

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER A-37-15
Relating to Certification of New Motor Vehicles

LOTUS CARS LTD

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 1989 model-year Lotus Cars Ltd exhaust emission control systems are certified as described below for gasoline-powered passenger cars:

| <u>Engine Family</u> | <u>Displacement Liters (Cubic Inches)</u> | <u>Exhaust Emission Control Systems (Special Features)</u> |
|----------------------|---|--|
| KLT2.2V5FP4X | 2.2 (132.6) | Three-Way Catalyst Heated Oxygen Sensor (Electronic Port Fuel Injection) (Turbocharger) (On-Board Diagnostics) |

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

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

| <u>Hydrocarbons (Grams per Mile)</u> | <u>Carbon Monoxide (Grams per Mile)</u> | <u>Nitrogen Oxides (Grams per Mile)</u> |
|--|---|---|
| 0.08 | 0.7 | 0.4 |

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 Administrative Code 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 standards by providing evidence that there are sufficient projected sales of vehicles certifying to the primary NOx standard, or is allowed a delay in implementation under small volume manufacturer provisions, or is allowed a delay in implementation under small volume manufacturers provisions, or is allowed a delay in implementation under the "In lieu" standards, or is certifying passenger cars weighing more than 5250 lbs. loaded vehicle weight.

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 Administrative Code, 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 Tune-Up Label Specifications" (Title 13, California Administrative Code, 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 Administrative Code, 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 regulations (Title 13, California Administrative Code, Section 2035 et seq.).

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 14th day of September, 1988.


K. D. Drachand, Chief
Mobile Source Division

Attachment 4

1989 MODEL YEAR CERTIFICATION REVIEW SHEET
 EXHAUST/EVAPORATIVE SYSTEM & FILL PIPE SPECIFICATION COMPLIANCE

Mfgr. LOTUS CARS LTD Engine Family KLT2.2V5FP4X
 PC LDT MDV Gas Diesel LPG Cert. Type - CA 49S 50S
 CID 132.6 Liters 2:2 Rated HP 220 @ 6500 RPM Rated Torque 220 @ 4000 RPM
 Type Cert - 50K 100K Evaporative Family LT4 Eng. Type L-4 Turbo
 Exhaust Control Sys. and (Special Features) TWC. H.O.S. O.B.D E.P.F.I. T.C.

| | <u>Section/Page</u> | | <u>Section/Page</u> |
|--|---------------------|---|---------------------|
| Authorized Representative | 01:01:00:00 | 13 Evap. Bench Test Procedure | Assigned D.F' |
| 2 Fuel, Test Equipment, Procedures & Route | 03/4/5:00:00:00 | 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. | 16:04:02/3:00 |
| 4 Maint: Cert/Req'd/Recm'd | 06:01:01:01 | 16 Label Durability | 17:03:04:00 |
| 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 | |
| 8 Fuel/Ignition Systems | 10:03/4:00:00 | 20 Tamperproof Req'ment | N/A |
| 9 Exhaust Control System | 10:07:00:00 | 21 Ck for DF, Outlier, Line Xing | Assigned D.F' |
| 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. Emis. | N/A* 1989 | 24 Alcohol Compatible | Up to 10% |
| C/O MY or C/A EF | | 25 Cert. Preview Program | 17:02:00:00 |
| Vehicle Logs | 12:00:00:00 | 26 OBD System <u>GM P4</u> | 6/10:00:00:00 |
| Zero Mile Books | 12:00:00:00 | 27 OBD Extension | NO |
| Maint. Logs & Engr. Eval. | 16:04:00:00 | | |
| * ASSIGNED D.F.'s | | | |

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

- (1) The emission data vehicle/s above comply with stds of 0.41 7.0 0.7 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 _____
- (2) Trap Oxidizer : Yes No Continual Periodic

Remarks _____

Application Processed By Karl Sime Date 9-13-88 Reviewed By RS/Kenny Date 9/13/88

Attachment 3

E.O. A-37-15

1989 Air Resources Board Supplemental Data Sheet

Manufacturer LOTUS CARS LTD Engine Family KLT2.2V5FP4X *IN LINE*
 Evaporative Family LT4 Engine Type KLT2.2V5FP4X *4 CYL*
 Liters (CID) 2.2 (132.6)

ABBREVIATIONS

| <u>Ignition System</u> | <u>Exhaust Emissions Control System</u> | <u>Special Features</u> |
|---------------------------------------|--|--|
| CA-Centrifugal Advance | AIP-Air Injection - Pump | CFI-Central Fuel Injection or Throttle Body Injection. |
| ECU-Electronic Control Unit | AIV-Air Injection - Valve | EPFI-Electronic Port Fuel Injection |
| EI-Electronic Ignition | EGR-Exhaust Gas Recirculation | MPFI-Mechanical Port Fuel Injection |
| ESAC-Electronic Spark Advance Control | EIC-Electronic Injection Control (Diesel only) | SFI-Sequential Fuel Injection |
| VA- Vacuum Advance | EM-Engine Modification | DID-Diesel Injection-Direct |
| VR-Vacuum Retard | SPL-Smoke Puff Limiter or Throttle Delay | DIP-Diesel Injection Prechamber |
| | TOC-Trap Oxidizer, Continual | TC-Turbocharger |
| | TOP-Trap Oxidizer, Periodical | SC-Supercharger |
| | DBC-Dual Bed Catalyst | IC-Intercooler or Aftercooler |
| | | CCV-Combustion Chamber Valve |
| | | OBD-On board Diagnostics |
| <u>Fuel System</u> | TWC-Three way Catalyst | |
| CFI,EPFI,MPFI, SFI, DID, DIP, HOS, OS | WUOC-Warm up Oxidation Catalyst | |
| nV-nVenturi Carburetor | WUTWC-Warm up Three way Catalyst | |
| VV-Variable Carburetor | OS-Oxygen Sensor | |
| | HOS-Heated Oxygen Sensor | |

VEHICLE MODELS *LOTUS ESPIRIT TURBO*

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

1989 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET

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.....
Page 3

PASSENGER CARS ✓... LIGHT DUTY TRUCKS MEDIUM DUTY VEHICLES GAS ✓... DIESEL

MANUFACTURER: LOTUS CARS LTD ENGINE FAMILY: KLT2.2V5FP4X

LITER (CID) (132.6) 2.2 ENGINE FAMILY: KLT2.2V5FP4X

EMISSION CONTROL SYS (SPECIAL FEATURES) TWC/HOS/OBD's/EPFI/TC

| ENGINE CODE | VEHICLE MODELS (IF CODED SEE ATTACHMENT) (DYNO HP) | TRANS TYPE WEIGHT | EQUIV TEST | IGN SYSTEM (ECU) PART NO | FUEL SYSTEM PART NO | EGR VALVE PART NO | CATALYS PART NO |
|--------------|--|-------------------|------------|--|-----------------------------------|--------------------------|------------------------|
| KLT2.2V5FP4X | LOTUS ESPRIT TURBO (5.6 Hp) | M5 | 3125 | A910E6940 Direct ignition system PROM ID#1939 | A910E6946 (Fuel rail assembly) | None | A08256045 |

Comments: See page one 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 Issue 5th July '88.....Revisions: