
CAR and DRIVER

ROAD TEST

Mercedes

Benz

300-SE

*This high-powered
European compact is
almost ideal for
American conditions*



Not since the Invicta Black Prince was announced in 1946 (May C/D) has a European manufacturer built a production car embodying so many details of advanced engineering as are contained in the Mercedes-Benz 300-SE. This model combines all the latest developments from the vast engineering staff of the old-established Stuttgart company, and one is easily led to believe that an important purpose in releasing the 300-SE for world-wide distribution was to obtain field experience with the various components prior to their use in future models. Mercedes-Benz has a unique policy with regard to technical innovations—the company believes in inventing and developing everything itself instead of relying upon outside suppliers as is common throughout the industry on both sides of the Atlantic.

Most notable features of the 300-SE are its Daimler-Benz automatic transmission, its air suspension, its power steering, its disc brakes and its limited-slip differential. Of course it also has the already well-proved Mercedes-Benz systems of port-type fuel injection and single-joint swing-axle independent rear suspension with lowered pivot point.

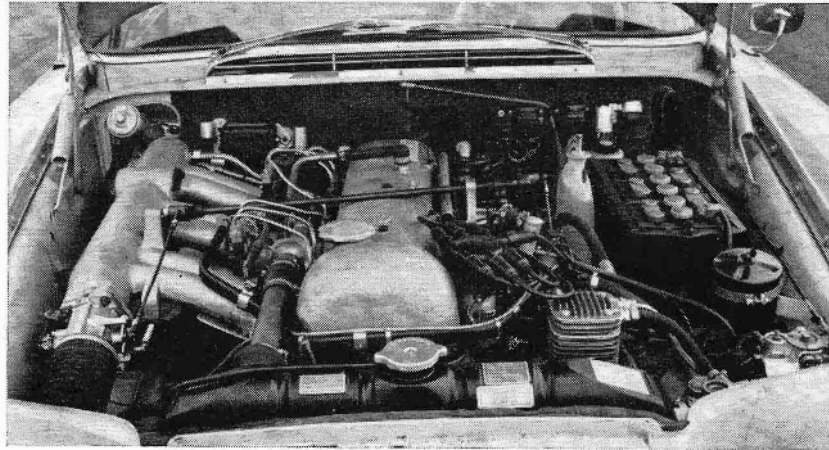
The mechanical over-elaboration of this car is not immediately apparent after the first driving experience. It is only after becoming familiar with it and its behavior that the full possibilities of the various elements in the chassis are realized. This was true for us, and it is extremely interesting that the factory itself reacted in the same manner. For the European rally championship, Mercedes-Benz has so far relied upon the four-door 220-SE to bring home the points, but competition manager Karl Kling, after lengthy tests with the 300-SE, feels that this car, in spite of its automatic transmission, may do the job better. The advantages of its air suspension show up better when road conditions get worse, and especially when high average speeds are aimed at.

If the greatest advantages of the 300-SE are not immediately appreciated, its close relationship with the 220 series becomes apparent right away. This is no executive's car like the obsolete 300-B and has even less in common with the pre-war Type 770, but is a practical everyday automobile for those who can afford it. However, the interior has neither better finish nor more luxury items than the 220-SE, and both interior and trunk space are exactly as in the 190 series, which sells at less than half the price. The 300-SE is, however, slightly heavier than the 220-SE, and slightly faster in both top speed and acceleration.

