CROSSING THE U.S. ON ITS LONG-DISTANCE ECONOMY RUN, THE MERCEDES 190-D ENCOUNTERED ALMOST EVERY TYPE OF

HIGHWAY, WEATHER AND TRAFFIC CONDITION—PLUS AN ENDLESS ARRAY OF INTERESTED SPECTATORS AT EVERY STOPPING POINT.

Is the DIESEL the coming economy car?

Could be, as 5122-mile test run from Seattle, Wash. to New York City in a Mercedes-Benz 190-D gives these amazing figures: 41 mpg average at an average speed of 41 mph. Total cost—$32.27 or about 6/10ths of a cent per mile.

by Bill Carroll

MISTER, THEY DON'T MAKE diesel engines small enough for passenger cars. If I put diesel fuel in your tank, this car will never run again," grumbled the attendant of a little Midwestern station. So we had to pop the hood of MOTOR TREND'S test car to prove there really is such a thing as a diesel car.

It all began back in 1876, when a German by the name of Otto built the first practical spark ignition four-stroke engine. By 1892 Rudolph Diesel had proposed an engine in which air was compressed until high temperatures were reached to ignite fuel injected at maximum cylinder pressure. This is the diesel engine. No ignition system, and a fuel that is difficult to burn in the liquid state, before mixing with air at a higher compression ratio than used in Otto engines.

By 1936 the Daimler-Benz firm had enough experience building huge ship and powerplant diesels to begin production of a tiny four-cylinder unit for their passenger cars. Today, more than 100,000 Mercedes-Benz diesels are scooting around Europe. Most of them are in taxis because they have proved to be more economical than any other common form of automotive power.

Two years ago Mercedes-Benz announced a new and highly improved diesel passenger car with the same body and chassis as used for 180, 180-D and 190 sedans. But model number and engine are totally different. The 190-D (for diesel) is a true diesel in which fuel is atomized into the Daimler-Benz pre-chamber combustion system that has proven both reliable and quiet. The new four-cylinder engine is of 115-cu.-in. capacity, runs an amazing 21 to 1 compression ratio under an overhead camshaft to produce 55 horsepower at 4000 rpm.

We expressed interest in testing this new edition and the Mercedes people held a hurried conference which up-ended a happy offer. "No one can get the feel of a diesel in 200 miles," they said. "Drive it across the country and you'll really appreciate the economy of the 190-D."

Ten days later a nearly new (1728 miles on the clock) 190-D began threading its way through a cold dawn just opening its eyes over Seattle, Wash. We were beginning our 5122-mile "economy test run" to New York.

On the main highways sleepy drivers popped awake as they read signs identifying the first diesel they had probably ever seen . . . 16 miles outside Ukiah (Calif.) a deputy sheriff

continued on page 64

Is the Diesel THE COMING ECONOMY CAR?

continued from page 33

escorted us to the city limits . . . A disgruntled San Francisco policeman allowed five minutes to move the car off its sidewalk display point, which caused a minor panic as someone had locked the keys inside . . . Arizona made us buy a special permit for fuel as diesel stations collect no road tax and the state wants it anyhow . . . "Boy, if this keeps up you'll put us out of business," said a Kansas City service station owner after replacing the six gallons of fuel we'd used to cover 253 miles . . . The mayor of Peoria Heights enjoyed his ride but thought the car a little slow . . . In Chicago the sun came out and wind went away during our two-day stay in town . . . Detroit snowed us out of town (they'll be sorry when diesels replace gas-happy V8s) . . . And Toledo turned out en masse to see the MT car on display . . . Pittsburgh was unimpressed and Philadelphia had so much rain the dealer sold only four cars all day. We arrived in New York on time, displayed the car to a waiting group of automotive people, then left for a quiet German dinner at Luchow's.

When our figures were added, divided and averaged, the results of MOTOR TREND'S test are impressive. We'd driven a 2680-pound car, with 400 pounds of passengers and 200 pounds of luggage, from Seattle to New York, on a route totaling 5122 miles, for only $32.27. No repairs, no adjustments. Average speed was 41.14 miles per hour, about right if you keep in mind we had the speedometer pegged at 50 most of the time. And miles per gallon were an amazing 41.04. This figures to 9/10ths of one cent per mile.

Wise guys may question our test methods. So for their benefit, here's how. Each morning the fuel tank was filled to a mark inside the filler neck. Then while driving at a steady 50 miles an hour (where traffic and law permitted) we'd cover one leg of the trip. On arriving at the overnight stop we'd find a diesel station, level the car and fill to the same mark inside the filler neck. This provided our point-to-point mileage figures. Miles per hour were computed from a stopwatch which ran as long as the car ran; with time out for eats, long trains and traffic delays. Speedometer divided by watch gave miles per hour. Tires were at recommended pressures, and engine oil the proper grade. We played the radio and used the heater when necessary, making no effort to stretch fuel mileage by reducing generator load. We did not coast down hills.

You might be interested to know that external differences between our car and 190s with gasoline engines are limited to use of the initial "D" behind an identifying 190 on the trunk lid. Inside the only difference is a starter knob and glow plug indicator on the dash. But under the hood there's plenty of proof it's a diesel. An injection pump on the left lies on the nozzle side of the block, which provides short injection pipes of equal length for accurate metering. There's even an air control unit which looks like a carburetor, but isn't. When you can't find spark plugs, distributor or coil, you'll be convinced it's a diesel. However, the crankcase as well as cylinder head bore formation are almost identical for both gas and diesel 190s which makes for low-cost production and a plentiful supply of spare parts.

Starting a Mercedes diesel is somewhat different from punching a gas engine to life. First you pull the starter knob out past the first notch, to the second notch. In this position it passes current to "glow" plugs, of which there is one in each cylinder. Each plug has a heater element (somewhat like a cigarette lighter) which glows and heats the pre-chamber. After 10 seconds of glowing (up to 30 seconds if it is near zero outside) you notice a tell-tale light in the panel. Pull the starter knob to the third notch and the engine fires. Let loose of the knob and it springs to the "Run" notch. Nice part of the whole operation is that warm engines need no glowing and start as quickly as the best gas engine.

When first started, a diesel sounds like dishes in a washing machine. But don't panic. Set the idle control (it's on the dash) and dive for low gear. Acceleration will be something less than head-snapping, and is best compared to a 1952 Chevrolet sedan. This means tires (you'll burn no rubber) and drivelines last longer. There's no trouble in keeping ahead of busses, big trucks and bicycles. As all four gears of the 190-D are synchro-meshed, make use of the red shift marks on the speedometer and wind the engine tight before shifting up. With this technique you'll easily keep up with the majority of traffic.

Highway traveling is pretty fine. The 190's four-wheel independent suspension (coils and wishbones in front, coils and low-pivot-point swing axle in the rear) produce a floating ride that at first seems a bit uncertain in the corners. But once you get used to being comfortable while rounding a sharp corner, you'll find it almost impossible to unglue the tires at any reasonable speed. Acceleration to 60 is fairly rapid, keeping in mind you have 55 horsepower—not 300. Sixty to 70 is a little slower and reaching 80 takes a good run.

I kept notes on the questions asked me by Mercedes fans as we traveled across the nation, of which nine seemed to pop up more often than any others. Here they are, in order of frequency:

How does the 190-D differ from the 180-D?

It's much quieter, has an overhead cam engine, more displacement, more power, is faster, yet provides fuel mileage only slightly less than the somewhat sluggish 180-D. Body and chassis are the same.

Is a diesel-engined car noisy?

It sounds like an old Chevy, with loose rods and tappets, especially if you stick your head under the hood. However, driving is a totally different story. In the 190-D, at 50 miles an hour, wind around the windwings was the loudest noise.

Is it hard to get diesel fuel?

Nope. Follow the same trick most travelers use to get good coffee. Watch for a collection of trucks near a cafe and service station. In one you find the coffee, in the other diesel fuel. Besides, you can travel 600 miles on one tankful.

What's the difference between diesel fuels?

Premium fuels (they cost the most) are of high volatility, burn easily and have a low pour point (remain fluid in cold weather), which makes them suitable for frequent stop-and-start truck operation where an absolute minimum of smoke is permitted. General Purpose (No. 2) fuels are just that. Of moderate cost, they will do a good job in the 190-D, are what the factory recommends, and cost less per gallon. Once in a while you may be offered a third fuel which is even cheaper than the previous two. It is formulated for use in huge slow-running stationary engines, and though it will work in a Mercedes, low purity standards are one good reason for not using it in an automobile.

Is such a small (?) car comfortable?

It may be small on the outside, but inside there's plenty of room for this six-foot-two frame. I consider the 190-D more comfortable than 95 per cent of the cars I've tested in the past two years.

How much oil do you burn?

We burned exactly one gallon of fuel oil for every hour of driving during the 5122-mile run. A half quart of crankcase oil was missing at one drain period which was 1100 miles overdue. Reason enough for the oil level to drop.

Why is the crankcase oil so dirty?

Good question. It seems that diesel fuel is not as clean-burning as gasoline and accordingly more combustion products slip past piston rings into the crankcase. Because the Mercedes oil pump moves nearly twice the oil of most pumps, the dirt remains suspended in the rapidly circulating oil instead of sticking to crankcase walls. Drain the oil, change the filter and you've cleaned the engine.

Can I pull a trailer with a 190-D?

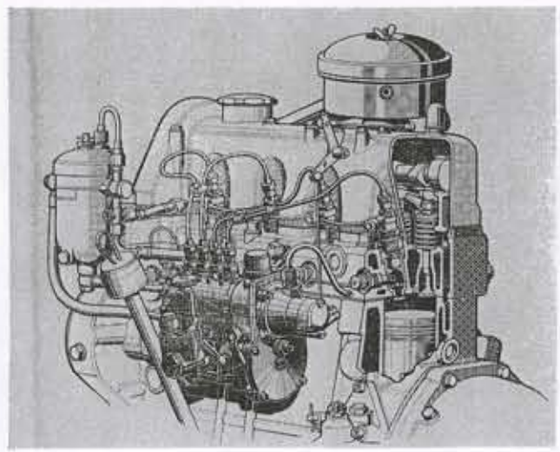
You sure can. The factory has an instruction sheet to help you produce a hitch that matches attachment points already in the underframe. They suggest a limit of 2000 pounds for a braked trailer, 1000 pounds if no trailer brakes.

Should I buy this car?

Not necessarily. It is a specialized means of transportation for the man (or woman) who travels long distances and wants complete comfort with economy. I doubt if anyone would quarrel with the lush comfort of a 190-D after driving it as far as I have. And before we get to fuel economy there's the matter of money saved on spark plugs and points that need never be bought, plus M-B diesel engines that run 150,000 to 200,000 miles between overhauls. I talked with a Borg-Warner executive on the subject of fuel economy obtained from his 180-D sedan. He's driven a total of 22,380 miles at a cost of $115.02 for fuel, while enjoying 38.04 miles per gallon of Chicago driving. Total operational cost for this car figures out to one-half cent per mile—which includes maintenance, insurance, depreciation and fuel.

If, like many travelers, this man is paid eight cents a mile by his employer . . . it seems he has pocketed $671.40 for a year of dieseling. Reason enough for high-mileage drivers to take a long hard look at their present gas-gulping transportation. A comparison with diesel power could point the way toward a raise in pay without a single memo to the boss. /MT

PHOTO BY BOB D'OLIVO



(Above) Four-piston Bosch injection pump is mounted on fuel nozzle side of the engine to gain shorter lines to pre-chambers. High fuel pressures at this point cause lines to expand, and they must be of equal length to insure precise metering. Injection pistons are lubricated by the fuel they pump, but camshaft that drives them has its own tiny crankcase.

(Above right) Overhead-cam engine looks like a fuel-injected gasoline-powered 190 but absence of coil, distributor and plugs is tip-off to diesel operation.

(Right) Fuel under 1700 pounds pressure enters pre-chamber and mixes with the hot compressed air at the precise moment for combustion. The glow plug, used only for cold starting, is located just below injection nozzle.