

THE REBUILDING OF A
LOTUS
ELAN

TABLE OF CONTENT

Supplement to the 1st edition

This document is meant as a supplement to the first edition of Brian Buckland's book "THE REBUILDING OF A LOTUS ELAN", published as ringbinder in 2006.

I have created this table of contents very carefully.

If you find any mistakes or wish to make a suggestion, please let me know:

user "gherlt" in the lotuselan.net forum or email guillermo@theelanman.com

TABLE OF CONTENT

INTRODUCTION AND AIMS OF THIS BOOK.	11
FIRST THINGS FIRST.....	13
AIM OF BOOK.....	16
LOTUS ELAN WORKSHOP MANUAL.....	16
OTHER WORKSHOP MANUALS.....	16
SCRAPYARDS.....	19
LAYOUT.....	19
MODEL AND CHASSIS IDENTIFICATION.....	23
MODEL SUFFIXES.....	29
ENGINE IDENTIFICATION.....	31
AMERICAN ELANS.....	31
 FIRST THOUGHTS.....	 39
THE FLASH OF LIGHTNING.....	41
PREPARATION.....	41
TOOLS.....	43
SAFETY.....	47
NUTS AND BOLTS.....	49
THE ECONOMICS OF IT ALL.....	49
 BUYING THE CAR.....	 53
WHAT MODEL ARE YOU LOOKING FOR.....	55
WHERE TO BUY.....	57
THE PURCHASE.....	59
GETTING THE CAR HOME.....	59
 CLEANING, PAINTING, RENOVATING AND REPAIRING COMPONENTS.....	 65
GENERAL.....	67
DEGREASING.....	67
NUTS AND BOLTS.....	67
REPAIR.....	67
RUST REMOVAL.....	69
PAINTING.....	69
POWDER COATING.....	69
PLATING.....	70
CHROME PLATING.....	70
 OBSOLETE PARTS.....	 71
GENERAL.....	73
DOOR FURNITURE SPECIFIC TO MODELS.....	77
SERIES 1 & 2.....	77
SERIES 3.....	77
SERIES 4.....	85
DETAIL ANALYSIS.....	85

INTERIOR UPHOLSTERY	121
GENERAL	123
CRASH PADS. (*).....	123
CARPET.....	123
DOOR SIDE FRAMES.....	125
FELT.....	127
SERIES 1 & 2 VINYL MAT.....	129
SERIES 3, 4 & SPRINT CARPET TRIM.....	134
PARCEL SHELF COUPE.....	135
COCKPIT / BOOT PANEL, S3 ONWARDS.....	135
HEAD LINING COUPE.....	137
SUN VISORS.....	137
COUPE REAR QUARTER PANELS.....	137
SERIES 1 & 2, DOOR PANELS. (*).....	139
SERIES 3 & 4, DOOR PANELS.....	139
IN CAR ENTERTAINMENT.....	141
ABS / FIBREGLASS TRIMS.....	141
DOOR RUBBER SEALS.....	143
THE CHASSIS.....	149
GENERAL.....	151
GENERAL LAYOUT DRAWINGS.....	151
PROBLEMS.....	151
CHECKING A CHASSIS.....	153
SPYDER CHASSIS.....	153
REMOVING THE OLD CHASSIS.....	155
STRIPPING THE SUSPENSION / CHASSIS.....	161
PREPARING THE NEW CHASSIS.....	161
FITTING THE NEW CHASSIS.....	167
BODY.....	177
GENERAL.....	179
REPAIRING GLASS FIBRE.....	179
BODY REPAIR SUPPORT / PIVOT.....	185
BODY PROBLEMS.....	185
GRP REPAIRS.....	189
SERIES 1 & 2 WINDSCREEN FRAME.....	203
SERIES 3 AND 4 WINDSCREEN FRAMES.....	205
BUMPERS.....	205
CORRECTION OF DOOR WARP.....	207
CONVERSION OF FIXED HEAD TO DROP HEAD.....	209
ADJUSTMENT OF PANELS.....	211
SEAT RUNNERS.....	227
MINOR MOULDINGS.....	227
WATER INGRESS.....	232
SPRAYING.....	234
UNDERSEAL.....	237
PAINT PROTECTION.....	237
HOODS.....	239
WINDOW FRAMES.....	243
DOOR WINDOW GLASS.....	251
DOOR GUTTERS.....	255

DASHBOARD PANEL	255
WINDSCREENS.	255
BOOT FLOOR.	257
AIR GRILLE.	259
NUMBER PLATES.	259
BRACKETS.	261
MODEL IDENTIFICATION BADGES.....	269
FRONT SUSPENSION.....	279
GENERAL DESCRIPTION.....	281
SUSPENSION PROBLEMS.....	283
SUSPENSION CHECKS.	283
TRUNNION.	283
VERTICAL LINK.....	287
BALL JOINTS.	287
WHEEL BEARINGS.	287
STUB AXLE.	289
ANTI-ROLL BAR.....	289
DAMPER / SPRING ASSEMBLY.....	293
METALLASTIK BUSHES.....	293
TOTAL REBUILDS.	295
MODIFICATIONS.....	299
REAR SUSPENSION.	305
GENERAL DESCRIPTION.....	307
SUSPENSION PROBLEMS.....	307
HUB REMOVAL.....	309
STRIPPING THE SUSPENSION.	313
INSPECTION OF PARTS.	315
BEARING REPLACEMENT.....	319
NEW OUTER DRIVE SHAFTS.	319
NEW BEARING HOUSINGS.	325
ASSEMBLY OF COMPONENTS.	325
ROTOFLEX COUPLING WARNING.....	329
TIGHTENING THE SUSPENSION.....	329
WHEEL HUB.....	331
MODIFICATIONS.....	331
THE ENGINE.....	335
ENGINE IDENTIFICATION.....	337
PROBLEMS.....	343
BUYING AN ENGINE.	345
TORQUE WRENCHES.....	345
BOOKS TO INWARDLY DIGEST.	347
ENGINE MOUNTING BRACKETS.	347
REMOVING / INSTALLING THE ENGINE.....	347
WATER PUMP REPLACEMENT.....	353
OIL.	363
STARTING THE ENGINE.	363
ADJUSTING TAPPETS.	365
CAM BUCKETS AND SLEEVES.	367
CAM CAPS AND BEARINGS.....	369
TIMING CHAIN.....	369

VALVE GEAR.....	371
PISTONS (*).	373
OIL DIPSTICK TUBE.	373
PETROL PUMP (*).	373
OIL PUMP.	375
DISTRIBUTOR. (*)	375
TIMING MARKS AND BELT DRIVE PULLEY.	375
PLUG THREADS.....	377
STUD THREADS.....	377
BREATHER PIPE.	377
CORE PLUGS.	377
TESTING THE ENGINE.	377
ENGINE PAINT.	379
BALANCING.	381
MODIFICATIONS.....	381
GEARBOX.....	383
GENERAL.	385
PROBLEMS.....	385
REMOVING GEAR LEVER.	387
REMOVING THE GEARBOX FROM THE CAR.	387
ASSEMBLY OF ENGINE / GEARBOX UNIT.	387
REAR OIL SEAL REPLACEMENT.	389
GEARBOX SPIGOT BEARINGS.	389
OIL FILLING.	393
REAR GEARBOX SUPPORT.	393
SPEEDOMETER CABLE ANGLE DRIVE.	395
SPEEDOMETER CABLE DRIVE.	395
EXHAUST SUPPORT.	395
MODIFICATIONS.....	397
HUBS, WHEELS AND TYRES.	401
GENERAL.	403
WHEELS.....	403
WHEEL STUDS.	405
HUBS. (*).....	405
WHEEL TIGHTENING.	405
TYRES.....	407
WHEEL BALANCE.....	408
TYRE PRESSURES.	408
MODIFICATIONS.....	408
STEERING.....	411
GENERAL.	415
PROBLEMS.....	417
STEERING RACK.	419
BUMP STEER.	423
STEERING ARM.....	425
STEERING COLUMN.....	425
MODIFICATIONS.....	431

