



**ALFA  
AT WORK  
OPERATION  
GIULIA**

**EXCERPT  
FROM THE  
MAGAZINE**

**QUATTRO**ote

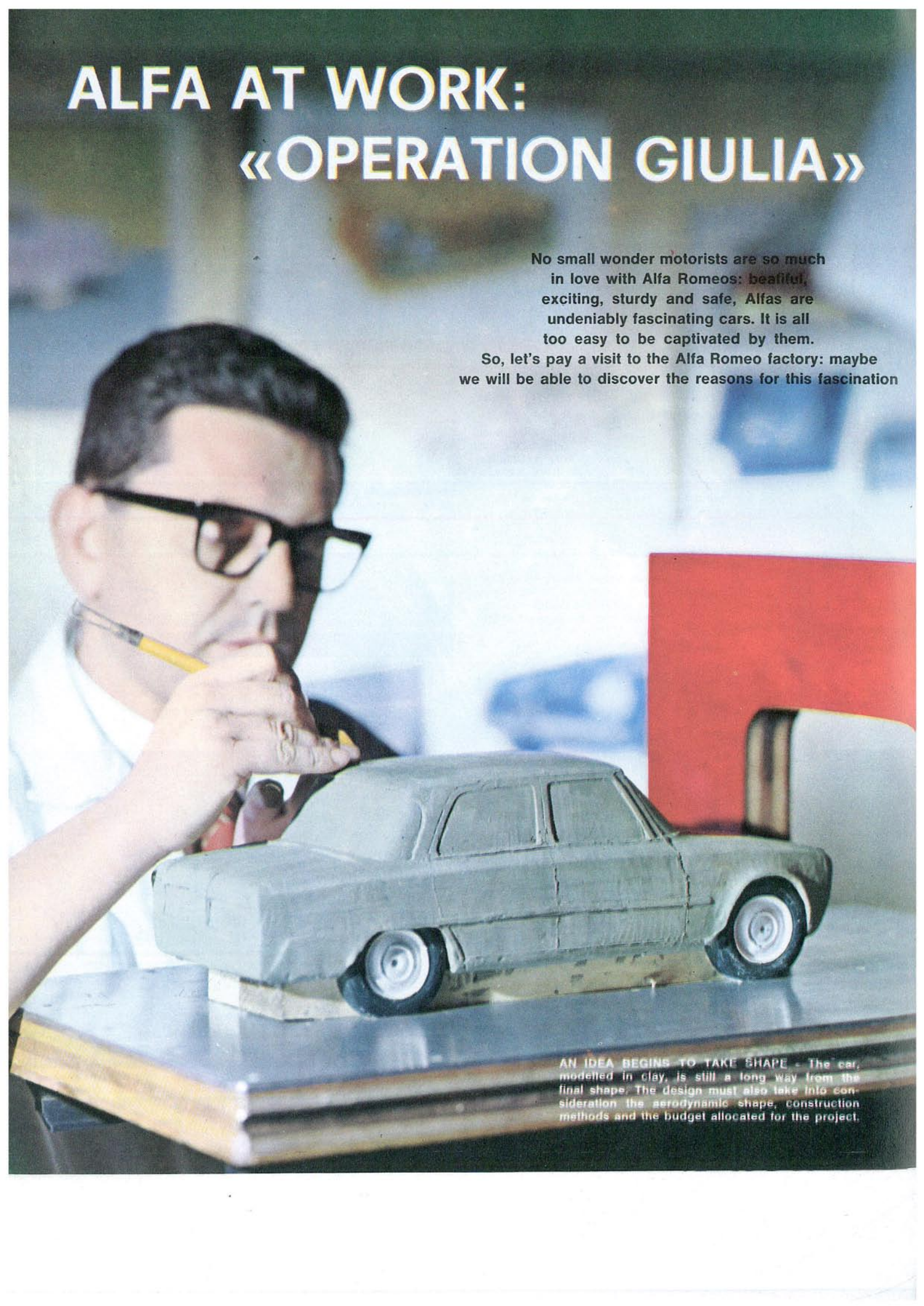
**SUPPLEMENT "ALL CARS OF THE WORLD"  
DATED DECEMBER 1965**



# ALFA AT WORK: «OPERATION GIULIA»

No small wonder motorists are so much in love with Alfa Romeos: beautiful, exciting, sturdy and safe, Alfas are undeniably fascinating cars. It is all too easy to be captivated by them.

So, let's pay a visit to the Alfa Romeo factory: maybe we will be able to discover the reasons for this fascination

A man with dark hair and glasses, wearing a white shirt and a dark tie, is focused on working on a clay model of a car. He is using a yellow-handled tool to shape the clay. The car model is a four-door sedan, likely an Alfa Romeo Giulia, and is placed on a metal workbench. The background is a blurred workshop or studio setting with a red wall and a white object.

AN IDEA BEGINS TO TAKE SHAPE - The car, modelled in clay, is still a long way from the final shape. The design must also take into consideration the aerodynamic shape, construction methods and the budget allocated for the project.



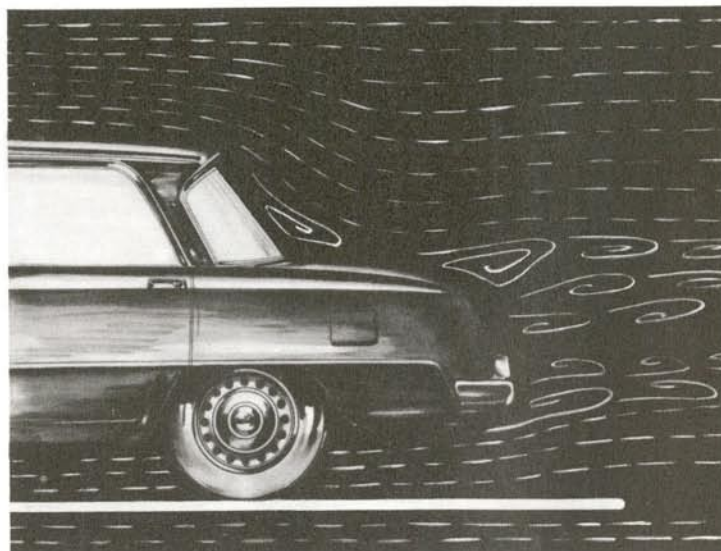


## When the «Giulia» was still a secret

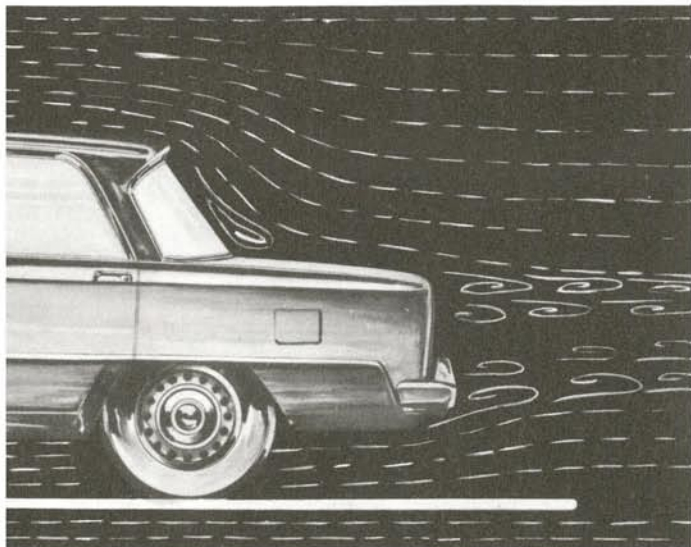
«The Styling Department»: this is the most closely guarded section in the entire Alfa Romeo organisation. Here in fact begins the fascinating story of the studies, tests and research which eventually lead to the creation of a new model. For us... a special pass! We are ushered into a large room, brilliantly lit, completely silent! Men in white overalls leaning over drawing boards, model cars of all shapes and sizes strewn everywhere rough drafts, vividly coloured sketches, materials of every possible shade. A dummy is lying on a divan, dressed in pale blue overall. He is tall and heavy - just like the average man: he is used for the tests which are carried out to determine the most comfortable and correct driving position. Full size body parts, completely covered with white sheets, are scattered everywhere - even cars have their own ghosts; here though they are ghosts of the future. In fact in the Styling Department, according to their studies, they are already in the 1970s.

### What the wind tunnel dictated

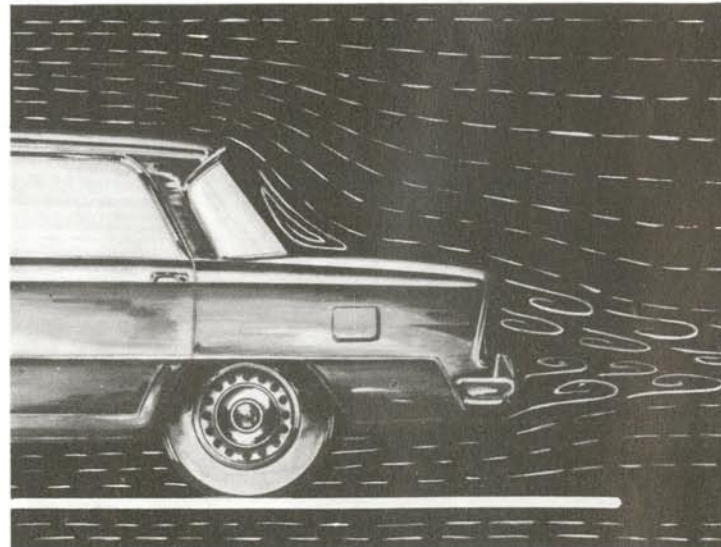
The major obstacle for a car in motion is air pressure. Therefore, the more streamlined the car, the more easily will it overcome wind resistance. Careful study of the bodyshape from both an aesthetic and aerodynamic point of view is made in the «wind tunnel». A small model of the car is placed in the middle of the wind tunnel anchored to the arms of a multiple balance and air is blown against it at varying speeds. The balance shows the values of drag, lift, etc. in pounds. Moreover, the regular or irregular movement of wool strands shows whether the aerodynamic shape is good or bad. It is from tests such as these that the tail of the Giulia was conceived and incorporated into the present shape.



**NOT LIKE THAT** - A rounded tail profile would leave in its wake large vortices tending to build up towards the front of the car. This would slow it down and increase petrol consumption.



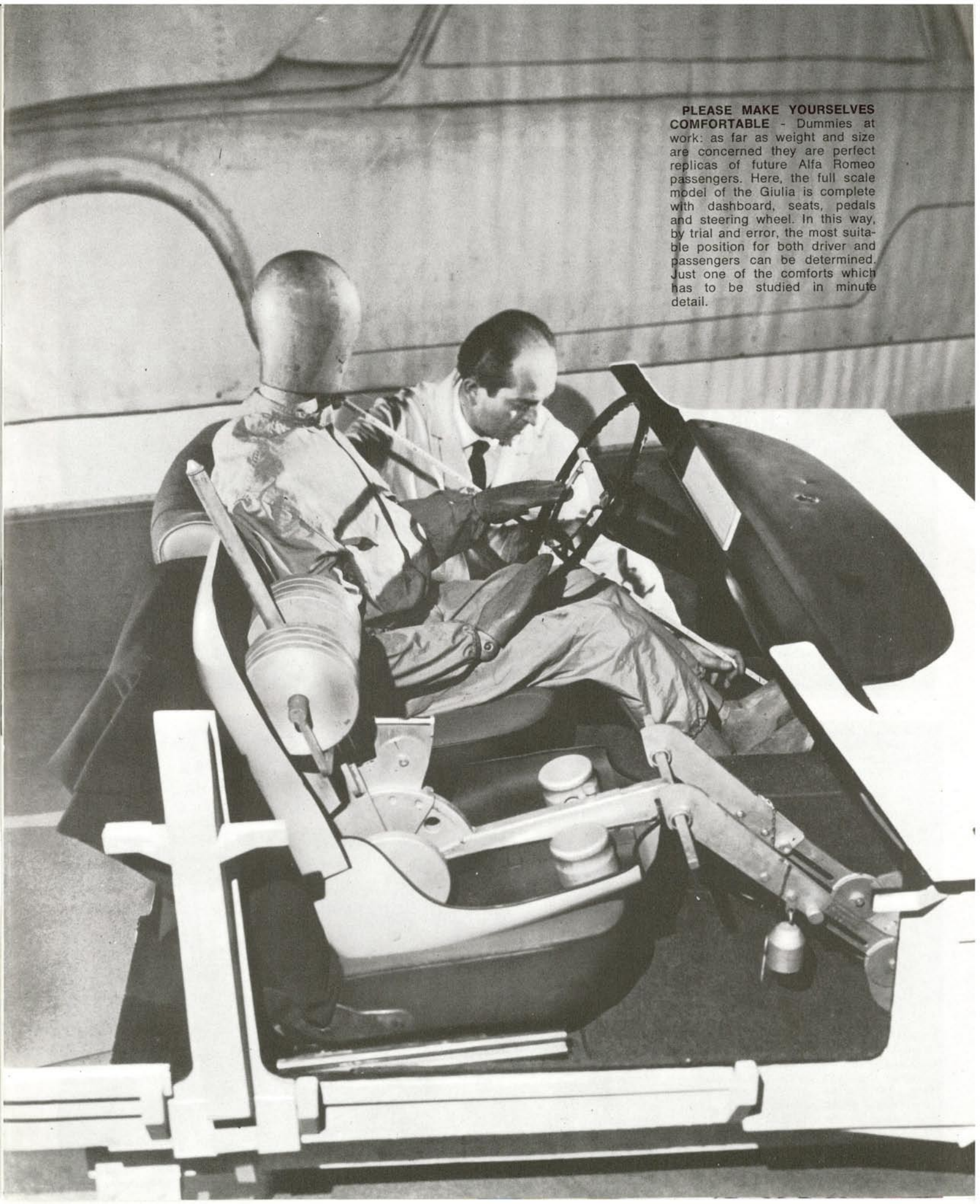
**THAT'S BETTER** - A knife-edged profile would definitely produce less turbulence towards the front of the car. The wake now is narrower than in the previous example.



**THAT'S FINE** - By adding a concave tail, turbulence is reduced still more. This shape gives the best result and explains why the Giulia goes faster and consumes less petrol.



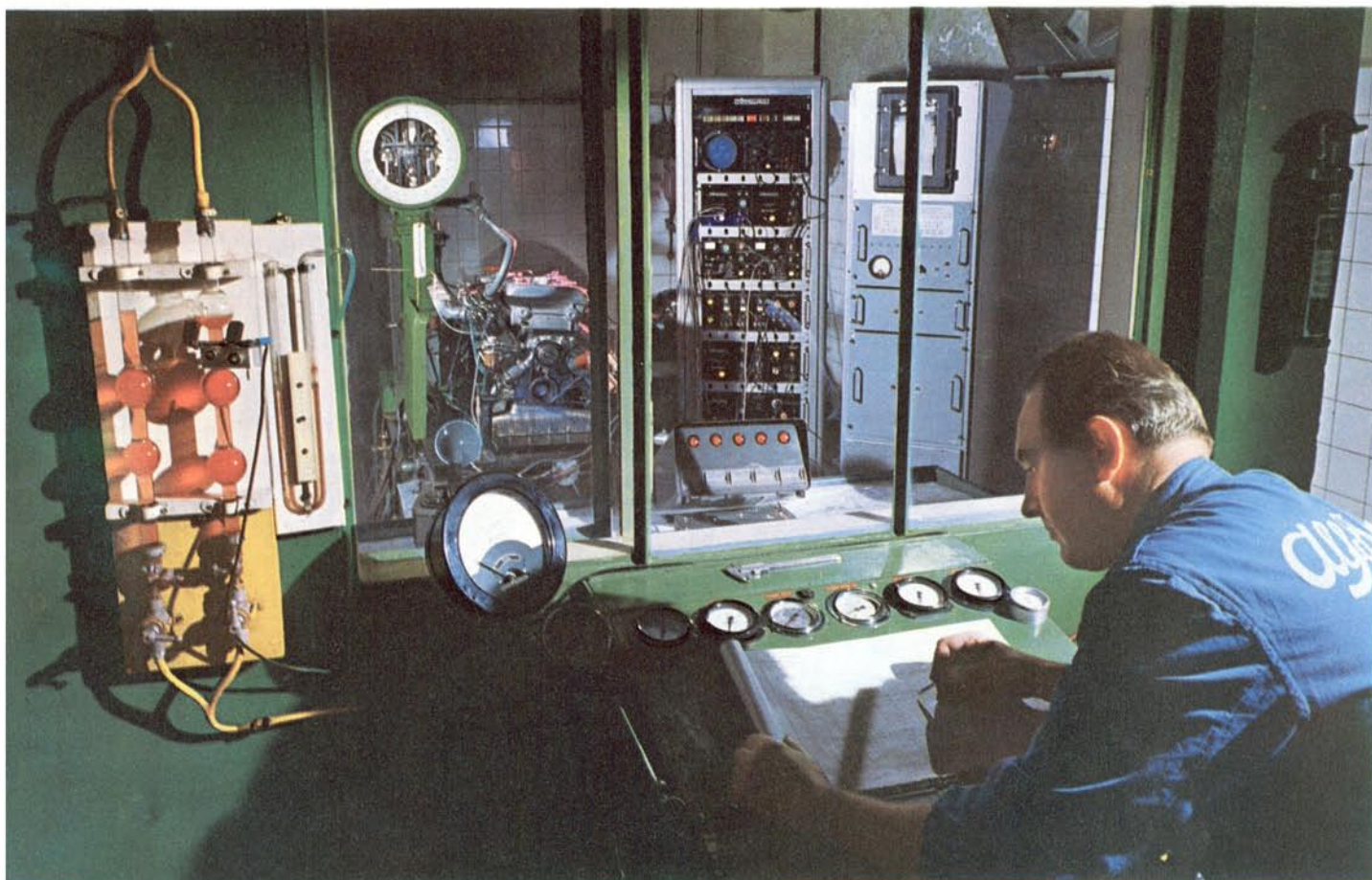
**PLEASE MAKE YOURSELVES COMFORTABLE** - Dummies at work: as far as weight and size are concerned they are perfect replicas of future Alfa Romeo passengers. Here, the full scale model of the Giulia is complete with dashboard, seats, pedals and steering wheel. In this way, by trial and error, the most suitable position for both driver and passengers can be determined. Just one of the comforts which has to be studied in minute detail.







