Installation of a Renault all-aluminium engine with cross-flow head in place of the now out of production #697 and #821 Renault flat-head stock unit is a very interesting conversion in view of the hemi-head higher power & torque available without impairing reliability. Due to the light weight of the Euro, power/weight ratios equalling or surpassing the most expensive sports cars can be obtained at lesser cost.

However, contrary to representations made by some misguided Renault or Lotus "experts", replacement of a stock flat head #697 or #821 engine by a hemi-head unit is not a bolt-on job and requires several modifications & adaptations as well as adjustments. These are minimal but they still require a mechanic with some ingenuity and, in some cases, availability of a properly equipped machine shop. It is also exceedingly important before acquiring a Renault hemi-head engine to know what model it is and what particular modifications it requires to be installed in the Euro. Due to the fact that nowhere it advertises its hemi-head engines as a "bolt-on" replacement, but, on the contrary, warns of the modifications which will have to be contend with, FAI has no OBLIGATION to supply any modification or adaptation parts FREE OF CHARGE, or on an EXCHANGE BASIS. Hemi-head Renault engines are sold as they come from the manufacturer for their particular application. As a result, any extra part necessary for installation in a particular chassis such as the Lotus will have to be ordered and purchased separately except if otherwise specified. However, in order to assist any customer to solve the various technical problems encountered, FAI will provide advice and supply supplementary or alternate parts & equipment at special lower prices for purchases of new engines.

Selection of an engine: Renault hemi-head engines come in two basic models:
- the 807 series now out of production with a displacement of 1656cc. Only one model, the 807-13 fuel injected is available in the U.S. This engine installed in the early R17TS CORDINI is detuned to meet US EPA specifications to 94bhp DIN. See list.
- the 843 series still in production with a displacement of 1647cc. Available in the U.S. in two models:
  - 843/13 - 1647cc - 92bhp - fuel injection - compression ratio 9.25:1
  - 843/10/11/15/16 - 1647cc - 70 bhp - carburetor down draft Weber two-barrel anti-emission - ratio 8:1

In order to return these engines to original French specs, it is necessary to replace the pistons with higher compression units available from FAI as follows:
- 821mm pin **
  - for #807-13 engine: 10.25/1 compression ratio 977mm CORDINI PISTON-LINER KIT (liners-pistons-rings-pins-seals) $298.
  - for #807-13, 81.5/1 875mm $395.
  - for #843-10/11/13/15/16 etc., engines: 9.5/1 compression ratio 979mm PISTON-LINER KIT $298.

Larger displacement kits up to 894mm (1662cc) & 105 bhp can be ordered also from FAI.

On 843-10/13/15/16 engines, it will be necessary also to replace camshaft with Cordini unit, and to modify motor mounts.

This is why it is more interesting to obtain an #807 engine than an #843...

**Some engines are fitted with 60mm pin pistons - Con rods will have to be machined or bushes to install.

Fuel Systems: The following fuel systems are currently used on Renault hemi-head engines:
- one downdraft dual barrel Weber carburetor (32DID/DAD/DAR - anti-emission) or 28/36DCID (as used in Europe)
- one side draft (40DID or 45DID)
- twin (45DID)
- Bosch Electronic Fuel Injection (807-13 and 843-13 engines only)

There is no clearance problem to install single downdraft or side-draft systems. However, it is necessary to do some internal body panel grinding to install twin carbs or fuel injection systems in Lotus Europa. Also make sure you have all the parts and external components necessary by the fuel injection system (fuel pump up and all electric parts) since they are extremely expensive if bought separately and cannot be substituted in the system. You will also need an experienced fuel injection expert to re-adjust the system to the new application (lighter car-different wheel and tire sizes-different transaxle etc..). For all these reasons, it is advised to stay away from fuel injection and use carburetion. Single downdraft or side-draft units are excellent for regular street and road driving while twin carb systems should be used only for competitions (rallyes, various racing) where constant high regime is maintained, and regular maintenance is available.
No matter what fuel system is used, it will be necessary to reroute the Europa throttle cable and to install proper cable anchor. The Europa bell crank can be used if the hemi-head engine rocker cover is fitted with a pivot. FAI can also supply proper bell crank and rod in any length desired. The side draft systems are equipped with a totally different linkage which is supplied with engine or conversion (see list). Throttle cable should be inspected and replaced if not in perfect operating condition, since, in particular, with side draft twin systems, additional load will be put on it.