BRAKING SYSTEM.....	435
GENERAL DESCRIPTION.....	437
CLEANING FLUIDS.....	437
FRONT BRAKES.....	437
BRAKE LINES.....	443
FLEXIBLE BRAKE LINES.....	445
REAR BRAKES.....	445
CALIPER INSTALLATION.....	445
HAND BRAKE.....	447
HAND BRAKE WARNING LIGHT.....	453
MASTER CYLINDER.....	453
PEDAL BOX BRACKET.....	453
STOP LIGHT SWITCH.....	455
BRAKE PROBLEMS.....	455
BRAKE SERVO.....	455
MODIFICATIONS.....	461
COOLING SYSTEM.....	463
GENERAL.....	465
PROBLEMS.....	465
WATER PUMP.....	465
RADIATORS.....	467
RADIATOR FIXING.....	468
ANTIFREEZE.....	469
RADIATOR CAP.....	469
RECOVERY VESSEL.....	469
BOTTOM HOSE.....	469
MODIFICATIONS.....	471
FUEL SYSTEM.....	475
GENERAL.....	477
PROBLEMS.....	477
PETROL TANK.....	477
PETROL TANK WARNING.....	479
PETROL GAUGE SENDER.....	479
PETROL SUPPLY PIPE.....	479
PETROL PUMP.....	483
FLEXIBLE CARBURETTOR CONNECTIONS.....	483
AIR FILTER BOX.....	483
CARBURETTOR AIR BOX.....	483
MODIFICATIONS.....	485
ENGINE TUNING.....	489
GENERAL.....	489
DISTRIBUTOR.....	489
SPARK PLUGS.....	495
COIL.....	495
CARBURATION.....	497
WEBER 40 DCOE 18 AND 40 DCOE 31 CARBURETTORS.....	497
DELLORTO CARBURETTORS.....	501
STROMBERG CARBURETTORS.....	501
SPARKING PLUGS.....	503

ELECTRICAL EQUIPMENT.....	509
GENERAL.....	511
WIRING DIAGRAMS.....	511
PROBLEMS.....	511
BATTERY.....	515
FUSE BOX.....	515
WIRING LOOM.....	515
DASHBOARD.....	519
INSTRUMENTS.....	523
MECHANICAL CABLES.....	523
FRONT LIGHTS.....	525
HEAD LIGHT RELAYS AND FLASHER UNIT.....	525
REAR LIGHTS.....	525
NUMBER PLATE LIGHTS.....	531
STARTER MOTOR.....	531
STARTER SOLENOID.....	533
GENERATOR.....	533
CONTROL BOX.....	533
ALTERNATOR.....	535
AMMETER.....	543
HORNS.....	543
WINDSCREEN WASHERS.....	543
WASHER JETS.....	545
MODIFICATIONS.....	545
LUBRICATION & MAINTENANCE.....	549
GENERAL.....	551
500 MILES FREE SERVICE.....	551
‘A’ SERVICE 3000 MILES.....	551
‘B’ SERVICE 6000 MILES.....	553
‘C’ SERVICE 12000 MILES.....	553
LUBRICANTS.....	555
HEATING AND VENTILATION.....	557
GENERAL.....	559
PROBLEMS.....	559
HEATER.....	561
MATRIX CLEANING.....	561
FRESH AIR PLENUM CHAMBER.....	563
FRESH AIR PIPE CONNECTIONS.....	563
CONTROL VALVES.....	567
DASHBOARD HEATER CONTROL.....	567
WINDSCREEN PILLAR TRIM.....	567
FRESH AIR FACE LEVEL VENTS.....	567

CLUTCH.....	569
GENERAL.....	571
PROBLEMS.....	571
CLUTCH ADJUSTMENT.....	571
BLEEDING.....	573
MASTER CYLINDER.....	573
SLAVE CYLINDER.....	573
CLEANING.....	577
RELEASE ARM.....	577
RELEASE BEARING.....	581
CLUTCH.....	581
FREEING A SEIZED CLUTCH.....	581
FINAL DRIVE.....	585
GENERAL.....	587
PROBLEMS.....	587
PROPELLER SHAFT.....	589
DIFFERENTIAL.....	591
REMOVING THE DIFFERENTIAL.....	595
SPRINT DIFFERENTIAL REMOVAL.....	595
DIFFERENTIAL OUTPUT DRIVE SHAFTS.....	595
DIFFERENTIAL RESILIENT MOUNTINGS.....	597
RADIUS RODS.....	599
INTERMEDIATE DRIVE SHAFTS.....	599
OUTER DRIVE SHAFTS.....	599
MODIFICATIONS.....	599
EXHAUST SYSTEMS.....	605
GENERAL.....	607
PROBLEMS.....	607
INSTALLATION.....	609
EXHAUST EMISSION MANIFOLD.....	613
MODIFICATIONS.....	613
OVERHAUL AND REBUILD.....	615
RUNNING ON ROAD FOR FIRST TIME.....	615
HANDLING PROBLEMS.....	615
NUTS AND BOLTS.....	615
GENERAL.....	617
WEATHER PROOFING.....	617
DRIVING ON ROAD FOR FIRST TIME.....	625
HANDLING PROBLEMS.....	629
NUTS AND BOLTS.....	633