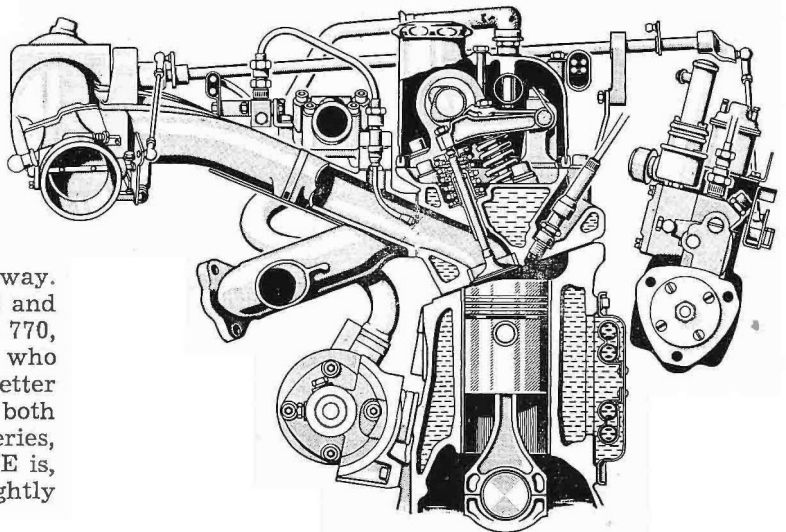
The 185-bhp light-alloy three-liter engine is a new power plant, having the same bore and stroke as the cast-iron unit of the 300-B but it is based on the light-alloy construction developed for the 300-SLR competition model of 1955. The fuel injection is essential in getting enough power, as experimental engines equipped with carburetors produced only 156 bhp at 5,000 rpm (against 185 at 5,200 with injection). Peak bhp (170 psi) is realized at 4,000 rpm with injection, while the carburetor version never exceeded 150 psi at 3,500 rpm. Whereas the 300-SLR used direct injection, port-type injection was chosen for the 300-SE (as for the 220-SE) because of the problems with oil dilution experienced with the racing engines and the higher

cost of the special Bosch injection pump required. We found the engine highly responsive and extremely flexible, but inclined to be noisy at high rpm. Fuel consumption was unexpectedly high: a 15.88-mpg average for the duration of the test.

The transmission was described in CAR AND DRIVER last December, but our experience with the car was then too brief to permit going into details of its operation. Americans used to torque converters may find the up-and-down changes of the four-speed gearbox objectionable, and the creep is rather strong. The choice of a hydraulic coupling pays off, however, in efficiency,

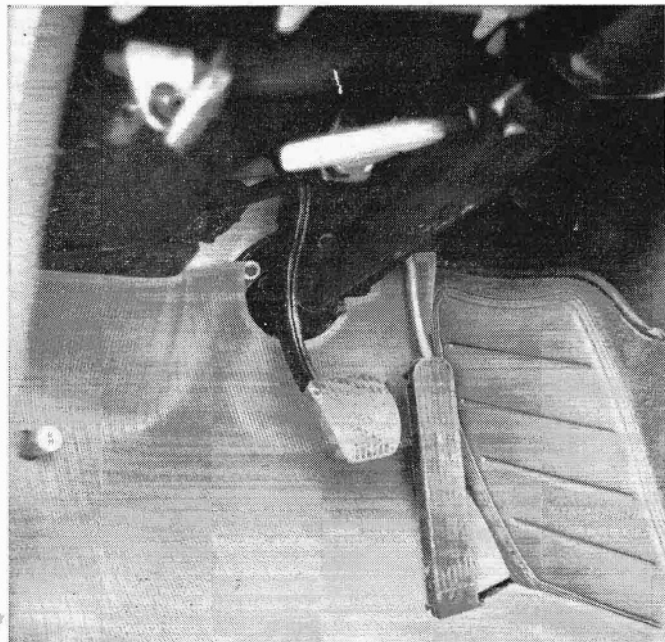


The engine compartment is completely filled with auxiliary equipment for accessories but maintenance and check-up points are accessible.



as there is only an eight-bhp loss at maximum rpm. Loss would be doubled with a torque converter.

Although the gears seem equally well chosen for acceleration from standstill, for city driving, and for mountainous roads with hairpin bends, there may be some question of whether the transmission is really perfectly mated to the engine. Displacement is only 182.8 cubic inches, while most American engines are twice as large, and consequently far less demanding in the way of gearing. In order to compensate, the 300-SE has a 4.1-to-one final-drive ratio, which gives excellent high-speed acceleration but means that the



Absence of a clutch pedal leaves plenty of room for the driver's left foot, but the brake pedal should have been wider.

engine is turning 3,800 rpm at 70 mph. The transmission can be held in a lower gear by the selector lever on the steering column, and the car can be driven almost like one with a conventional gearbox. If left in position "4" it will behave like most automatic transmissions, shifting up and down according to throttle opening and speed. For maximum acceleration, full kickdown is required, and the power available is more than adequate for normal driving. But top-gear acceleration without kickdown is surprisingly sluggish, and the driver soon learns to downshift manually for medium acceleration at part throttle. The procedure is the same for negotiating slight uphill with occasional straights, to prevent up-changes just before the turns, and in preparing to overtake on a three-lane highway.

The graph (bottom left) showing the shift programs in the different drive ranges also illustrates the fact that torque outputs coming closer to the theoretical maximum can be obtained by manual shifting. For maximum acceleration from standstill, it is necessary, in other words, to move the selector lever to position "2" and hold it there (with full throttle) until the engine is peaking out, then moving the lever to "3" or "4", as the full-throttle upshift to direct drive is delayed in the automatic-shift program until maximum rpm are reached in third gear.

The transmission is notable for its lightness as well as for its small power losses. The fuel-consumption increase caused by the hydraulic coupling is only 5% on an over-all average, or 8% in town driving.

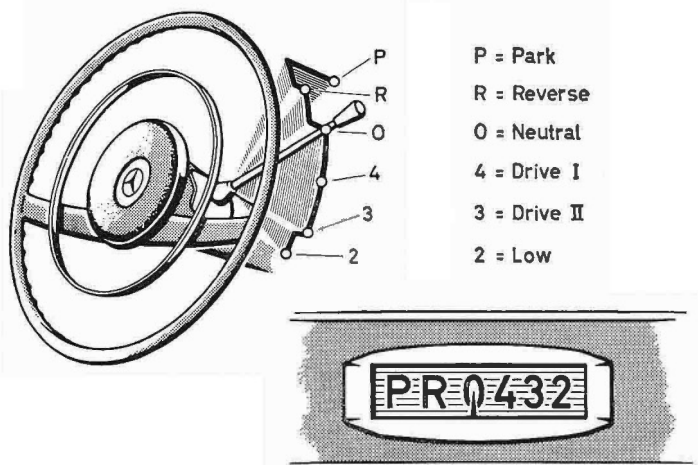
In our recent road tests of other Mercedes-Benz products (190 and 190-D in May C/D, and the 220-SE coupe in August C/D) we have talked at length about the excellent seating, driving position, and layout of the controls. The 300-SE has all the same advantages, and the power steering deserves particular praise. In contrast with American systems giving full assistance, the Daimler-Benz power steering has enough feedback to give proper road feel at all times. The initial steering effort is manual, and up to a Pitman-arm force of 375 pounds one-third of the effort is still manual. Beyond that point, all effort beyond 6.6 pounds is supplied by the Ate servo. In this way, the driver has exceptional control, and sharp turns, parking and backing up are just as easy as high-speed drifts.

The air suspension not only increases riding comfort but provides perfect leveling regardless of load. Compared with steel springs, the air bellows offer more flexibility and highly improved progressivity. There is, however, no roll resistance in the air springs, so anti-roll bars are fitted both front and rear. The air springs also require damping, so special shock absorbers have been developed to operate at temperatures up to 390°F (against 250°F in the shock absorbers used in the 220-S). These are made under license from de Carbon.

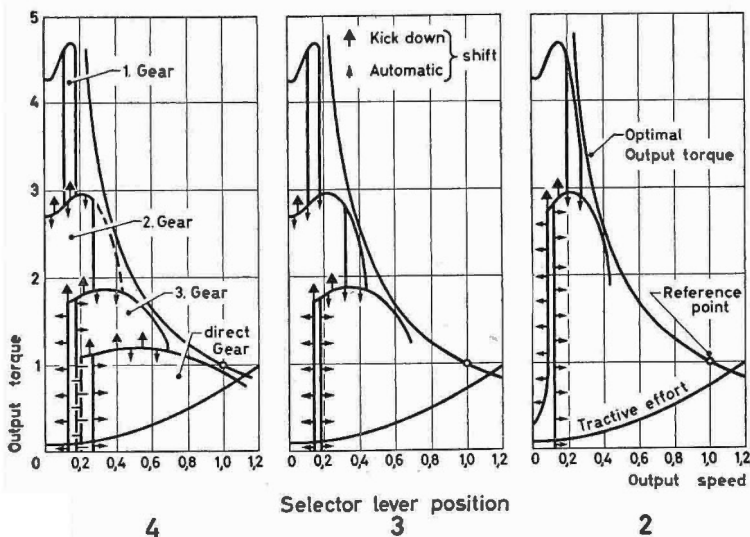
The suspension units are the same as in the 220, the air bellows just taking the place of the coil springs. Independent rear suspension is necessary in view of the low spring rates, and Mercedes-Benz has found the low-pivot-point swing-axle design well suited to air. The result is one of the most versatile suspension and springing systems in existence, giving this relatively heavy car exceptional road-holding qualities.

If only the price had been acceptable to a larger section of buyers, the 300-SE would find a wider reception in the world market than it now has. The car is being built in series, but still in small numbers after a year's production. Whatever its place in the Mercedes-Benz program, it will satisfy those who want a fast and roomy five-seater of modern conception.

C/D

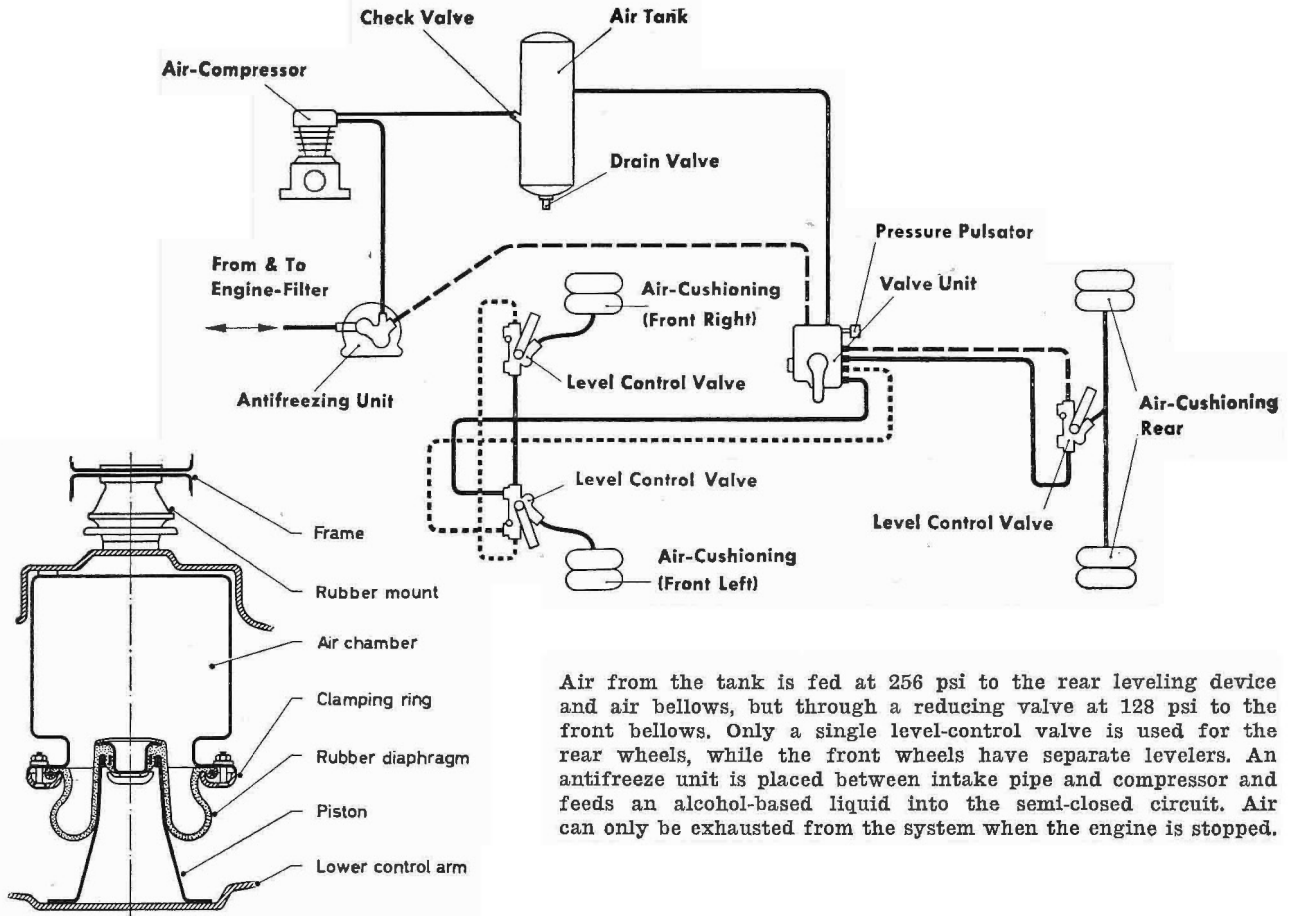


The gear-selector lever moves in a staggered quadrant, with only third, fourth and neutral positions in the same plane.



The shift program of the various drive ranges permits close to full torque utilization but has some minor disadvantages.

MERCEDES-BENZ AIR SUSPENSION

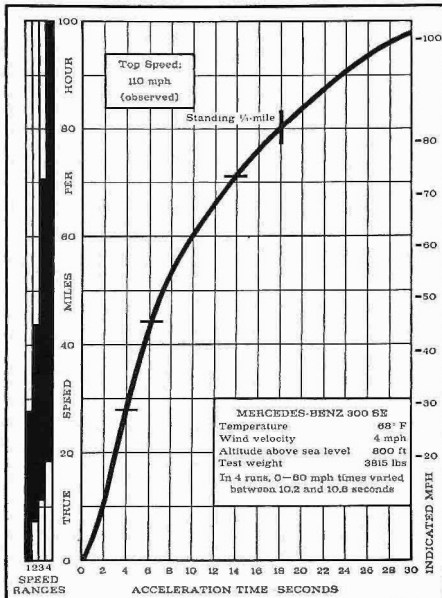


Air from the tank is fed at 256 psi to the rear leveling device and air bellows, but through a reducing valve at 128 psi to the front bellows. Only a single level-control valve is used for the rear wheels, while the front wheels have separate levelers. An antifreeze unit is placed between intake pipe and compressor and feeds an alcohol-based liquid into the semi-closed circuit. Air can only be exhausted from the system when the engine is stopped.

MERCEDES-BENZ 300-SE

Price as tested: \$8,637 POE N.Y.

Importer: Mercedes-Benz Sales, Inc.
635 South Main Street
South Bend, Indiana



ENGINE:

Displacement 182.8 cu in. 2,996 cc
Dimensions 6 cyl, 3.34-in bore, 3.47-in stroke
Valve gear: Single overhead camshaft operating in-line inclined valves through fingers.
Compression ratio 9.0 to one
Power (SAE) 185 bhp @ 5,200 rpm
Torque 205 lb-ft @ 4,000 rpm
Usable range of engine speeds 1,000-6,000 rpm
Carburetion: Mercedes-Benz/Bosch port-type fuel injection
Fuel recommended Premium
Mileage 12-20 mpg
Range on 19-gallon tank 240-380 miles

CHASSIS:

Wheelbase 108.3 in
Track F 58.35 in, R 58.66 in
Length 192 in
Ground clearance 7.2 in
Suspension: F: Ind., wishbones and air cushions with air chambers, rubber auxiliary springs, anti-roll bar, hydraulic shock absorbers. R: Ind., single-joint swing axle with low pivot point, air cushions with air chambers, rubber auxiliary springs, anti-roll bar, hydraulic shock absorbers.
Steering: Daimler-Benz recirculating ball power steering
Turns, lock to lock 4.0
Turning circle diameter between curbs 38.4 ft
Tire size 7.50 x 13
Pressures recommended F 24, R 27 psi
Brakes: Dunlop 10-in discs, ATE power booster, 428 sq in swept area.
Curb weight (full tank) 3,510 lbs
Percentage on the driving wheels 50.5

DRIVE TRAIN:

Clutch: Daimler-Benz Automatic (with planetary transmission).

Gear	Ratio	Step	Overall	Mph per 1000 rpm
Rev	4.15		17.00	4.4
1st	3.98	58%	16.37	4.6
2nd	2.52	59%	10.38	7.2
3rd	1.58	58%	6.49	11.6
4th	1.00		4.10	18.4

Final drive ratio: 4.10 to one (limited-slip differential)

