

THE SPORTOMATIC.



# It makes driving slowly more pleasant - because you don't have to declutch.

The Sportomatic was developed by the House of Porsche. It adapts the principle of hydraulic torque conversion for use with high-performance engines too. The Sportomatic offers all the advantages you would expect from combining a Porsche synchromesh gearbox with a fluid transmission. Its primary function is to make the driver's job easier. Some traffic situations are enough to make the most enthusiastic driver lose heart.

Driving in dense city traffic can be one of these. Or constant starting and stopping in queues and traffic jams. Times when never-ending clutch en-

gagement and disengagement can prove a heavy strain on both driver and car.

The Sportomatic makes tough situations like these easier to bear.

It takes over tedious clutch pedal and gearshift movements for you. The clutch pedal vanishes. All you have to do is select one of the four 'driving ranges'.

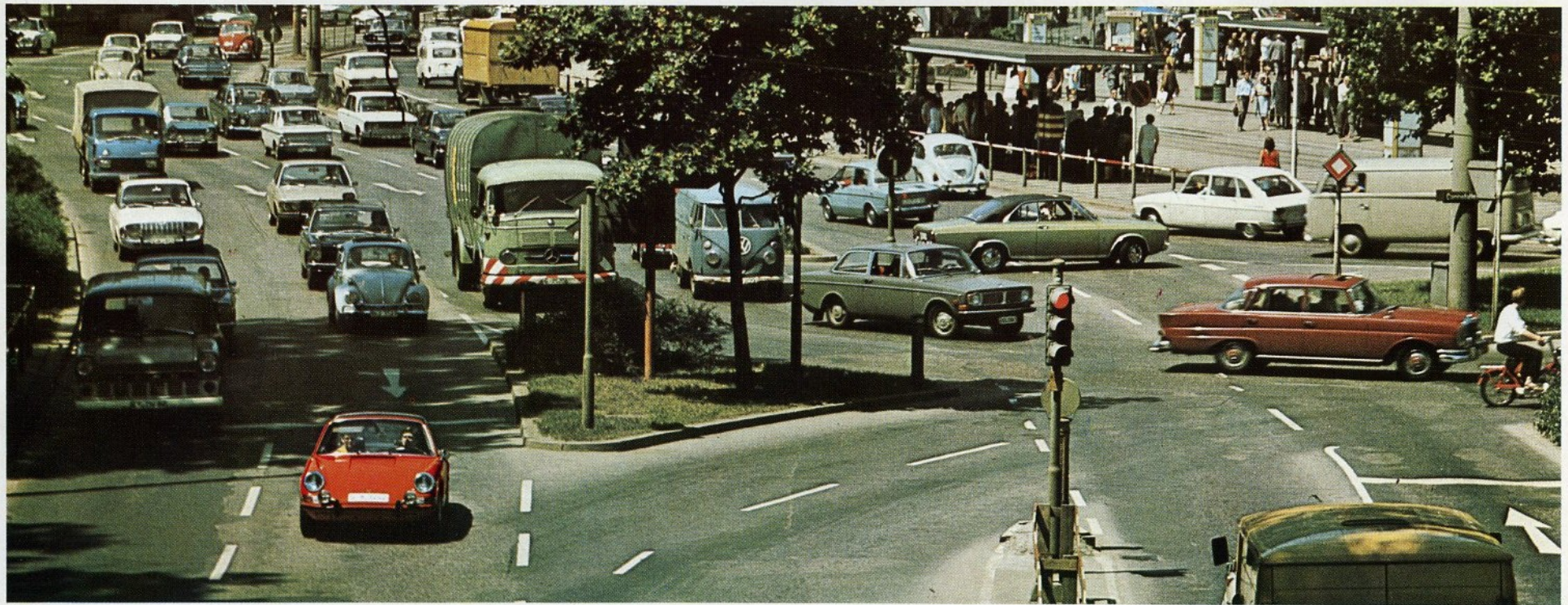
After that, you can deal with any situation with just accelerator and brake pedal alone.

The driving ranges of this automatic transmission overlap in such a way that you need never shift

gears at all. You can concentrate your attention fully on the road and keep your hands on the steering wheel all the time.

But the Sportomatic isn't just around to soothe your nerves.

It protects your Porsche or VW-Porsche too. The hydraulic torque convertor absorbs gearshift shocks which normally impose severe strain on drive and transmission components as output loads fluctuate.





# It makes driving fast more fun - because you can shift gears if you like.

The Sportomatic has another big advantage - the keen driver can select the speed range he prefers at any time, just as if he were using a standard manual shift gearbox.

The Sportomatic cars provide a choice of 4 driving ranges as well as reverse:

L = for road speeds between 0 and 48 mph

D = for road speeds between 0 and 68 mph

D<sup>3</sup> = for road speeds between 0 and 93 mph

D<sup>4</sup> = for road speeds between 0 and the car's maximum.

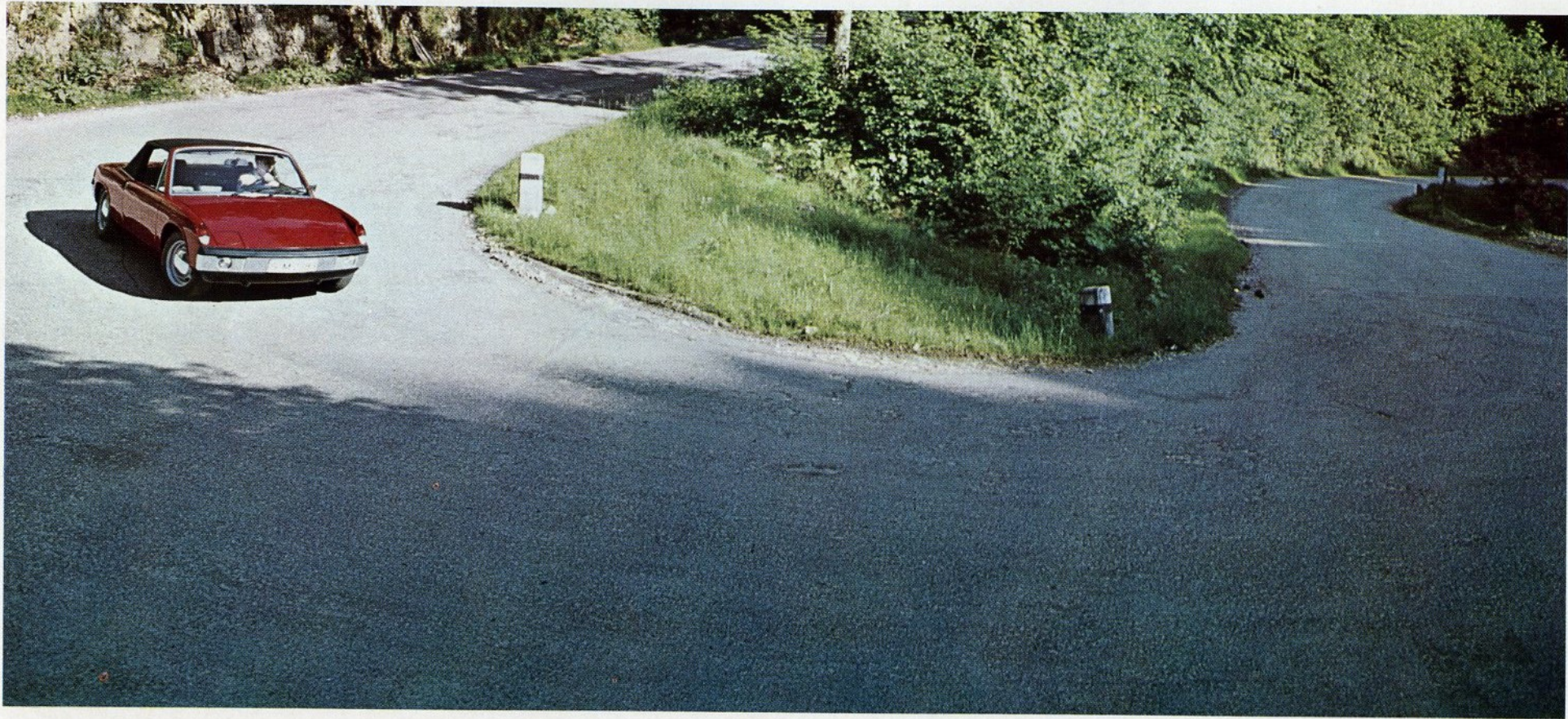
To obtain maximum acceleration, you just select the lowest suitable driving range and keep it engaged all the way up the engine speed band.

Gearshifts to a higher or lower driving range take place at lightning speed, with no uncontrollable

jerking. You will appreciate this feature when driving on smooth, icy roads.

And engine braking is always available. All you have to do is select a lower driving range.

The Sportomatic combines in this brilliant fashion the sporting qualities of a good manual gearbox with the comfort and convenience of an automatic transmission.





# And it works like this.

Two engineering principles of acknowledged quality are combined: the fluid transmission and the Porsche allsynchromesh four speed gearbox. Strongly built, straightforward designs, simple to maintain. The Sportomatic transmission has three major elements. The fluid coupling, more accurately called the hydraulic torque converter - the automatic gearshift clutch - the manual shift four speed gearbox with parking lock.

The hydraulic torque converter operates on the 'Trilok' principle. Two paddle-wheels, the input or pump wheel and the output or turbine wheel face each other very closely inside the converter housing. The third element, the impeller, rotates on a

freewheel between the other two. The freewheel is supported in the converter housing and prevents the impeller from rotating in the opposite direction to the turbine and pump wheels.

The converter housing is filled with oil under pressure from the engine oil tank. When the engine starts to turn the input or pump wheel, its blades press against the oil inside the turbine wheel also. The energy imparted by the oil flow is converted into a force which starts to rotate the turbine wheel. As the oil flows away from the turbine wheel blades it strikes the inclined blades of the central impeller, and is diverted to flow back into the pump wheel blades at the most favorable angle. The freewheel

in the housing, on which the impeller is mounted, prevents the impeller from rotating backwards and reducing the directional force imparted to the oil. This redirection of the oil stream has the effect of increasing the rotary force supplied by the engine through the pump wheel so that a greater torque output is available at the turbine wheel. The increase is at its peak as the stationary vehicle begins to move, and falls gradually and continuously as road speed increases until the ratio of power input to output is again 1 : 1.

Whenever engine speed increases and the pump wheel begins to rotate faster than the turbine wheel, the resulting deflection of the oil stream by the impeller will yield increased power - in the form of extra torque - at the driving wheels. The greater the difference in rotating speeds of the two bladed wheels in the converter, the higher the level of 'torque multiplication'.

In normal driving, however, pump and turbine wheels soon begin to rotate at almost the same speed, and torque conversion no longer takes place. The converter now operates as a straight fluid coupling, with the impeller running freely in the same direction as the other two paddle-wheels. To shift from one driving range to the other in the manual gearbox, the power flow must be interrupted between the engine-torque converter unit on the one side and the manual gearbox which follows it. The hydraulic torque converter itself cannot be 'disengaged' at high engine speeds, and so an automatic gearshift clutch is installed between the converter and the manual gearbox.

Since the Sportomatic cars have no clutch pedal, engine manifold depression is used to operate a servo clutch withdrawal motor. A control valve regulates the link between the motor and the intake manifold. When the accelerator is fully depressed, static manifold depression is quite low, and of course no manifold depression at all is developed when the engine is stopped. A vacuum reservoir is therefore provided so that the gearshift clutch can be operated a number of times before manifold depression is exhausted.

A contact switch in the shift lever transmits an electrical impulse to the control valve as soon as the driver's hand touches the gearshift.

