

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER A-37-18
Relating to Certification of New Motor Vehicles

LOTUS CARS LIMITED

Pursuant to the authority vested in the Air Resources Board by the Health and Safety Code, Division 26, Part 5, Chapter 2; and

Pursuant to the authority vested in the undersigned by Health and Safety Code Sections 39515 and 39516 and Executive Orders G-45-3 and G-45-4;

IT IS ORDERED AND RESOLVED: That 1990 model-year Lotus Cars Limited emission control systems are certified as described below for gasoline-powered passenger cars:

Engine Family: LLT2.2V5F1C9 Displacement: 2.2 Liters (133 Inches³)

Equipped with the following exhaust emission control systems:

- Heated Oxygen Sensor
- Turbocharger
- Charge Air Cooler
- Three-Way Catalyst
- Multipoint Electronic Fuel Injection
- On-Board Diagnostic System

Vehicle models, transmissions, engine codes and evaporative emission control families are listed on attachments.

The following are the emission standards for this engine family:

| <u>Hydrocarbons</u> <u>(Grams per Mile)</u> | <u>Carbon Monoxide</u> <u>(Grams per Mile)</u> | <u>Nitrogen Oxides</u> <u>(Grams per Mile)</u> |
|--|---|---|
| 0.41 | 7.0 | 0.7 |

The following are the certification emission values for this engine family:

| <u>Hydrocarbons</u> <u>(Grams per Mile)</u> | <u>Carbon Monoxide</u> <u>(Grams per Mile)</u> | <u>Nitrogen Oxides</u> <u>(Grams per Mile)</u> |
|--|---|---|
| 0.16 | 1.2 | 0.3 |

BE IT FURTHER RESOLVED: That the listed models are certified to the optional NOx emission standard thereby making the vehicle manufacturer subject to Section 1960.1.5 of Title 13, California Code of Regulations which includes recall liability for emission control components up to 7 years or 75,000 miles if found defective by the Executive Officer.

BE IT FURTHER RESOLVED: That the vehicle manufacturer is certifying to the optional NOx standard based on actual sales of 1989 model-year California-certified passenger cars.

BE IT FURTHER RESOLVED: That the listed vehicle models also comply with "California Evaporative Emission Standards and Test Procedures for 1978 and Subsequent Model Gasoline-Powered Motor Vehicles".

BE IT FURTHER RESOLVED: That the listed vehicle models also comply with the Board's "Specifications for Fill Pipes and Openings of Motor Vehicle Fuel Tanks" (Title 13, California Code of Regulations, Section 2290) for the aforementioned model-year.

BE IT FURTHER RESOLVED: That the listed vehicle models also comply with the Board's high altitude requirements and highway emission standards as stipulated in "California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles".

BE IT FURTHER RESOLVED: That the listed vehicle models also comply with the "California Motor Vehicle Emission Control Label Specifications" (Title 13, California Code of Regulations, Section 1965) for the aforementioned model year.

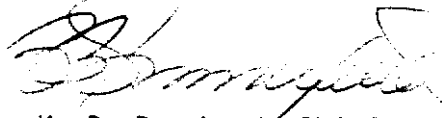
BE IT FURTHER RESOLVED: That the vehicle models listed also comply with the "Malfunction and Diagnostic System for 1988 and Subsequent Model Year[s]..." (Title 13, California Code of Regulations, Section 1968) for the aforementioned model year.

BE IT FURTHER RESOLVED: That for the listed vehicles, the manufacturer has submitted and the Executive Officer hereby approves the materials to demonstrate certification compliance with the Board's emission control system warranty provisions (California Health and Safety Code Section 43205).

Vehicles certified under this Executive Order must conform to all applicable California emission regulations.

The Bureau of Automotive Repair will be notified by copy of this order and attachment.

Executed at El Monte, California this 10th day of October, 1989.


fo) K. D. Drachand, Chief
Mobile Source Division

E.O. A-37-17

**1990 MODEL YEAR CERTIFICATION REVIEW SHEET
EXHAUST/EVAPORATIVE SYSTEM & FILL PIPE SPECIFICATION COMPLIANCE**

Mfgr. LOTUS CARS LTD

Engine Family LLT2.2V5FP40

Rated HP 228 @ 6500 RPM Rated Torque 218 @ 4000 RPM

Cert. Type - CA 49S 50S ✓ Type Cert. - 50K ✓ 100K

| | <u>Section/Page</u> | | <u>Section/Page</u> | | |
|----|---|----------------------|---------------------|---|----------------|
| 1 | Authorized Representative | 01:01:00:00 | 13 | Evap. Bench Test Procedure | Assigned D.F's |
| 2 | Fuel, Test Equipment, Procedures & Route | Sections 3, 4 & 5 | 14 | Gen. Std., Increase in Em., Safety, Mtg. All Req'ments | 16:01:00:00 |
| 3 | Warr. State & Parts List | 17:01:00:00 | 15 | Prod. Veh. Same as Test Veh. | 16:03/4:00:00 |
| 4 | Maint: Cert/Req'd/Recm'd | 06:01:01:01 | 16 | Label Durability | 17:03:00:00 |
| 5 | Tune-up Lab./Vac.Hose Diag. | 07:01:00:00 | 17 | Driveability | 06:01:02:00 |
| 6 | Evap. Control System | 09:00:00:00 | 18 | Fill Pipe Specs. | 17:03:05:00 |
| 7 | Engine Parameters | 10:00:00:00 | 19 | Altitude A/F Req'ment | 06:02:04:00 |
| 8 | Fuel/Ignition Systems | 10:03/4:00:00 | 20 | Cert. Preview Program | Yes |
| 9 | Exhaust Control System | 10:07:00:00 | 21 | OBD System | 17:04:00:00 |
| 10 | Projected Sales | 10:10:25:00 | 22 | EPA Certificate | To follow |
| 11 | Vehicle Descript. | 10:10:40:00 | 23 | Two Yr./24k Warranty | No |
| 12 | Test Veh.Information | Dur. ID Dur. MY | | Emis. ID Emis. MY | |
| | C/O MY or C/A EF | Assigned D.F | | 62011 1989 | |
| | Vehicle Logs | | | 12:00:00:00 | |
| | Zero Mile Books | | | 12:00:00:00 | |
| | Maint. Logs & Engr. Eval. | | | 16:04:00:00 | |

| Veh. ID | Code (Displ) | Trans | Axle Ratio | ETW | RLHP | PROJECTED EMISSIONS (1) | | | | (2) | | |
|---------|-----------------|-------|---------------|------|------|-------------------------|--------------|------|------|------|------------|---------------------|
| | | | | | | MPG City/Hwy | Test Loc. | HC | CO | NOx | Hwy NOx | 50k Evap or part |
| 62011 | 2.2 (132.6) | M5 | 3.889 | 3250 | 5.7 | 19.3/ 35.6 | EPA | 0.08 | 0.72 | 0.41 | .33 | 1.62 |

(with D.Fs added)

(1) The emission data vehicle/s above comply with stds of 0.41 7.0 0.7 - 2.0
and includes deterioration factors of 1.2 1.2 1.1 1.1 0.5

(2) Evaporative DF is the average of Vehicle DF ASSIGNED and Bench DF ASSIGNED

Remarks : Carry-over application based on 1989 model year KLT2.2V5FP4X engine family

Application Processed By [Signature] Date 10/5/89 Reviewed By [Signature] Date 10/6/89

Attachment 3

E.O. A-37-18

1990 Air Resources Board Supplemental Data Sheet

Manufacturer LOTUS CARS LTD Engine Family LLT2.2V5F1C9
 Evaporative Family LT4 Engine Type L-4
 Litres (CID) 2.2 (132.6)

ABBREVIATIONS

Ignition System

CA-Centrifugal Advance
 ECU-Electronic Control Unit
 EI-Electronic Ignition
 ESAC-Electronic Spark
 Advance Control
 VA- Vacuum Advance
 VR-Vacuum Retard

Exhaust Emissions Control System

AIP-Air Injection - Pump
 AIV-Air Injection - Valve
 EGR-Exhaust Gas Recirculation
 EIC-Electronic Injection Control
 (Diesel only)
 EM-Engine Modification
 SPL-Smoke Puff Limiter or
 Throttle Delay
 TOC-Trap Oxidizer, Continual
 TOP-Trap Oxidizer, Periodical
 DBC-Dual Bed Catalyst

Special Features

CFI-Central Fuel
 Injection or
 Throttle Body
 Injection.
 EPFI-Electronic
 Port Fuel Injection
 MPFI-Mechanical
 Port Fuel Injection
 SFI- Sequential Fuel
 Injection
 DID-Diesel
 Injection-Direct
 DIP-Diesel Injection
 Prechamber
 TC-Turbocharger
 SC-Supercharger
 IC-Intercooler or
 Aftercooler
 CCV-Combustion
 Chamber Valve
 OBD-On board
 Diagnostics

Fuel System

CFI,EPFI,MPFI, SFI,
 DID, DIP, HOS, OS
 nV-nVenturi Carburetor
 VV-Variable Carburetor

TWC-Three way Catalyst
 WUOC-Warm up Oxidation Catalyst
 WUTWC-Warm up Three way Catalyst
 OS-Oxygen Sensor
 HOS-Heated Oxygen Sensor

VEHICLE MODELS

Engine: Front Mid Rear
 Drive; FWD RWD 4WD Full Time 4WD Part Time

1990 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET

E O A-37-18

PASSENGER CARS LIGHT DUTY TRUCKSMEDIUM DUTY VEHICLESGAS DIESEL....

MANUFACTURER: LOTUS CARS LTD

ENGINE FAMILY: LLT2.2V5F1C9

LITRE (CID) (132.6) 2.2

ENGINE FAMILY: L-4

EMISSION CONTROL SYSTEM (SPECIAL FEATURES)

TWC/H O2S/OBD/ME/TC/ CAC

| ENGINE CODE | VEHICLE MODEL(S) (IF CODED SEE ATTACHMENT) | TRANS TYPE WEIGHT | EQUIV TEST | IGN SYSTEM | FUEL SYSTEM | EGR VALVE | CATALYST |
|-------------|---|----------------------|------------|------------|-------------|-----------|----------|
| | (DYNO HP) | | | PART NO. | PART NO. | PART NO. | PART NO. |

| | | | | | | | |
|--------------|---------------------------------------|----|------|---|--------------------------------------|------|-----------|
| LLT2.2V5F1C9 | LOTUS ESPRIT TURBO (7.0 Hp) | M5 | 3250 | A910E6940 Direct ignition system | A910E6946 (Fuel rail assembly) | None | C03256045 |
|--------------|---------------------------------------|----|------|---|--------------------------------------|------|-----------|

Comments: See Page 1 for abbreviations and evaporative emission family identification. Please refer to manufacturer's Hp list for correct dyno test Hp settings based on model and equipment. If two test weights are listed, the lower weight will be used for testing.

Date of IssueRevisions: