

LOTUS 49B FORD F-I



At the Spanish Grand Prix in 1968 hidden in the Gold Leaf-Team Lotus transporter was one of the strangest looking grand prix cars ever to be designed—the Lotus 49B. Colin Chapman decided that the car should not be raced in Spain, but two weeks later at the Monaco Grand Prix, Graham Hill drove the car to victory in its first race.

This victory, coming two weeks after Hill's victory in Spain, where he drove a Lotus 49, provided a tremendous fillip for the team after two of the World's finest drivers had been tragically killed driving Team Lotus cars.

The 49B uses the same monocoque center section as the Lotus 49, but the nose and tail section differ considerably from the 49's. The tail section of the car is a wedge shape as used, by all Lotus single seaters, while the nose has two elevators or 'de-elevators' growing from it. The wedge-shaped tail was found to be necessary when the 49 was seen to be rising to full suspension on fast circuits and it is designed to eliminate this lift at the rear, the elevators are designed to perform a similar function at the front of the car. The elevators have several positions of adjustment, while they were kept horizontal at Monaco where little lift is encountered, at Spa where speeds and therefore lift forces are high, they were angled to destroy this extra lift.

As well as these obvious differences between the 49 and the 49B there are many others. The geometry of both the front and rear suspensions has been altered, as have the pick-up points. The suspession systems remain much the same as the 49's, however, at the front the upper and lower wishbones have been angled forwards to enter the body further back in the monocoque. These modifications have improved the handling, steering, stability and braking of the car quite a lot over that of the 49.

The rear suspension mounting points and geometry of the 49 are both altered for the 49B, this has helped to eliminate rear-end bump-steer which was one of the major vices of the Lotus 49.

The running gear of the 49 is also altered for the 49B:new, wider wheels are fitted at the rear, the wheels being the widest ever fitted to a formula I car. They measure 15 in, between the rims and give the Firestone tyres an almost convex tread arc. The oil tank and cooler are moved to the rear of the car, above the gearbox, thus offering better weight distribution. A large N.A.C.A. duct is used to draw air into the oil cooler. The mounting of the oil tank and cooler at the rear also helps to prevent frothing in the oil system because, the shorter the distance the oil has to travel, the less chance there is of it frothing. The engine of the 49B differs little from 1967's Cosworth V-8. The only obvious differences are that the engine has been tidied up externally so that it looks much less cluttered, detail changes have also been made to the breathing and throttle

Lotus have forsaken the ZF gearbox used for so long on their formula 1 cars, in its place they have fitted the new Hewland FG400 box to the 49B.

This box is Hewland's Formula 2 gearhox with the crown wheel and pinion from their old Formula 1 box, the Formula 2 box's selectors have also been considerably strengthened. While th ZF genrbox was both light and reliable it was not designed for motor racing and the Lotus mechanics had to strip the 'hox down before they could change a gear-ratio, with the Hewland gearbox however, the ratios can be changed very quickly thus putting the Team Lotus mechanics on a par with the mechanics of other teams.

New type driveshafts are fitted to the 49B, they are made by Hardy-Spicer and are constructed with hallrace type constant velocity joints, on the same principle as those used by the B. M. C. 1800s.

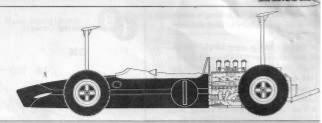
The 49B while not a wholly new designis very different from the 49 which it replaces. Colin Chapman is now reported to be working on a successor to the 49B which will be a completely new car, indeed it is rumoured that this car will have a revolutionary new type of suspension system.

Chapman is, at the time of writing, the only grand prix car constructor to make full advantage of the F.I.A.'s new (in Europe) regulations concerning advertising. As the name of the entrant as well as 55 square inches of advertising stickers are now allowed on the side of the cars; Colin Chapman, by calling his racing team Gold Leaf-Team Lotus, is able to advertise Players Cigarettes, together with the normal tyre, plug and fuel stickers on the side of his cars; he is therefore gaining twice the advertising revenue of the other Formula 1 teams, good luck to him if he can get away with it.

The Team Lotus cars have therefore, since early this year, been painted like a giant Gold Leaf packet. For the henefit of non-smokers, that is with a red body top and white lower body, the red and white are separated by a thin gold stripe which widens over the nose. The 49B carries 'Autolite' and 'Firestone' stickers and just in front of the windscreen is an 'I'm Backing Britain Union Jack. The 'Gold Leaf' lettering on the car's sides is white, while the Team Lotus' part of the message is gold. On the nose of the car 'Lotus Ford' is written in white and in between the words is a small 'Lotus' badge.



The Lotus 49B like its predecessor, the 49, began its competition career in a blaze of glory. Graham Hill took the first 49B to be completed, R49B/5, to Monaco, and with it he won his fourth Monaco Grand Prix in six years, the



first driver to win this race four times. Hill dominated this meeting in the style of his late team leader. Jim Clark. set up the fastest time in the two dry practice sessions, and led the race for all but the first three laps. He won the race at a canter, setting a new race record and only just slower than the late Jim Clark's outright lap record.

Two weeks later, at the Belgian Grand Prix, the 49B's luck which had started good, turned all bad. Only one of the two cars entered, Hill's, turned up for the first practice session, and Graham could only complete four laps before the car was wheeled away with an engine that would not pull over 8,000 r.p.m. The second 49B to be completed, R49B/6, appeared for Jackie Oliver on the second day of practice. On that day, however it did nothing but rain, and even though Oliver managed third fastest time of the day, this was only good for 16th place on the grid a place lower than Graham Hilf's car never ran well in the race, and be retired after six laps, while in 10th place, the car breaking a driveshaft. Jackie Oliver drove a steady race to finish in fifth place, however, his car had stopped on the circuit when Jackie was holding fourth place, with less than two laps to go. Oliver's 49B retired with identical trouble to Hill's, the new-type driveshafts which had worked so well at Monaco, did not seem to be able to cope with the high speeds attained at Spa.

The car's ill-luck continued at Zandvoort, where Jackie Stewart scored the Matra marque's first Grand Prix victory. Graham Hill spun his car in the last 10 laps of the race while lying fourth, and Jack Oliver finished 10 laps behind Stew art after a number of spins and pitstops caused by the wet weather conditions.

After the Dutch Grand Prix the 49B's were drastically modified for the French G.P. which was held two weeks later on the Rogen Circuit. The wedge tail was taken off the car and an airfoil mounted above the rear suspension exerting downward thrust directly on the car suspension. The 'de-elevators' on the nose of the car were extended to a point in the centre of the wheels. Oliver crashed his 49B in practice and was unable to race while Hill retired on the 15th lap with a repetition of the Spa drive shaft failure.

The next Grand Prix on the schedule was the British held at Brands Hatch. The cars had only minor changes since their unsuccessful outing at Rouen. The wings on the cars were mounted five feet from the ground, 12 in, higher than at Rouen, and a lip was fitted across the top of the nose to separate the airflow and kill lift. A third 49B, R49/7 appeared in this race, driven by Jo Siffert, and entered by Rob Walker; the car was painted in the famous blue and white colours of this team. Hill and Oliver completely dominated the practice sessions and gained first and second positions on the grid while Siffert qualified fourth. From the start of the race the three Lotus cars circulated in 1st, 2nd and 3rd places until Hill retired with transmission trouble and Oliver with a broken crankshaft, both retiring while in the lead. This left the race to Shiffert who finished in front of Chris Amon and won his first Grand Prix by four seconds.

At Spa and Zandvoort both 49B's carried small spoilers tacked onto the tail. Hill's car carried the numbers nine, one, three, 12 and eight in the live races mentioned above, and Oliver's the numbers two, four, 14 and nine. The numbers are carried in white discs just behind the gold stripes on the nose, and behind the Gold Leaf-Team Lotus stickers on the side of the car, the numbers being black. The 49B's windscreen is tinted yellow and the tail spoiler bare metal. It would appear that the Team Lotus G.P. cars are again the fastest competing in Formula I racing, as they usually are.

Wings have suddenly become a part of G. P. racing during '68, first appearing on the Ferrari and works Brabhams at the Belgium G. P. For the Dutch G. P., the Matra Ford had aerofoils to attach to the front upper wishbones and for the French G.P., Ferraris, Brabhams, McLarens and the two works Lotus 49 Bs, all sported aerofoils.

The Lotus wings are the widest and highest of all, each team having its own ideas and each driver claiming that their version improves the handling of their car. The basic idea of the wing at the rear is to create a downthrust over the rear wheels to help transmit the power of the engine down on to the road. Drivers were experiencing wheelspin at high speed as the cars tended to lift up over the airstream and they were also

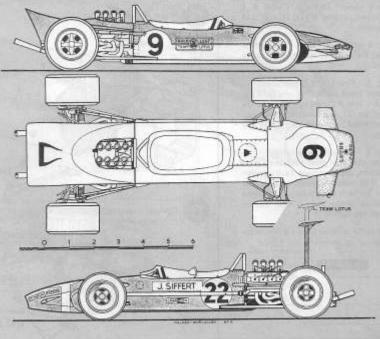
unable to transmit the power during bumpy and adverse conditions.

While the Ferrari, Brabham and Mc-Laren type of wings act directly on to the engine putting the stress on the suspension, the Lotus wing is mounted on to the rear wheel uprights, as were the Chaparral's wings. The Lotus wing produces 400 lbs. downthrust at maximum speed.

The front canard fins counteract the force exerted by the wing and top the nose lifting, with both aerofoils working as they should, the combined pressure tend to push the car down on to the road surface.

The cars drawn are the Monaco-tailed Lotus and a side view of Jo Siffert's British G. P. winning machine which used the low wing and short fins. Graham Hill's French G. P. car used the same set-up, but for the British G.P., Hill had a high wing and wide front fins.

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Please read the following instructions very carefully before assembly.

★This kit has a very large number of parts, almost 180.Please read and study the diagrams very carefull before starting work.

Assemble all the parts in their respective numbers.

*You will need the following tools for the construction of this kit: a candle, a small screw driver, tweezers, knife, cellotape and a rule. *Remove each part of the twig

*Remove each part of the twig before you assemble the various parts.

*In the diagrams the sections which have to be fixed either with adhesives or by warming are coloured blue. Always be certain that you apply the correct adhesive to the correct sections.

Fig. 1 — Assembling Cockpit Cement B 8, C 36, B 11 and E 11 to cockpit B 15.

*Paste a sticker onto the Dashboard.

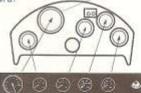


Fig. 2 —Battery Mount Installation Cement battery mounts M 1 and M 2, and switch mount M 3 to the rear of cockpit B I5 as illustrated. Heat fix three pins of B I5. Connect red lead to M 1 and blue lead to M 3.

NOTE:

The term "Heat fix" denotes the use of heat to fix the plastic by melting it down. Simply use a small screw-driver, heat the tip of it and apply it to the plastic whilst still hot.

Fig. 3 — Assembling the Body Apply cement to fix A I and A 2 together, holding B I, B I4 and B I0 in place.

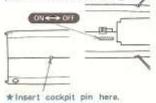
Fig. 4 — Cowling Mount Installation Heat fix cowling mount M 6 onto B 16.

Fig. 5 — Front Arm Installation Insert front arms D 42 and D 40 into A 1 and A 2 respectively and fix them by C 1 from inside. Then cement front bulkhead B 16 to the body.

Fig. 6 - Cockpit Installation

After checking that switch is in onposition, apply cement to fix cockpit B 15 onto the body, making the rear surface of cockpit slip onto notches of the body. Pull switch leads through B 10.

*Past a sticker onto switch in the position as shown in the figure.



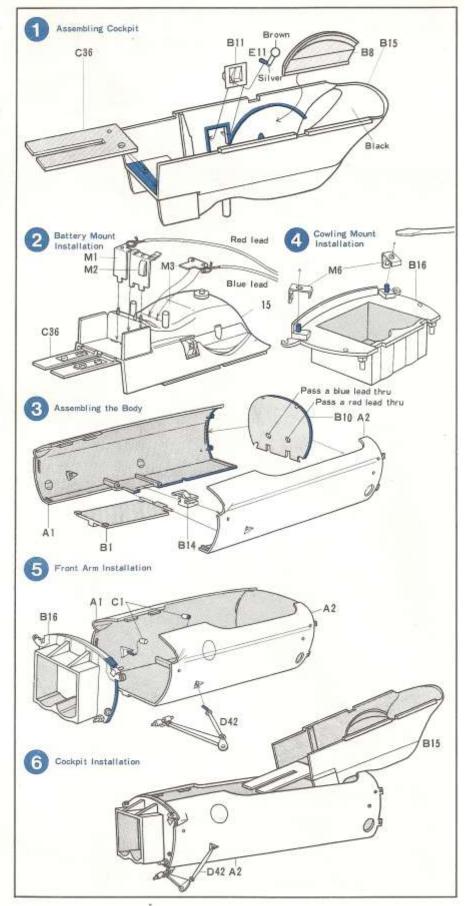


Fig. 7 - Rack Installation Fit B I7 and D 45 into bulkhead B 3.