**Choke cable:** Stock Europa cable is too large in diameter and will not fit Webers. A regular cable of 5" length which can be found at any auto parts store or that we can supply (see list . . . ) should be installed.

**Air Filter:** It is essential to protect the engine with an adequate filter. Unfortunately the space is restricted in the Europa engine compartment. For 28/36DCD or 36DCD Webers, re-use stock renault air filter which is the best you can get by drilling holes in bottom plate and installing Conversion Kit sold by FAI (see list). Install a small Sports Chromed Filter which must be cleaned every 1,000 miles because of its small size otherwise it will clog.

For 32 DIR/DAR and 43DCOE Webers fitted with stud top, FAI can supply a Sports Chromed Filter (see list)

For 32 DIR/DAR Webers with clamp collar top (no studs):

- - - - - - - - - modified (see list)

There are now larger air filters which will clear the Lotus deck available for these last two units. However, a nozzle can be supplied for top of carburetor (see list) to connect to larger remote air filter located on chassis with a flexible hose.

For single 40 or 45DCOE side draft carburetor, it is recommended to use the larger cast aluminum LE LUXE Air Filter or a similar unit with elbow which protects from the water falling through the engine compartment deck opening of the Lotus.

For twin side draft 43DCOE Webers, a problem of space is encountered and it might be necessary to grind some internal fiberglass panels on the right side to accommodate the second carb and its filter. Three kinds of air filters are available for this system:

- the original calibrated Renault-Gordini Twin Carb Air Filter designed specifically for the twin carb hemi-head Renault engine. Not only does this unit provides adequate volume of air and complete protection, but it features a large external air inlet allowing better engine breathing through a flexible hose and can be used as an air box for racing by removing the internal element (see picture). This is by far the best unit available.
- a remote air filter which can be connected with proper inlet nozzle plate (see list) and flex hoses - minimum space required -
- twin small Sports Air Filter as sold by Weber distributors, requiring cleaning every 1,000 miles and protection from water from engine compartment lid.
INSTALLATION OF HEMISPERICAL HEAD RENAULT ENGINES IN LOTUS EUROPAS S1 & S2 (2)

Important Recommendation for Twin Side Draft Weber set-ups: you are cautioned against the fact that all twin side draft set-ups are prone to air leaks due to the combined weight of both carbs & manifolds & filters, and it is therefore strongly recommended to install a Bracing Kit to prop them up (see list).

Velocity Stacks (Air Horns): first note that stacks are primarily for competition use and do not offer any protection against dust and other particles for your engine. As a result, a brand new unit can be worn within a few weeks if not protected adequately. However, since a while, a new gadget called velocity stacks "huffs" which is an industrial highly porous foam filter fitting on top of each stack as a glove has been offered and can be supplied by FAI (see list).

Oil Sump: None of the hemi-head sumps will fit the Europa rear suspension; you will have to transfer original Lotus sump or install flat cast alloy sump (see list).

Motor Mounts: The stock Lotus Europa Renault engine is suspended by 3 points - 2 motor mounts no. 03466000 which are Lotus parts available only from Lotus dealers. These mounts are fitted by two L-shaped brackets, one right and one left. The right bracket has a hole through it for passage of shift rod. Both brackets bolt to the motor mount on one side and the engine case on the other side, with 3 bolts in a triangle pattern.

-1 rear transaxle mount which is a Renault part.

First, make sure the mounts are all in good condition and replace them if necessary. Note that all early Renault hemi-head engines have the same bracket bolt pattern (807 series). However, on the latest 840 models, the side bolt pattern is different which necessitates to weld an additional plate to bracket drilled at proper places and add a spacer. A template is available to make this modification from FAI, as well as brackets extension kit fitting new bolt pattern to be welded to Lotus brackets (see list). No modification to rear mount.

Bell Housing, Clutch & Flywheel: The bell housing of the 4-speed stock Lotus-Renault transaxle will fit all models of Renault hemis. However, some hemi engines come with 200mm flywheel (same as Lotus stock flat head engine), some other come with a 215mm flywheel which has to be replaced with the stock wheel or fitted with a 215mm Perodo clutch available from FAI.

When using the 200mm clutch, it is extremely important to utilise exclusively the special 200D325 reinforced clutch cover fitted stock on the Europa instead of the 200D unit from the Renault R-16 which is too weak for the additional power load. Also note the Europa 200mm clutch cover features a huge friction ring upon which the throw-out bearing comes in contact when the latest hemi engine clutches do not have this part, the throw-out bearing going in direct contact with the diaphragm. If you get a hemi-head engine with the latest clutch cover as described, you will have to discard the clutch and install the original Lotus unit back on. In no case should the stock Europa throw-out ball bearing be used directly in contact with the diaphragm*.

In order to use the latest cover, you need also the latest throw-out bearing. Unfortunately, it is rather difficult to attach it to the clutch control fork which is of a different design, and has a larger shaft. The only way to use therefore the latest 200mm clutch and the 215mm unit is to replace the whole bell housing which is rather an expensive operation.

*Use of the stock Europa properly adjusted throw-out bearing will operate the clutch but is left entirely to the installer's responsibility.

IMPORTANT: Some very early 1967 S1 Europas (up to motor #060) are equipped with a 5 holes flywheel which cannot be mounted on any hemi-head engine. It will be necessary in this case to install a later 7 holes 200 or 215mm wheel.
Exhaust System: Europas are fitted stock with a clamp collar type exhaust manifold connected to an exhaust pipe on the left side of the car. Hemih−head exhaust manifolds are also attached to the left of the engine but they come in two basic models:
- one, denominated TX manifold, which is a 4−into−1 design terminating by a clamp collar type flange connecting with an exhaust pipe and muffler of larger diameter. This is the only manifold which clears the Lotus frame without modifications.
- others which are 4−into−2 designs and terminate by a flat bolted flange connecting to exhaust pipe. These models do not clear the Lotus frame and require cutting and welding of a new flange which is a difficult job since the material is cast iron.

Exhaust pipe: If you are using the TX clamped manifold, FAI can supply the following:
- TX Exhaust Pipe connection. Length: 20” ID: 40mm (1.532”) will connect to TX manifold with a pair of clamps and extends down 20” with flat side allowing clearance of Lotus left V−frame member. This connecting pipe can be heat−heated and welded to any exhaust system chosen by yourself.
- TX primary Exhaust Pipe − same design as above but with an elbowed tube extending 700mm (8 1/2”) towards rear of car. will fit stock hemih−head muffler.

If you are using the 4−into−2 manifold shortened to clear Lotus V−frame member, the muffler shop will have to build its own exhaust system and flanges. The only part we can supply is the exhaust fork 2−into−1 sh own in picture sheet.

Silencers/Mufflers: you can use either Renault exhaust components & parts which are properly calibrated to the hemih−engine or have a good muffler shop put together an exhaust system. The only requirements are to use 42mm ID (2 3/16”) exhaust pipe and muffler. For the muffler itself, a straight−thru unit will increase the performance but might be too noisy. Check with your local noise regulations. In view of the fact there never was an exhaust system designed for this engine in the Europe, you still have to perform some cutting, welding and bending to make or adapt a Renault system to the European.

Note that the original flat head exhaust system has to be totally discarded since it is both too small in ID and not fitting the manifold. The stock Europa flat head pump cannot be used with the hemih−head camshaft.

Fuel Pump: all Renault hemih−head engines available in the U.S. are fitted with an electric fuel pump. The stock Europa flat head pump cannot be used with the hemih−head camshaft. You will therefore have to install an electric fuel pump flexibly mounted on frame or body. Any electric pump can be used as long as the pressure is comprised between 2.5 & 4 psi. (for all models of carburetors). Installation of a fuel filter before pump is also recommended.

Breather Device: both hemih−head and flat head Renault engines are fitted with oil vapors recirclating devices located on rocker covers and connected with intake systems. These devices can be retained by selecting an air filter with proper spout (inlet tube) or by brazing one. The OD of the inlet tube should be 1/2” OD in order to take hose of same size.

Other Recirculating and Anti−Pollution Devices: depending on model and application of engine, there will be more or less systems and devices. It is advised to stay with original system of the engine you bought or bypass it completely by plugging all lines. For hemih−engines such as the 843 which are fitted with an air pump, this device should be removed and all connected lines and devices plugged and removed or bypassed since it will absorb some unwanted power. Fuel pressure should also be removed and fuel pressure relieved.

Ignition: the stock distributor of the Europa flat head engine cannot be used for the hemih−head which comes with a different unit. All hemih−head distributors delivered with our engines are statically timed, but final adjustment of the advance can be done only with engine installed and running. Factory procedures and specs sheets supplied with every new engine should be followed. However, if you have your own engine, FAI can supply specs after proper identification of unit has been made.

Very Important: the stock DUCOL coil used in Europas with flat head engines is marginal to use with hemih−head units especially twin carb models requiring a more powerful spark at high regimes. Therefore it would be an excellent idea to replace the stock coil by a Heavy Duty or Racing unit of same make as distributor preferably. (see list).

Electronic Ignition Devices are interesting only if breakers (no points wearing out) − see list.

Starter Motor: the stock Europa flat head starter will fit all hemih−heads. However it would be a good idea to check condition of crank unit and have it reconditioned if necessary, since higher compression engines are harder to turn and a worn starter might not be able to do the job. Latest Renault hemih−heads are fitted with a heavy duty larger starter which might be interesting to consider but which
INSTALLATION OF HEMISPHERICAL CROSS-FLOW HEAD RENAULT ENGINES IN LOTUS EUROPA S1 & S2 (3)

Alternator & Pulleys: the Europa stock alternator is located more towards the block than the hemi-head units. Also most recent hemi-heads are fitted with a belt tensioning system which does not exist in the Europa. The cheapest and easiest way to install the stock Europa alternator is to discard the tensioning system and replace the water pump pulley by another unit fitting the hemi-head pump, so that the pulleys will line up. FAI can supply the modified pulley or you can make your own. It will also be necessary to transfer the stock alternator bracket and camshaft pulley from old to new engine to obtain proper line up.

However, if your engine is equipped with the belt tensioning system, it is much better to retain it though it requires several additional parts:
- Special alternator pulley (will fit stock Europa unit)
- expansion kit to lengthen alternator from support frame
- 2 spacers 6mm long, 1 with 10mm diameter
- 1 with 6mm

Oil Cooler: it is imperative to install an oil radiator for twin carb hemi-head engines. On single carb engines, it is strongly recommended in view of the diminutive stock Europa cooling system. The oil cooler (radiator) can be installed either in conjunction with a larger external oil filter (see picture) or by itself. If installed in rear, generally under luggage compartment on top of transaxle, it should be larger than if fitted in front next to water radiator. It is also preferable to use safety fitting hoses and components which are safer and the only ones accepted for competition, though they are more expensive than the clamped systems. FAI can supply a complete system which was designed specifically for the hemi-head Renault engine. If you want to use your own oil radiator or/and filter, you need only the oil engine take off and return kit (see list) and eventually the corresponding connecting fittings.

Note also that a Gordini High Volume Oil Pump is available for engines equipped with standard oil pump. (see list)

Cooling system: the Europa original system is already deficient because of poor location and size of radiator. It will therefore be IMPERATIVE when changing engines to CHECK THOROUGHLY not only radiator condition but all hoses, pipes, clamps, etc.

If a larger radiator can be installed by your local radiator shop, this would be still better but you can keep the water temperature under control with the stock radiator in excellent condition & eventually by replacing small nylon plastic fan by larger heavy duty steel fan sweeping 33% more air volume. (fits readily) see list

Also be informed that Europa's radiator have an interior welded baffle plate which should be inspected since it gets corroded or unbrazed very often and let coolant run directly from inlet to outlet pipe without going through radiator core. If you have your radiator reconditioned, caution radiator shop accordingly.

