Driving Impression:

VOLVO GTL TURBO

Turning a 107-bhp weakling into Swen Atlas

BY JOHN DINKEL

PHOTOS BY JOE RUSZ

SURPRISE. WHILE WE'VE been looking elsewhere for our automotive entertainment, Volvo has pulled a fast one. In 1978 Volvo gave us the GT. With gas-over DeCarbon shocks, thicker anti-roll bars, wider alloy wheels and high-performance Pirelli radials, a front air dam and distinctive striping, the GT made us think twice before categorizing all Volvos as roomy, comfortable, durable but rather stodgy sedans.

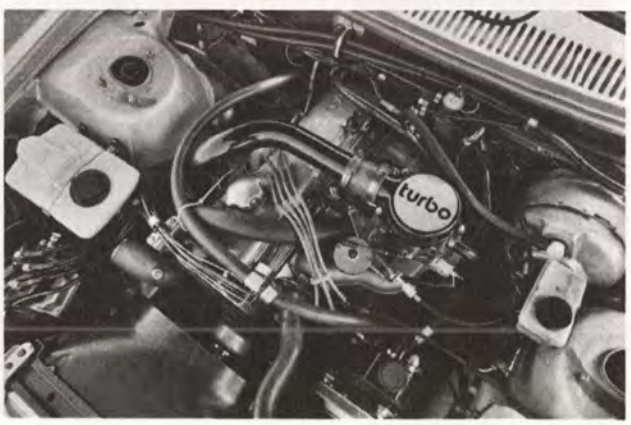
However, the GT failed to deliver all of its new-found promise in one critical area: horsepower. But pretty soon the automotive bullies of this world won't be kicking rubber dust at Volvos any more. Volvo's magic elixir is one that has perked up several other automotive weaklings, including the Porsche 924 and the Audi 5000. In one 5-letter word: turbo. Volvo has added an AiResearch BT03 turbocharger with integral wastegate to the current 2.1-liter 4-cylinder and the resulting GLT Turbo, as it's called, works wonders for Volvo's image.

For the statisticians in the audience the figures read as follows: 0–60 mph in 10.2 seconds, versus 11.3 sec with normally aspirated power, and the standing quarter mile in 17.5 sec at 78.5 mph, compared to 18.5 at 75.0 mph.

In U.S. trim and with 5-psi boost, the turbo four produces 127 bhp at 5400 rpm and 150 lb-ft of torque at 3750. (European turbos get an extra 2 psi of boost and commensurate increases in horsepower and torque: 155 bhp at 5500 rpm and 160 lb-ft at 3750, respectively.) These are healthy increases compared to the non-turbo engine's 107 bhp at 5250 rpm and 114 lb-ft at 2500.

I've used the expression "added a turbo" rather loosely because there's a lot more to the installation than you might notice on a casual inspection. For example, unless you tore into the engine's innards you wouldn't know that the compression ratio has been reduced from 9.3:1 to 7.5:1 or that the turbo 4-cylinder has sodium-cooled valves with Stellite seats and faces. Look under the hood at the sanitary turbo installation and you'll discover a one-quart-capacity, thermostatically controlled oil cooler up front near the radiator.

A turbo engine packs more charge into each cylinder when it's on boost. That's how it generates all that extra power. The additional fuel and air don't just magically materialize; you've got to design for it, and Volvo's solution is a clever one. Count the number of holes in the injection's fuel metering unit and the sum will be six instead of the expected four. By fitting the metering unit from the V-6 (with two of the openings suitably blocked),



Turbo dash gets extra instruments including a boost gauge.

Volvo engineers have effectively "tricked" the injection system into seeing more displacement than is really there. So when the turbo starts twisting and the 4-banger starts breathing like a six, additional fuel and air are instantly available.

To ensure longevity the turbo engine has three built-in safeguards. First is the usual wastegate. Second is an overboost solenoid that completely dumps the wastegate if the boost exceeds 7 psi. If that, too, should fail, then another backup system shuts off the supply of fuel at 10 psi of boost.

Having added lots more go, Volvo engineers also included extra whoa. The turbo model is equipped with the vented front discs from the 6-cylinder cars; rear brakes are standard solid discs. The other performance change of note involves the transmission. The manual gearbox in all models gets a higher numerical 1st gear ratio (4.03 versus 3.71:1). In the case of the turbo the transmission is coupled to a taller (3.73 versus 3.91:1) final drive. The result of these changes is a slight improvement in low-end grunt plus better highway fuel economy.

During a recent trip to Connecticut I had a chance to test the performance of the GLT Turbo at Lime Rock Park and to sample its roadability on the demanding 2-lane roads twisting through the nearby countryside. I came away very impressed. The key word in any turbo installation should be flexibility and this car has it. The engine will pull from as low as 1500 rpm in 4th gear without protest, and you can "short shift" it at 5000, 4000 or even 3000 rpm without fear of running out of pulling power. Volvo's 4-cylinder gets rather noisy about 5000 and with the turbo you don't have to thrash it continually to the 6500-rpm redline to extract decent performance. The turbo effectively broadens and raises what was a relatively narrow power band, and the wide-ratio gearbox feels like it's been fitted with two extra gears. The power comes in very progressively and I was not acutely aware of turbo lag or the effects of lower compression during off-boost operation. You can feel the boost from as low as 1500 rpm but the engine really starts to feel "cammy" from 3200 on up. I didn't have an opportunity to check fuel economy, but according to Volvo, figures in the 22–25 mpg range are not unusual.

As you read this, Volvo dealers will have started receiving their first shipments of Turbos. Volvo expects to build 2500 for the U.S. in 1981 at an estimated price of $13,500 including air conditioning and a sunroof but not a radio. These days that's a bargain and I leave you with one additional piece of advice. If you're one of those nasty types who has looked upon Volvos as easy pickings, I'd suggest that in the future you listen before you leap. Because if you hear that distinctive whine of a turbo, chances are your opponent is a Swen Atlas and not some wimpy 107-horsepower weakling.

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find an intermediate throttle position where it will pull. I would guess that the 3-speed automatic would be hopeless. Peculiarly enough, all this super-rich slogging doesn't seem to affect the fuel mileage much (hovering around 31 mpg at this point; only one qt of oil added) nor was it difficult to start hot or cold at high altitudes. We eventually got to Glenwood Springs, which may have one of the most nowhere restaurants in the world but also features a couple of good ones. Glenwood Springs is on the crossroads just after scenic Glen Canyon, side roads going to Aspen etc and thus is frequented in the white season. We stopped at the Ponderosa Lodge, one of those collections of funny little log cabins, but the nice lady and her husband have built some new A-frames out back where you can have dry wood burning in the fireplace plus a horse looking in the window. Cheaper than the Holiday Inn and you can open a window to clean air. For dinner one goes to the Fireside Inn which looks sort of off-putting with a big sign saying Lounge but actually is a very professional operation run by some German people. Long time since we had a decent Wienerschnitzel and I don't mean a weenie. For breakfast we were sent to Rosie's Bavari Inn (!) closer to town, a nice little place, clean and not too kitschy, presided over by Rosie herself who has a Number 1 chop operation and will sell you a whole crumb tart. Worth the trip alone.

Much refreshed, we whizzed off down the road, finally getting out of Colorado but not the lovely scenery evocative of old cowboy movies, and some 20–30 miles past the border took the turnoff to Cisco which, for 10 miles or so, looked like a bad guess. However after a while comes a sign saying Moab which, when obeyed, takes us down a canyon road and a tiny one-way bridge which is too small for RVs, at a guess, and a 2-ton limit to boot. Thence comes a lovely drive through a precipitous canyon wherein live the upper reaches of the mighty Colorado, whose acquaintance we had already made some distance above Glenwood Springs, already pretty wide and moving along at a purposeful 8 knots or thereabouts. There are places to come off the road and park to spend the day even if RVs would have to come in from the Moab end. This was really western with the view down the red rock canyon featuring tall snow-capped peaks at the end. At any rate, from Moab we motored off down through Monticello etc etc (copwise, Utah is the West's Georgia) with lovely scenery *très* folklore and eventually puttered past Monument Valley which is good enough to be on airline calendars and in the teeth of our now freshening headwind and some good opera backdrop clouds, on to Gray Mountain just past the junction at Cameron and the east entrance to Grand Canyon.

The truck stop restaurant/trading post/post office/social center at Gray Mtn was pretty good, actually, for meals if not at all cheap so we set out in good time and in good humor for the last day's run which looked to be one of these 550-mile marathons which I like but my poor wife hates. Naturally enough it turned out to be mostly downhill and as the Volvo was becoming broken in nicely turned out to be real pleasure. There are some twisty bits; I forgot to mention that the stiffer suspension on this particular example makes it a capital mountain car (downhill anyway) as it doesn't lean much, understeer, oversteer etc and on the occasional ups, other traffic can actually be passed by dropping out of od and into direct 4th. The clouds by this time were turning into Fronts and having from time to time a few doses of snow around Flagstaff not to mention 40 mph in gusts (quite a few trailers and one of those transportable prefab homes were on their sides) we were glad we had our nice comfortable Volvo which was quite imperturbable. And that we were going downhill to the flat. Actually down at reasonable altitudes the car had loosened up enough so that we could pull some of those long grades up from Needles in od top which proves it to be a practicable car for long-distance driving anyway. Eventually we arrived home still in daylight, an hour having been picked up, not particularly tired and having returned something like 33.16 mpg for 3000+ miles. A nice civilized automobile . . . maybe I will get to drive it back.