



**MASERATI**  
**BITURBO**

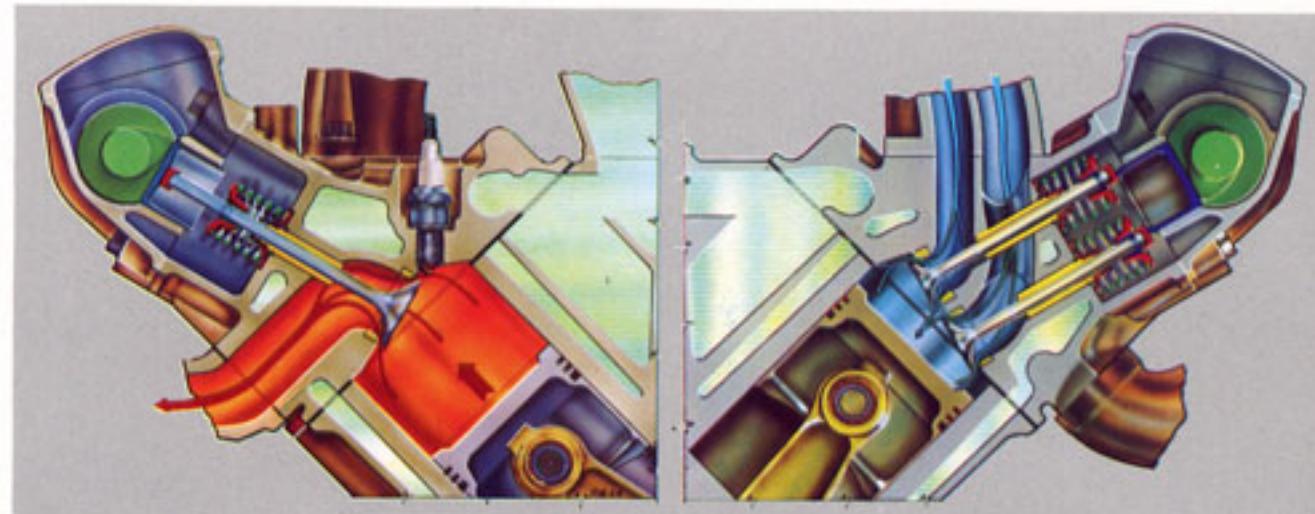
## THE BITURBO ENGINE®

The heart of this engine is its mixture induction system (Maserati-De Tomaso patent) with two intake valves, a small one and a larger one which, together provide a swirl effect that increases combustion efficiency.

This major technological innovation helps save fuel and increase power. The engine is a compact and light V-six at 90° with two overhead camshafts and two turbochargers: i.e., Biturbo®.

The exhaust gases operate an extremely fast turbine (120,000 to 150,000 r.p.m.).

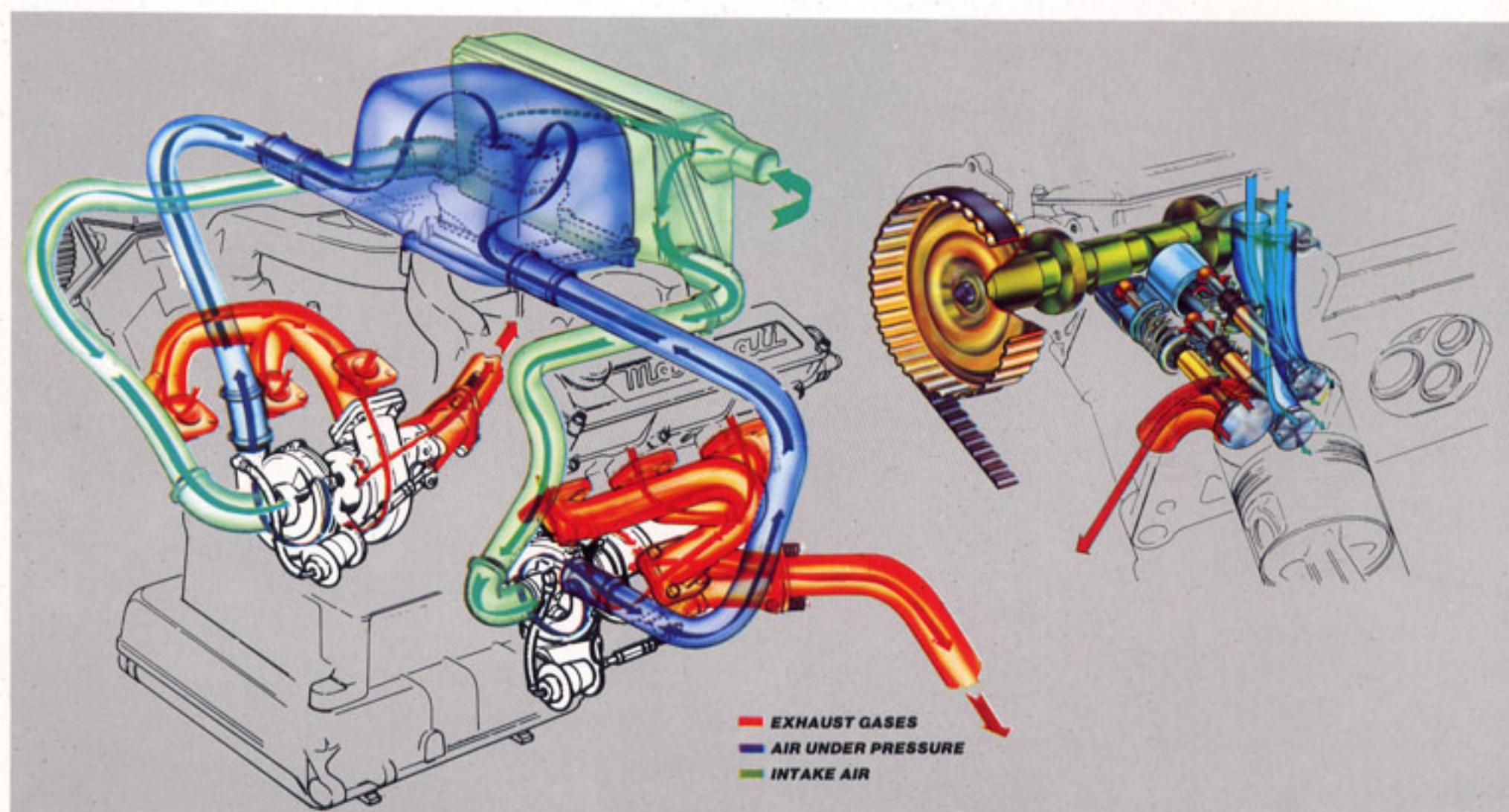
This, in its turn, drives a second turbine which compresses the air-gasoline mixture in the intake manifold at a higher pressure than



the atmospheric one, thus improving and increasing the thermodynamic performance of the engine.

Further advantages of this system over a normally aspirated engine are a better exploitation of fuel and lower consumption under the same power conditions.

In addition, Maserati has developed the Maserati Automatic Boost Control (MABC) System. This electronic device monitors engine performance, adjusting the Turbo pressure to maintain optimum power under all driving conditions and improve fuel economy.



## WHY THE BITURBO®?

Maserati has chosen this system with two turbochargers to assure high reliability and long life. This Biturbo solution cures the problem of thermal concentration, thanks to the drastic reduction of the masses involved.

The same technical reasons eliminate the main trouble of present turbo-engines, that is the inertia of the turbocharger at low and medium r.p.m.

By using two turbochargers, inertia is reduced by 75%, thus enabling the engine to respond, immediately and progressively, to the accelerator control.

All manufacturers of Formula One racing cars equipped with turbo-engines have chosen this solution.

The power and the torque of the 2.5 liter Maserati Biturbo engine can be compared to those of a 3.5 liter normally aspirated engine.

## MABC® MASERATI AUTOMATIC BOOST CONTROL SYSTEM

The function of the Maserati Automatic Boost Control System is to continuously and intelligently adjust turbocharger boost pressure.

In order to adjust boost pressure, the turbochargers are supplied with bypass valves (wastegates) that, when open, allow some gas to go directly into the exhaust system without passing through the turbine wheel. In traditional turbocharger systems (dotted pipe (A) in drawing), the wastegate is opened by a diaphragm valve to which the pressure of the compressor is supplied.

The adjustment of wastegate opening is made by varying the preload of the spring in the diaphragm valve. As a consequence, the wastegates are always more or less open depending on the boost pressure and not according to the actual needs of the engine.

The purpose of MABC® is to control boost pressure under all conditions through the use of electronic control. There are two advantages to such a system:

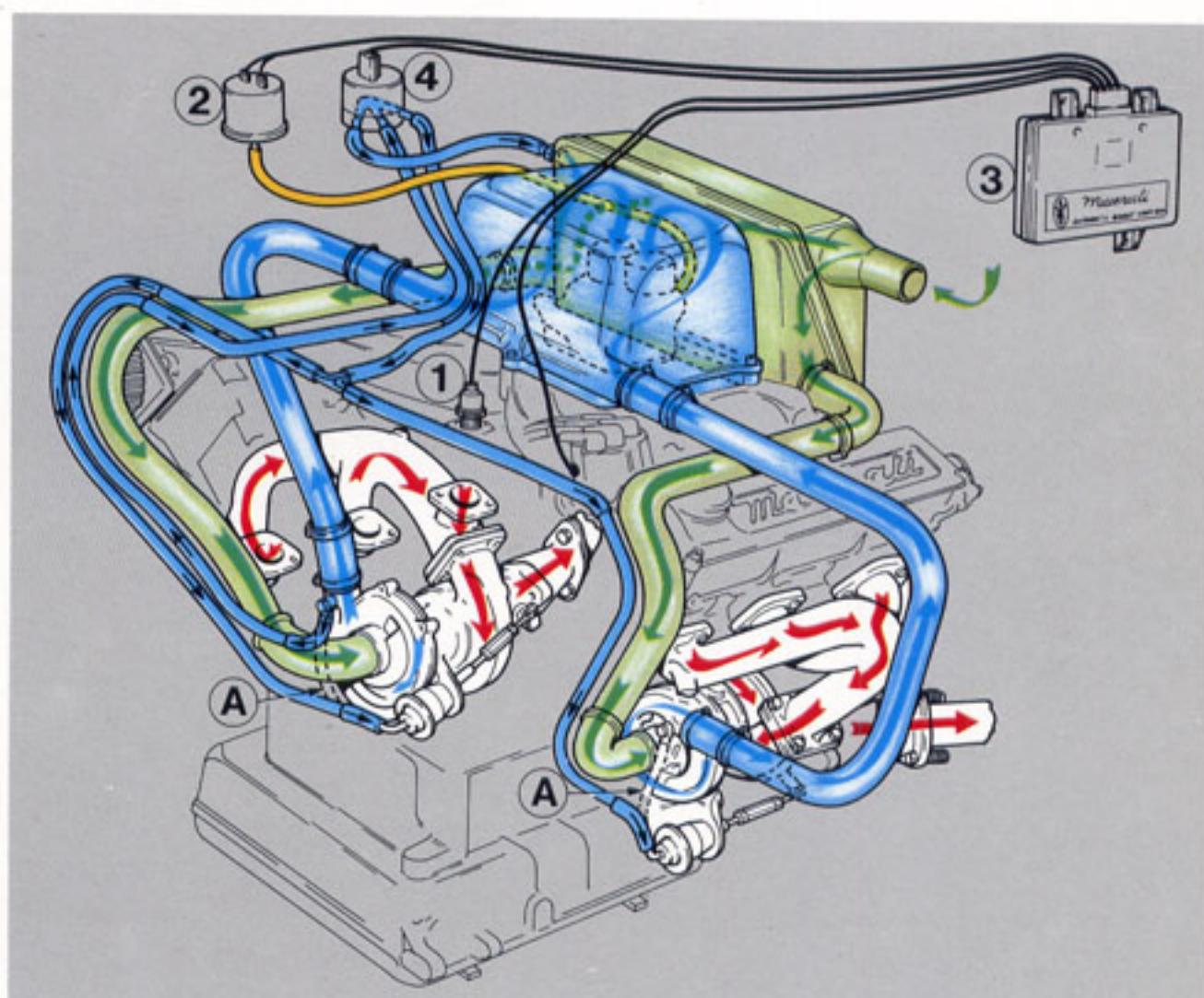
- Improvement of engine performance, i.e.:
  - better efficiency at part and wide open throttle
  - better mileage
- Protection of the engine from:
  - knocking (for any reason)
  - excessive boost pressure
  - overspeed

MABC® consists of four components:

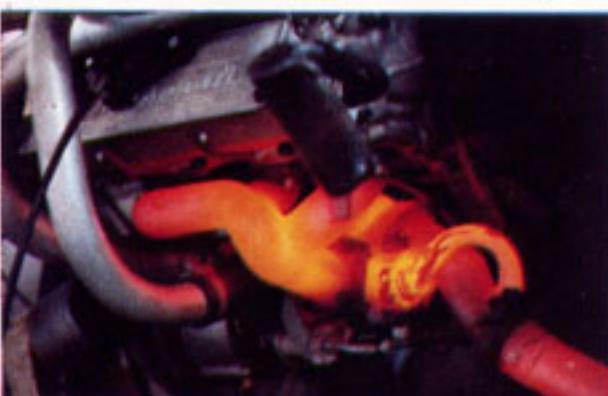
1. Knock sensor (screwed into engine block in the middle of the V)
2. Pressure transducer (senses pressure/vacuum in the intake manifold)
3. Electronic control unit (E.C.U.)
4. Solenoid valve

The solenoid valve will in turn change the pressure sent to the wastegate diaphragm valves, thus lowering boost to the preset value or, in the case of knocking, lower pressure to the point that knocking disappears.

In this way, boost pressure is adopted to the operating conditions of the engine. This type of active protection provides maximum combustion efficiency as opposed to other systems that reduce knock by retarding ignition, which decreases mileage and increases exhaust gas temperature which is extremely harmful for the turbines. Furthermore, since the engine is always in maximum boost condition, there are great advantages in performance and consumption compared to engine without MABC®, where boost pressure is always less than the optimum value.



*Biturbo engine on the dynamometer during extremely heavy endurance tests at maximum power and speed*



Continuous inputs to the E.C.U. include the pulses from the knock sensor, the pressure signal from the transducer, and engine speed from the pick-up of the ignition distributor. In the memory of the E.C.U. is stored, for each speed, the maximum allowable boost and the maximum allowable vibration level. The E.C.U. compares the pressure in the intake manifold and the vibration level with the values it has in memory. If the pressure or vibration level are higher than the preset values, the E.C.U. will send a signal to the solenoid valve.

These improvements have been taken a step further by increasing the compression ratio. Normally, turbocharged engines require low compression ratios to avoid knock, so the compression ratio is dictated more by prudence than by the goal of maximum efficiency. With the MABC® the compression ratio is chosen for maximum efficiency and minimum consumption.

## THE INTERIOR AND CONTROLS COMBINATION

The interior represents a combination of comfort, Italian Style, functionality and safety.

Five seats and a lot of room in all directions, even for tall people; the front seats automatically slide forward, when tilted, to allow easy access to the rear seats.

The hand-made bucket seats are covered in Italian leather; the elegant console between the seats incorporates a wide arm-rest and glove-box and the side window control switches; this console, which also lodges the air-conditioning

heating controls, radio and gearshift lever, extends backwards for the air-conditioning outlets to the rear seats; the steering wheel position can be adjusted in both vertical and longitudinal direction.

The greatest care has been given to all details, to make the interior comfortable and elegant.

All controls are within easy reach and designed with functionality in mind.

The dashboard and surrounding area is abundantly padded with shock absorbing material to protect head and knees in case of accident. Both the front and the rear seats are equipped with adjustable headrests and automatically rewinding inertial safety belts.

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## THE INSTRUMENTATION

The instrumentation includes:

- Instrument panel illumination rheostat
- Electronic speedometer with standard odometer and trip odometer
- Tachometer
- Water temperature gauge
- Turbocharger pressure gauge
- Engine oil pressure gauge
- Fuel level gauge
- Voltmeter
- A set of warning lights for various functions, including:
  - parking and stop light failure
  - water temperature, oil pressure, brake oil level, failure of the braking circuit and brake pad wear



— direction indicators, parking lights, headlamp high beam, fog lights, generator, hand brake, fuel level, choke, safety belts, heated rear window

A set of electric control buttons:

- hazard warning lights, heated rear window, fuel flap opening and fog light
- test control and corresponding warning light.



## THE TECHNICAL DATA

Engine	front
Position	
Cylinders	No. V-6 at 90°
Bore	mm 91.6
Stroke	mm 63

Cubic capacity	cc 2491
Compression ratio	8.0 : 1
Maximum torque	lbs. 208 at 3000 r.p.m.
Maximum power	HP 185 at 5500 r.p.m.
IHI Turbochargers	No. 2

Engine block and head in light alloy with pressed-in liners; water cooling by centrifugal pump; forced lubrication and total filtering; one twin carburetor, two overhead camshafts; three valves per cylinder (two intake valves and one exhaust valve). Electronic ignition; 65 AMP alternator.

### Gearbox

Mechanical; 5 gears + reverse, ZF type S.5.18/3. Optional automatic transmission: 4 gears + reverse, torque converter.

### Ratios:

Mechanical gearbox.	
I	= 3.42
II	= 1.94
III	= 1.39
IV	= 1.00
V	= 0.87
REV	= 3.66

Differential Box: Salisbury type, with 4 crown wheels

Axle ratio with both mechanical gearbox and automatic transmission: 3.31 : 1

Chassis: Unitized Body & Chassis

Suspensions: front suspension type Mac Pherson with stabilizing bar and double-acting telescopic shock absorbers. Rear suspension of the type with independent arms fixed to a crosspiece anchored to the body by means of elastic mounts with coil spring and double-acting telescopic shock-absorber

Steering: mechanical rack and pinion steering (power steering available on request)

Braking system: IH type A.T.E. with servocontrol. Disc brakes on all 4 wheels + two rear drum brakes for emergency and parking

Wheel rims: aluminium alloy, 6"

Tires: Pirelli P6 195/60 VR 14

Body: 2-door sedan, 5 seats

### PERFORMANCE

Maximum speed at full load:  
133 M.P.H.

### DIMENSIONS AND WEIGHTS

Wheel base	in.	98.9
Front track	in.	55.9
Rear track	in.	56.3
Length	in.	165.8
Width	in.	67.4
Height	in.	51.3
Minimum height from ground	in.	4.9
Dry weight	lbs.	2560
Fuel-tank	gal.	20 (Usable)
Luggage compartment	cu. ft.	14
Turning circle	ft.	38 (approx.)

### STANDARD FEATURES ACCESSORIES

- Maserati Automatic Boost Control
- All engine and electrical components
- Steering wheel lock
- Vertical and longitudinal adjustment of steering wheel
- 5 speed transmission (automatic transmission optional)
- Electronic ignition
- Headrests
- Folding armrest between rear seats
- Safety rear view door mirror adjustable from inside
- Passengers sun visor vanity mirror with automatic light
- Digital quartz clock with stop-watch
- Front ashtray, lighter and cigarette box
- Centralized door locking
- Open door safety lights
- Air conditioning system with additional distribution of air to rear seats and side windows
- Aluminium alloy wheels
- Electrically operated side windows
- Tinted glass
- Heated rear window
- Opening rear side windows
- Blinds at the rear window
- AM/FM digital cassette radio with 4 speakers
- Halogen headlights
- Seatbelts
- Hand sewn Italian leather seat facings
- Engine and luggage compartment lights
- Full size spare wheel in retractable carrier
- Electronic warning system to monitor
- Remote trunk release in driver's door post
- Emergency tool kit

