. Further, the whiskers at the outer edge of the peg can be easily broken off from the twisting that occurs as you slide your foot off the peg.

Both front and rear brakes, though not extremely powerful for the weight of the bike, do their job in progressive fashion. The front is the kind you can work when banked well into a turn.

As they don't usually say in the standard "but there were only minor annoyances" type of road test, the controls do *not* readily fall to hand. The handlebars are narrow, a plus for high speed riding, but are twisted back at an odd angle, which causes strain on the wrists. The clutch and brake levers are a good distance from the handgrips, so that a big hand is required to simultaneously work the throttle and front brake—a fairly common procedure when you are slowing down fast and backshifting at the same time. The horn button, situated in a little box next to the left handgrip, is the least obvious choice between the lights and turn signals; common sense dictates that it should be the one most easily reached by the thumb, but instead, it is on top of the case. The instruments, including a tachometer and speedometer, are quite accurate, but you take pot luck on identifying which idiot light means what.

The Italian mood of contrariness also extended itself to the electrical system. Attachment of wiring to the primaries of the two coils was a bit shaky looking, a fact we discovered while trying to find out why the fire went out on the right bank. It was traced to a loose wire in the breaker point assembly, which was easily reached and fixed through the cover plate on the engine case.

Although the bike pulls well in the low rpm range, it exhibited a distinct one-shot miss if you fed it a large dollop of throttle under 2500 rpm, which is, of course, one of the toughest situations for a conventional breaker point ignition. Once above this low rpm band, the engine ran clean and strong. One final shot: only one of the four turn signal lights was operative.

The action of a silky smooth multi-plate clutch was marred by the cable fitting where it joins the lever entering the gearbox. For some reason, when you snap shifted the machine, using quick clutching action, you could make the cable pop out of the lever fitting. We taped it to eliminate the problem.

Obviously, these eccentricities are in the class of things a careful mechanic can eliminate with time, but do little to dispel the stereotype view of Italian automotive and motorcycle electrics. More encouraging is the starting system, which, powered by a 15 amp/hour 12V battery, cranks the engine over quite briskly. The "drill" consists of pulling the choke full on, hitting the starter button and backing off on the choke slightly as the engine fires. When the engine is warm, the bike fires instantly without choking or playing with the throttle, and maintains a smooth, low idle.

The Benelli 650 is definitely worth a try for the person who is willing to look at things differently. It requires a knowledgeable owner, as it will never be distributed in great numbers in the U.S., and there aren't many dealers. But due to its oversquare bore-stroke configuration, high gearing, and the resulting low piston speeds, and oil-tight, robust construction, Benelli's 650 should prove thoroughly reliable for the long-distance rider.

The price is high, but as with fine art, you pay more for an original. An original it is, indeed, from a country that specializes in originals. If you can dig the completely divergent spread in conception between this compact Benelli, the rangy Ducati 750 and the big shaft drive Moto Guzzi, you know exactly what we mean.

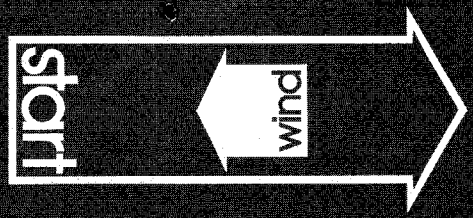
BENELLI TORNADO 650 S

SPECIFICATIONS

List price	$1799
Suspension, front	telescopic fork
Suspension, rear	swinging arm
Tire, front	3.50-18
Tire, rear	4.00-18
Brake, front, diameter x width, in.	9.06 x 1.125
Brake, rear, diameter x width, in.	7.87 x 1.125
Total brake swept area, sq. in.	58.05
Brake loading, lb./sq. in. (test weight)	10.84
Engine, type	four-stroke Twin
Bore x stroke, in., mm	3.30 x 2.28, 84 x 58
Piston displacement, cu. in., cc	39.2, 642
Compression ratio	9.6:1
Claimed bhp @ rpm	57 @ 7400
Claimed torque @ rpm, lb.-ft.,	N.A.
Carburetion	(2) 29mm Dellorto VHB
Ignition	coil & battery
Oil system	wet sump, gear-type pump
Oil capacity, pt.	6.4
Fuel capacity, U.S. gal.	3.6
Recommended fuel	premium
Starting system	electric; kick, folding crank
Lighting system	12V alternator
Air filtration	none
Clutch	multi-disc, wet
Primary drive	helical gears
Final drive	single-row chain
Gear ratios, overall:1	
5th	4.68
4th	5.36
3rd	6.24
2nd	8.63
1st	15.59
Wheelbase, in.	56
Seat height, in.	33
Seat width, in.	10
Handlebar width, in.	27
Footpeg height, in.	13
Ground clearance, in.	7.0 (at stand)
Curb weight (w/half-tank fuel), lb.	480
Weight bias, front/rear, percent	45/55
Test weight (fuel and rider), lb.	630

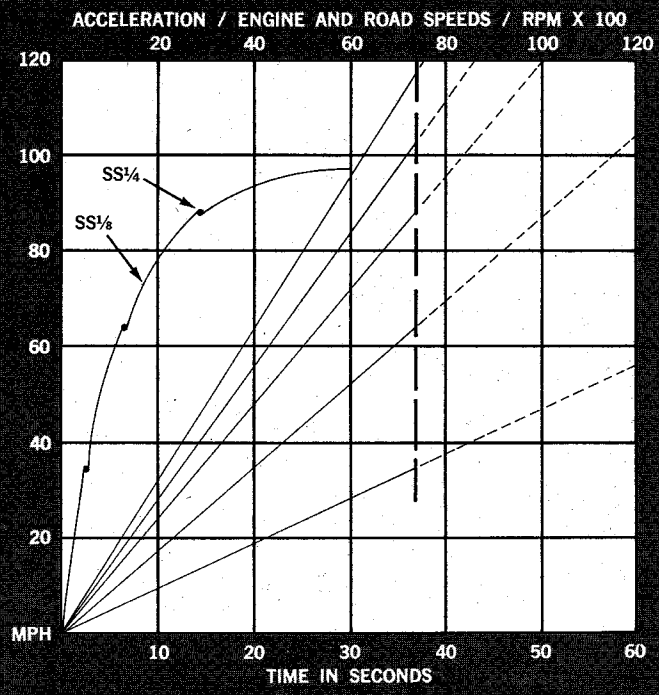
TEST CONDITIONS

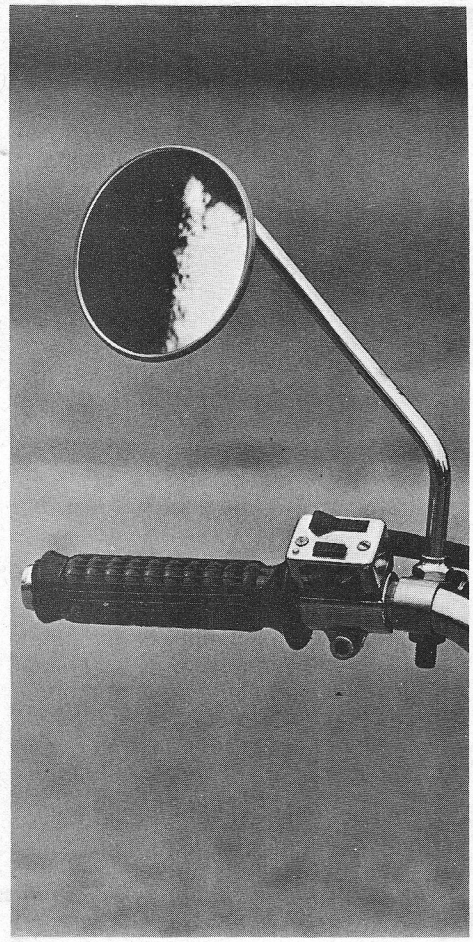
Air temperature, degrees F	82
Humidity, percent	57
Barometric pressure, in. hg.	30.55
Altitude above mean sea level, ft.	300
Wind velocity, mph	12 mph
Strip alignment, relative wind:	



PERFORMANCE

Top speed (actual @ 6100 rpm), mph	97
Computed top speed in gears @ 7400 rpm, mph:	
5th	117
4th	103
3rd	88
2nd	64
1st	35
Mph/1000 rpm, top gear	15.90
Engine revolutions/mile, top gear	3780
Piston speed @ 7400 rpm), ft./min.	2805
Lb./hp (with 160 lb. rider)	11.2
Fuel consumption, mpg	46
Speedometer error:	
50 mph indicated, actually	48
60 mph indicated, actually	59
70 mph indicated, actually	68
Braking distance:	
from 30 mph, ft.	35
from 60 mph, ft.	152
Acceleration, zero to:	
30 mph, sec.	2.3
40 mph, sec.	3.5
50 mph, sec.	4.6
60 mph, sec.	6.1
70 mph, sec.	8.0
80 mph, sec.	10.7
90 mph, sec.	17.4
Standing one-eight mile, sec.	8.77
Terminal speed, mph	73.52
Standing one-quarter mile, sec.	14.70
Terminal speed, mph	87.80



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