Final adjustments: all initial adjustments of carburetion and ignition should be made along engine specs which are supplied with each FAI engine. However these specs are for general use and might have to be altered due to particular conditions such as climate, altitude, weight of car, size of wheels and tires, kind of driving (city, highway, rallying or various kinds of racing) and particularly FUEL. These final adjustments or modifications should be done by an experienced mechanic equipped with proper checking instruments.

FAI carries a complete assortment of carburetor parts available upon demand.
Caution: Before installing a new engine, it would be also time to inspect other components which are going to receive the new plant such as transaxle/main shaft, play, lateral seals, etc., clutch and clutch control, motor and transaxle mount (very important), driveshafts & U-, joints, rear hub bearings & seals, suspension springs and shock absorbers, etc.

Any defect which did not show up with stock used engine might appear with new and more powerful unit.

General instructions for installing, fitting and breaking in new Renault engines supplied by FAI might be useful.

Sender units: all instrument gauge sender units from stock Europa will have to be transferred to new engine since they must match the British gauges of the Europa. There is no problem here since the threads are the same on both flat head and hemi-head. Only the position of these sender units (oil pressure, oil temp, water temp) might be different on hemi-heads (consult specs). Plug any other sender unit hole not used.

Front Cover: all 807 and 843 engines sold in the US are fitted with a front pulley which must be removed for installation in Lotus Europa chassis. Removal of pulley necessitates replacement of front timing cover by stock flat head engine unit, or installation of aluminum plug sold by FAI.

List of conversion parts available from FAI:
- Parts marked $ : SPECIAL ORDER - see TERMS -
- $ price valid until out of stock -

**Throttle Linkages**
- Hemi-heads equipped with downdraft carburetors
  - Twin 45DCOE - : complete linkage
- Shaker cable fitting all Webers : Length: 60" 6$
- Manifolds (Inlet): Inlet Manifold for single side draft Weber (40 or 45DCOE - specify) : Specify if for 807 or 843 engine 258$
- Renault manifold for 32DIR/DARA / DAR or 28/36DCD/36DCD (specify which) WEBERS 158$
- Gordon - 45DCOE Webes with gaskets and linkage, hardware, etc. 198$
- Gordon Racing Inlet Manifolds (shorter and leakproof) complete with gaskets, hardware, etc. 388$

**Carburetors**: all Weber carburetors, pre-adjusted to specs and jetted, new = 45DCOE 68/69 special twin Gordini ca. 248$

**Fuel Pumps**: mechanical fuel pump (AC) for usable on 807-13 and 843-13 Fuel injection engines 27$
- Electric fuel pump for 5 to 4 gph 48$

**Air Filters**: for downdraft Weber carburetors
- Warrenford or Ramflo chromed filter - fit 28/36, 36DCD & 32 DAR/DIR (model with studs) 24$
- Weber DAB/DIR with collar clamp (no studs) 36$

Conversion kit to fit stock LOTUS Air Filter to 28/36 or 36DCD or 32DIR/DAR (models with studs) Weber carburetors 24$

For sideDrafts carburetors 40 or 45DCOE :
- Sports Chrome Air Filter - plastic foam insert - mounts directly on carb. - breather device inlet connection 24$
- Cast Aluminum De Luxe Air Filter - with bent ram conduits - plastic foam insert - for single carb only 48$

**Bracing Kit** for twin Webbers (avoids air leaks)
- GORDINI Twin Carb. Integrated Air Filter / Air Box with filter cartridge, complete with flex hose 148$
- Replacement cartridge for same 36$

Inlet Nipple: mounted on top of carburetor cover, will allow installation of a remote air filter connected with FLEX hoses for single downdraft Weber (studs models) 48$
- (clamp collar models) 18$
- Dual side-draft 32 - (cast alu plate) - specify if 40 or 45DCOE 98$

We can supply remote air filters upon demand (specify for what application and what carburetor)

**Franco-American Imports**
French Sports Car Specialists since 1968
List of Parts (cont.) X: DISCONTINUED : - price valid only until out of stock - S: SPECIAL ORDER - see Terms -

For 28/36DCD or 36DCD down-draft Webers twin model-polished with protection grille - bolts on top of carb w/o. modif. 24. -
For 40DCOE & 45DCOE side draft - - two models available: bolted on top of carburetor - no modifications necessary
(specific) slide-in - requires special centering device
Bolted models : chromed with protective grille - comes in 3 lengths: 50mm-80mm-120mm pair 24.00
Slide-in - tuned finish - no grille - sizes from 10mm to 07mm - straight or bent conduits - pair: from $20.00 to $30.00.
Polyfoam Velocity stacks muff - mounts on stacks up to 80mm long with molded clamp pair 24.95
For 32/34/36 DARA down-draft Webers (3 models): Racing Calibrated cast alu base velocity stacks - pair 45.00
can also be used with 28/36DCD or 36DCD side drafts or 32 DAV/DAR/DARA clamp collar model(with slight grinding)

Exhaust Systems:
TX Exhaust Manifold 4-into-1 - with clamped exhaust flange 198. -
TX Connecting pipe for above - Length: 20" - straight - flattened for clearance of chassis - ID:40mm 45. -
TX - - - clamps - necessary to mount connecting pipe or exhaust pipe 16. -
TX - - pipe, straight - length: 1500mm (55") - ID:40mm - fits TX connecting pipe 24. -
$ TX - - , with ... Length: 700mm(27") - ID:40mm - with flange collar-replaces connecting & exhaust pipe 53. -
4-into-2 Gordini exhaust manifold - with bolted flange - needs cutting and welding to fit Lotus frame - gasket $3.00 148. -
$ - - fork - - - - - bolts on 4-into-2 Gordini manifold -L:28" - ID:40mm 70. -
$ Renault-Alpine Racing Exhaust Manifold 4-into-1-Dyno Tuned, with muffler 590. -
Silencers:
Primary Gordini Straight Thru Resonator - ID:40mm - track only 50. -
Muffler for all hemi-heads Renault - ID:40mm - road 75. -
$ Racing Headers: 4-into-1 - exit at bottom - needs bending to fit Europa - N/A
Rear Transaxle Mount Europa top - requires insulation of rear luggage compartment - DYNO TUNED 296.00 X
Motor Mounts modification kit (only for latest #843 engines with new offset threads). Needs to be welded in place & drill 48. -

Ball Housing for 215mm clutch with clutch control shaft - necessitates replacement of throw-out bearing (see under) 190. -
215mm Comp. Gordini Lightened and Balanced Steel Flywheel 348. -
200mm Europa stock flywheel 118. -
200mm reinforced FERODO Clutch Cover - original equipment on Europa - Disc 36.00
- - Ball Bearing - 20.90
215mm Competition Clutch FERODO with disc - Ball Bearing - 168.00
- - Ball Bearing - 24.00
Centrifugal Advance conversion kit for vacuum advance distributors—necessary when installing side-drafts Weber Carburettors. 
Gordini Twin Carb Modified Curve Distributor—for modified engines necessary with 20.25/1 or over engines.
Breakerless ELECTRONIC IGNITION kit—specify if Bosch or Gordini distributor vacuum advance or non-vacuum.
Ducellier High Power Oil Bath Racing Collar with external resistor matches Gordini distributor above.
Racing Distributor Cap with side wire outlets & flat top—fits all Ducellier Distributors.
High Performance heat resistant points—condenser.

Regulator 12.15—original equipment $48.00, suitable replacement $36.00.

Heavy Duty 12 volt Starter Motor—new—$298.00, core allowance $30.00, after inspection exchange.

15 volt Alternator—$280.00, $30.00, $148.00.

Conversion Water Pump pulley—fits stock alternator—$36.00.

Conventional alternator pulley fits stock Europa alternator—$24.00.

Bolt spacer kit to lengthen alternator fitment frame—$12.00.

Lubrication: Engine Oil Take-off and Return kit with seals to install any radiator or external oil filter (1/2 or 3/8" hose) $48.00.

Complete Oil Radiator & External Oil Filter Kit with engine take-off and return, hose (takes std. U.S. filter cartridge) $85.00.

...racing, aluminium radiator, aircraft safety hose...

HIGH VOLUME Heavy Duty Gordini Oil Pump with special pick-up strainer for Lotus sump—33% more output.

Safety Aircraft re-usable fittings—fits any 1/2" oil safety hose.

Cooling System: Large Volume Steel Radiator Fan—bolts in place of plastic fan.

Oil Sump: the Renault Hemé head engine sump will not clear the Europa suspension—Install Lotus original sump.

Front engine cover: aluminium obturating plug—only for latest hemé-heads fitted with front pulley (will not fit Europa).

Important: this plug has to be secured with proper device or glue.

Other components available: as shown on pictures.

Alpine cast alloy COOLING COVER—takes standard oil plug—special seal $7.75.

Gordini—screw-type plug $20.00.

Breather tube for Alpine or Gordini Rocker Cover—takes 1/2" hose—w/o flame arrester $3.00 with flame arrester $8.00.

Micro-Polished Gordini balanced competition crankshafts with matched lightened flywheel $380.00, $380.00.

Gordini Blueprinted lightened polished balanced reinforced DORMBJOS with special H6 thin thread bolts (no nuts). set/4 $480.00.

FRE Gordini Water pump with pulleys and notched belt $12.00.

Radiator: Alpaca Cast LH SUMP, large capacity, fitted with anti-surge baffle & pick-up—flat model only.


Inverted Bell Housing with clutch control FRE—fits #366 or #368 Renault transaxle $100.00.

5-Speed Renault #365 Transaxle used in Lotus Europa Twin Cam—ratios: 1st (3.61) 2nd (2.35) 3rd (1.57) 4th (1.30) 5th (1.07) $1,035.00.

Gordini racing steel Water Expansion tank (only approved for racing).

ALSO AVAILABLE: Competition Camshafts, Heavy Duty Main and Rod Bearings, Ported & Polished Cylinder Heads, Extra Large Valves, Competition Valve Springs, Valve seats, Cast and Forged Pistons & Liners up to 84mm (1601cc).

ASK FOR HIGH PERFORMANCE & ACCESSORIES LIST FOR RENAULT HEMEPHERICAL ALUMINUM ENGINES—FAM/R76.

FRAOCO-AMERICAN IMPORTS — (213) 846.9121

French Sports Car Specialists since 1968.
Ref: Installation of Hemispherical Head Renault Engines in Lotus Europa S1 & S2 - Additive #843 engines

Motor Mounts: New 843 only: The motor mount bolt pattern on the block of the late Renault hemi-head units such as the #843 have been modified in such a way that it is necessary to extend the Lotus right and left brackets no. 04022077 & 04022078 by welding a plate to a spacer. FAI makes available a blueprint showing the parts to make and weld or supplies a set of prepared plates as per list.

Gearbox: Lotus Europa S1 and S2 are fitted with THREE instruments which necessitates sender units on engine:
- Water Temperature gauge sender unit which is located on cylinder head (left side) behind water pump. The unit should be transferred to the hemi cylinder head on the other side (inside alternator support) where a hole of similar #24mm x 1.5 thread is available. This unit has to be the original Lotus unit to match the Smiths instrument.
- Oil Pressure warning light. can be either the flat head or hemi-head unit. Located on oil gallery towards engine Timing Cover on left side of block.
- Oil Pressure gauge sender unit: this unit is special to the Lotus Smiths instrument and has to be re-used with the new hemi-head engine. However, if it does not fit the same hole as the flat head engine, move it towards the Timing Cover where you will find an Allen wrench square fitting plug which will be removed and replaced by the original Lotus Oil Pressure Sender unit assembly as it came out of the old engine. The Hemi-head instruments can be kept as oil plugs but cannot be used with other instruments than French Jaegers, except for the oil pressure warning light. On all #843 engines, the last oil gallery plug towards the Timing cover has to be used to install the Lotus Oil Pressure Sender unit.

Throttle cable: All #843 engines with carburetor equipped with a Turret throttle linkage which will necessitate rerouting of Lotus cable and for which no extra parts are available. However, any mechanic with ingenuity should be able to attach easily the cable to the turret.

No choke cables are necessary on the #843 carburetion engines since they are equipped with a Weber DARA carburetor with electric choke.

FAI 11/78 - Additive no. 9

Installation of 5-speed Renault transaxle in LOTUS Europa S1 & S2: Two types of 5-speed transaxles are available on the U.S. market which will fit the stock Lotus Renault flat head engine or the Renault hemi-heads:
- the 365-07 transaxle as used in the Lotus Twin Cam with following ratios: 1st: 3.61/1 - 2nd: 2.33/1 - 3rd: 1.61/1 - 4th: 1.21/1 - 5th: 1.07/1 - Final Drive: 3.78/1. Installation of this unit which is controlled by a selector shaft located in rear cover of gearbox requires a completely different linkage all the way to the shift knob. (see picture). It will also be necessary to replace or modify the driveshaft inboard yokes & the lower link mount, the rear mounting plate and supports and to add the reverse idler mechanism which is strictly Lotus. All these parts can be purchased from Lotus only and are extremely costly. You can also have a custom linkage made up by a specialized shop.
- the #356 transaxle used in Renault-Gordini R17 sold in the U.S. which features the following ratios: 1st: 3.45/1 - 2nd: 2.54/1 - 3rd: 1.48/1 - 4th: 1.22/1 - 5th: 1.04/1 - Final Drive: 3.78/1. This transaxle is fitted with a rear cover transverse selector shaft for which no usable linkage exists, requiring complete modification or outright fabrication of the S1/S2 linkage. Also note this transaxle is not equipped with the reinforced differential of the 365 units and therefore cannot accept as much torque as the #365. The same other components listed with the #365 unit will also be necessary.

Bell Housing: Note that #365 bell housing will fit any Aluminium Renault engine where the 365-07 Lotus unit will require a new bell housing to replace the original part designed to fit the Twin Cam Ford engine. The stock S1/S2 bell housing can also be used with stock 200mm clutch but will have to be machined or replaced to take the 215mm clutch because of a different clutch cover and clutch release bearing. Also note clutch cable will have to be re-routed to right side of bell housing if using #365 unit. Also clutch shaft and lever will have to be turned off 90° to face down instead of up.

*FRANCO-AMERICAN can supply list of Lotus conversion parts upon demand. Cost $3.00

FAI 11/80 - Additive no. 9

Please note #843 engine available in the U.S. & Canada as well as earlier #807 engines have been fitted with 92mm and 91mm piston pins. Some of these pins are mounted free into the rod small end, some have to be pressed in, some are not in the 92mm ID. Unfortunately, the engine identification number stamped on a plate attached to the block under the cylinder head is not always sufficient to identify the kind of rods used. Therefore, if you do not have the vehicle identification number stamped on an oval plate in the front engine compartment, you will have to be careful when ordering piston-liner kits or con rods. Modifications of con rods from 92mm pins to 91mm costs $35. If non-bushed and $35. With bushings. If you want to have this job done in your own machine shop, we can supply the 22mm Gordini brass bushings for $2.50 ea. or $20—for a set of 4.

A. GEAR LEVER.
B. FRONT LONGITUDINAL LINK.
C. UNIVERSAL PIVOT ASSEMBLY
D. REAR LONGITUDINAL LINK.

Fig. 3.

INDENT REVERSE MECHANISM

#305 R17 GORDINI US
Transaxle
with transverse selector shaft.
For 365-07 unit, see illustration under Equipment for
Renault all aluminium engines.

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1) MAKE PLATES AS PER DRAWING OR PURCHASE FROM FAI
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1) MAKE PLATE AS PER DRAWING OR PURCHASE FROM FAI
2) WELD ALONG EDGE OF BARS
3) DRILL X HOLES (11/32") TO MATCH CRANKCASE HOLES