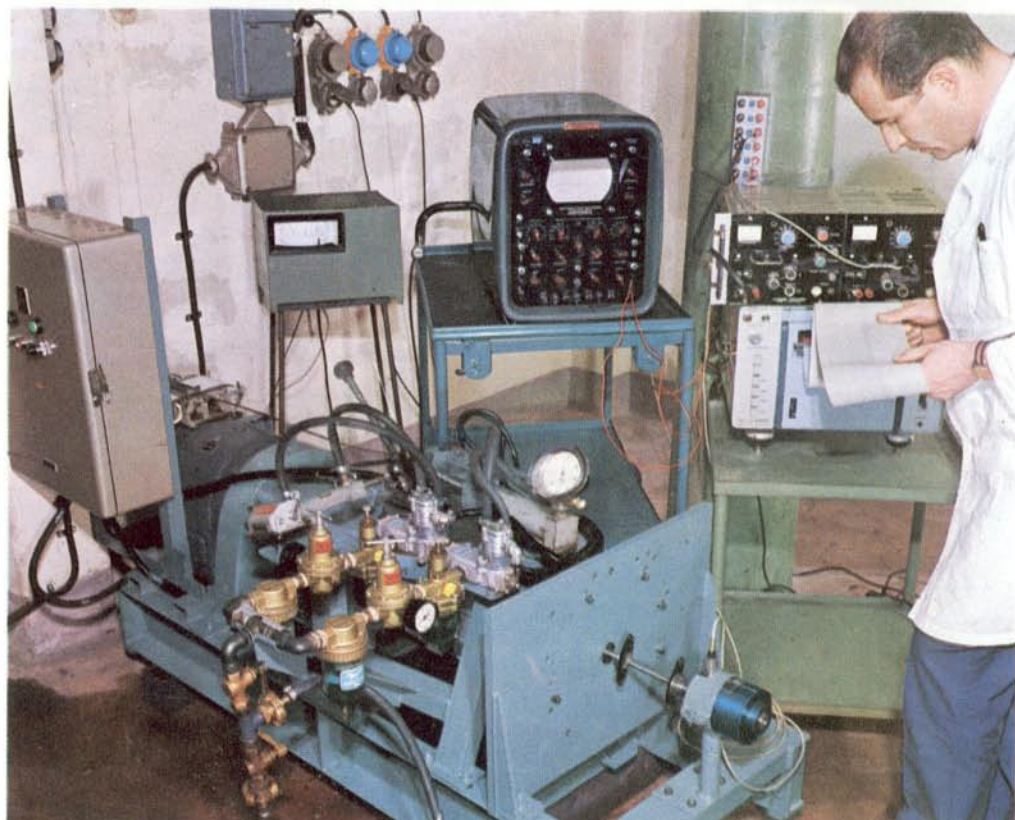
# Testing the «Giulia»: trials more demanding than reality



**THE MILLE MIGLIA IS RE-RUN IN THE LABORATORY** - In the testing room the engines are run for thousands of hours during which time different driving conditions are simulated. The engine is controlled by an electronic brain which reproduces the variations in power output and r.p.m. recorded by the engine of a Giulia driven at full speed during the Autostrada del Sole from Mito to Naples, or again in a road race such as the Mille Miglia.



**CLUTCH GYMNASTICS** - An electro-pneumatic servocontrol takes the driver's place and shifts gears 50,000 times between the 'high' gears (third, fourth, fifth) then 20,000 times between the 'low' gears (first, second, third). The time taken for the synchromesh to work on each engagement is registered electronically.





In the experimental department many examples of the new vehicle are assembled. Here they do by hand, with scrupulous attention to detail, what will later be done by the automatic machines on the production line at the Arese factory. When the construction

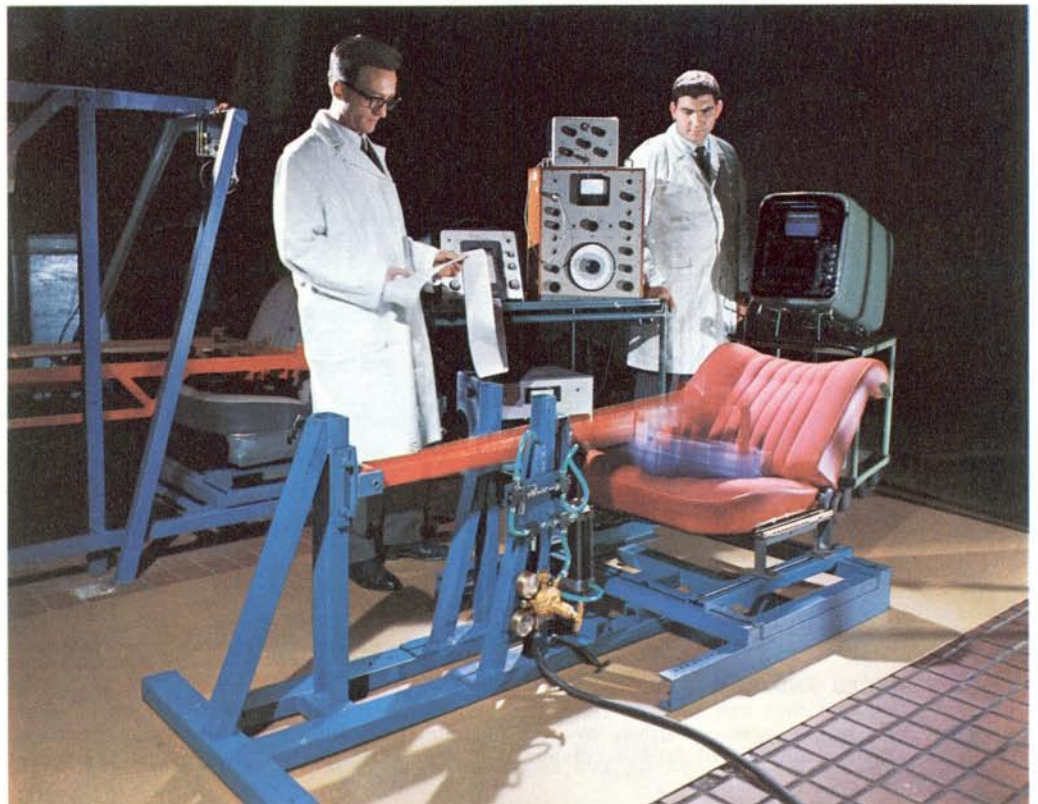
of the individual parts is completed the various test centres begin their work. At Alfa Romeo every single part has to undergo rigorous testing, far more severe than would be encountered during the normal life of the car.



**FAILURE SHOOTING** - For this test the body shell is fixed to a bench and loads are applied to certain pre-determined areas. By means of strain gages attached to the most critical points of the bodywork any yielding is discovered.



**A MILLION BLOWS FOR THE CUSHIONS** - This machine batters away at a seat for 100 hours without stopping. This has the same effect as a person weighing 75 kg (12 stone) jolting on the seat without a break. Special equipment records oscillations of the seat and shows up any defects. A good seat must be able to absorb any weight and accommodate all sizes. A difficult problem: like trying to make one shoe fit every type of foot!



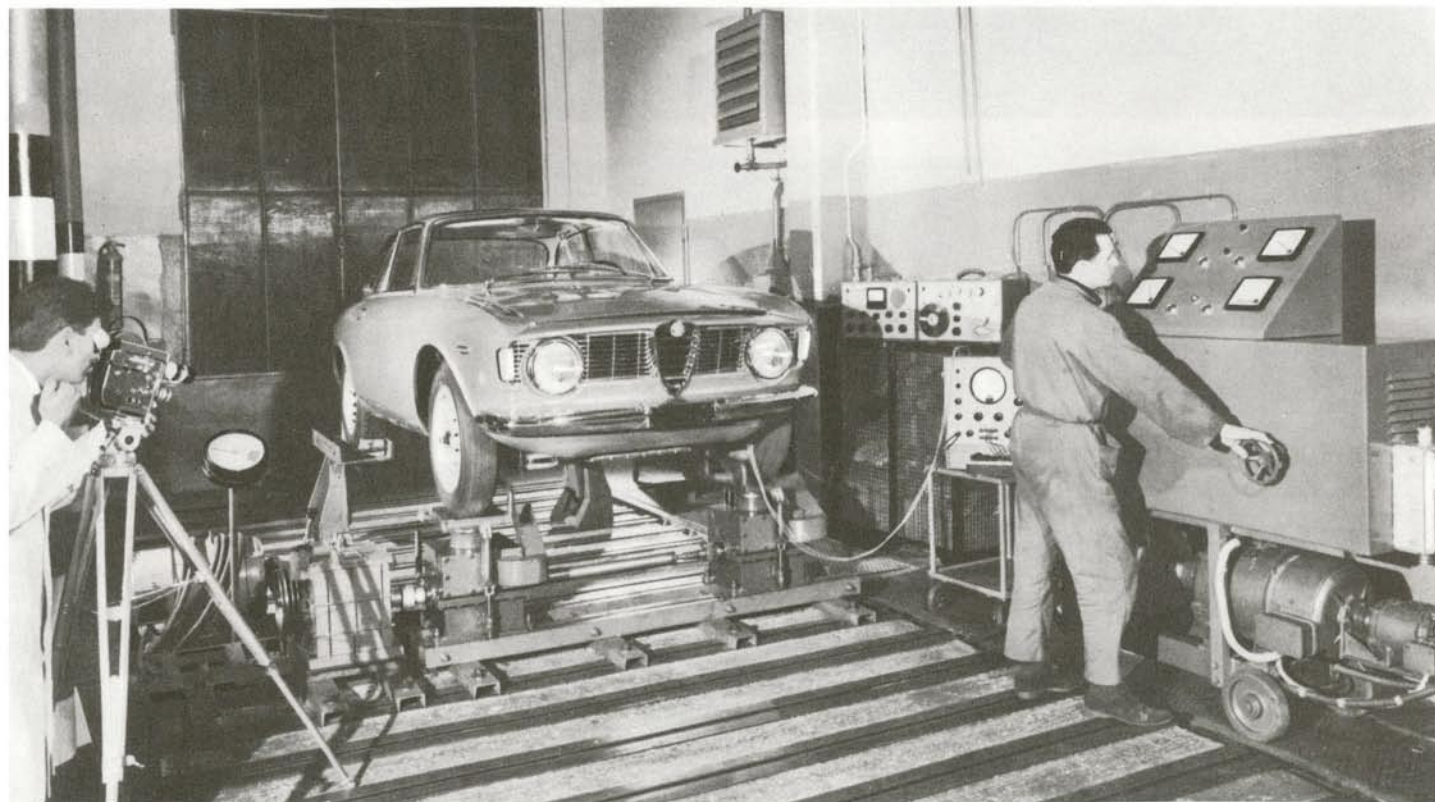




**till more tests:  
no peace  
for the «Giulia»**



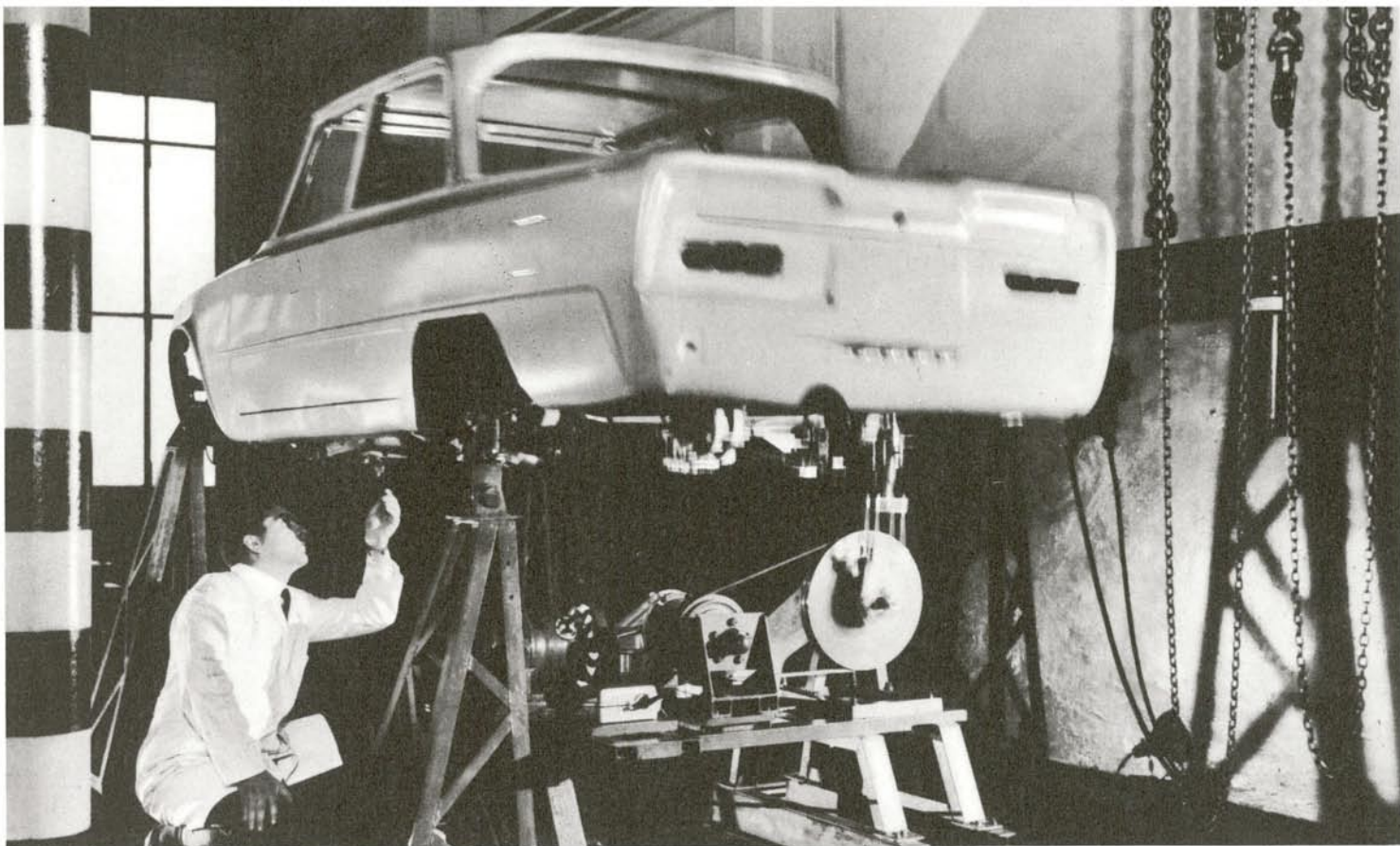
**12,000 TIMES FOR EVERY WHEEL** - This wheel is put in the same condition as if it had been driven around the first bend at Lesmo - on the Monza circuit - 12,000 times at a speed of 75 m.p.h. without distortion or breaking. Such conditions are reproduced by this machine to ensure that the rims are strong enough to support the pressure that is brought to bear each time the car enters a corner.



**THE BOUNCES AND BUMPS ALONG** - The car is mounted on a special test bed that can give to the wheels the same rough treatment they would receive if driven over an unmade road. The shocks are then recorded. The tape is connected to special equip-

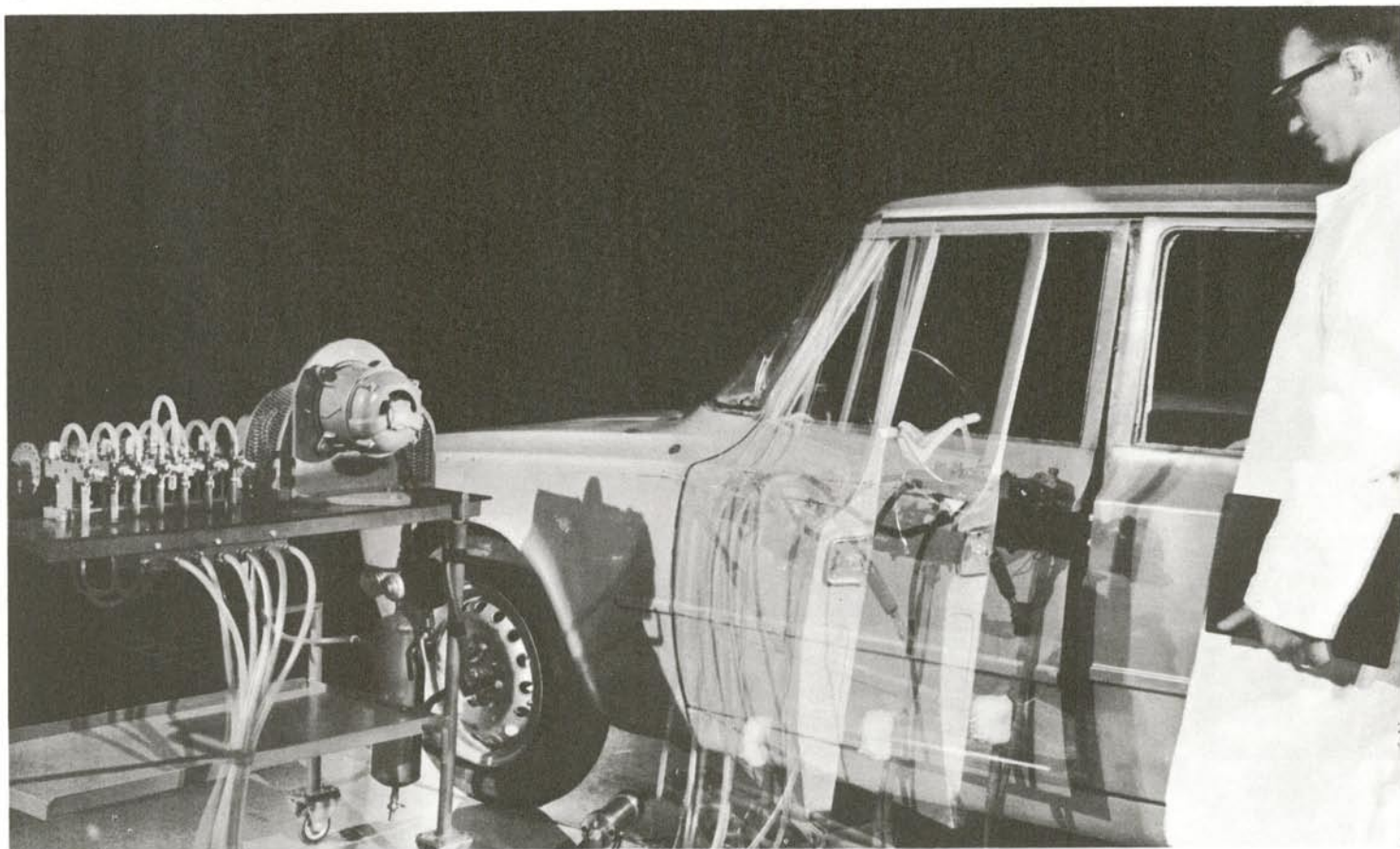
ment and is played back, reproducing the results of the test and film record is taken of the effect on the wheels. The film, shown in slow motion, enables a precise study of the behaviour of the car's suspension to be made.





**THE PAVEMENT TEST** - The frame is firmly secured at three points: at the fourth point a type of piston repeatedly pushes the body up and down. This has the same effect as if one wheel of the car

were mounting and dismounting the pavement. In this way, any unexpected weakness in the bodywork will be discovered. This test is carried out to destruction.



**SLAM THE DOOR.. HARD!**

A strong mechanical arm, actuated by a pneumatic servocontrol, incessantly opens the doors and slams them shut again thousands

of times (50,000 times 50 hours). In this way one can test the strenght of the hinges and the door locks.