Fig. 8 -Pinion gear and Steering column shaft assembly. Tap the pinion gear lightly onto the

Tap the pinion gear lightly onto the steering column shaft M5. Place opposite end through B3 and assemble E3.

Fig. 9 — Battery Mount Installation Heat fix battery mount M 4 onto bulkhead B 3.

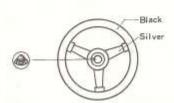
Fig. 10 - Assembling Bulkhead Parts Attach one D 25 onto the pre-assembled D 45 and another D 25 onto D 38. Fix D 21 onto each D 11 and D 10, and heat fix D 38 onto D 11 and D 10.

Fig. 11 - Bulkhead Installation Cement the pre-assembled B 3 to the body. At this stage. do not mount front arms D 42 and D40 onto B 3 and B 16. Driver

Assemble driver as shown. Paint before plecing in car. Paint goggles in black and lens in blue or silver. Place 'Firestone' decal on the back of the driver. Soak decal in water and remove from backing sheet, then apply to the helmet.



Fig. 12 - Driver Dummy Installation
Pass steering wheel E20 thru E8
with driver holding E20. Then
cement E8 to body and E20 to E3
as shown. Now, check if M5 engages
with B17 properly by turning steering wheel E20. Lastly, cament A5 to
A6.



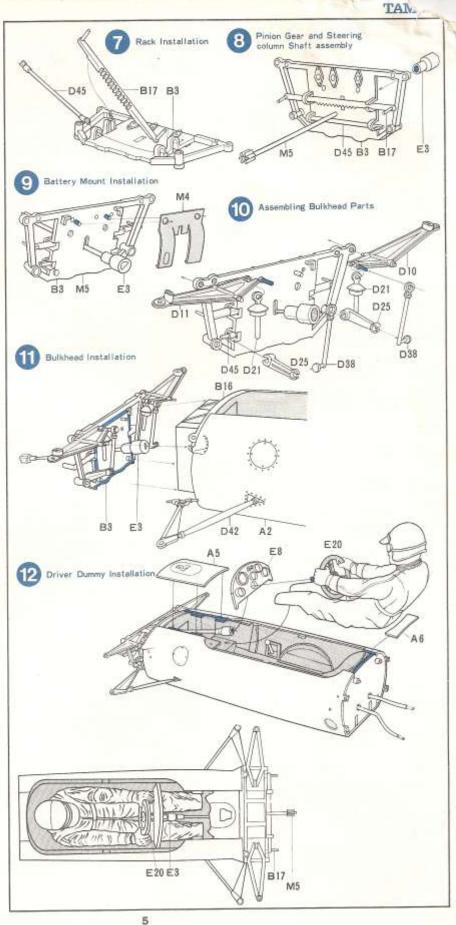


Fig. 13 - Assembling Windshield Cement windshield A8 to body and A9 to upper body. Attach rear view mirror D5 and D15 and roll bers D30 and D31 to A9,

Fig. 14-Oil Damper Installation Cement E 30 to oil damper E 28.





Fig 15—Coil Spring Installation Fit E 30 onto front arm D 40, M 8 onto E 28, and 21 onto E 28.



Fig. 16-Coil Spring Installation

Fit D 40 onto B 16 and B 3 by keeping bulkhead B 3 open as illustrated.

Fig. 17-Oil Tank Installation

Fix master cylinder C 35 and C 34 onto bulkhead B 3. Cement caps D 34 and D 32, also oil tanks G7 with D 33 and C 8, Then fix them onto B 3. Cement radiator arms D 27 and D 26 onto B 3.

Fig. 18 - Assembling radiator

Cut 4 rubber tubes to the lengths specified. Cement E4 to E 5 and attach the rubber tubes to E 5.

I piece 44 mm long



Fig. 19 - Radiator Installation Connect the rubber tubes from radiator as illustrated



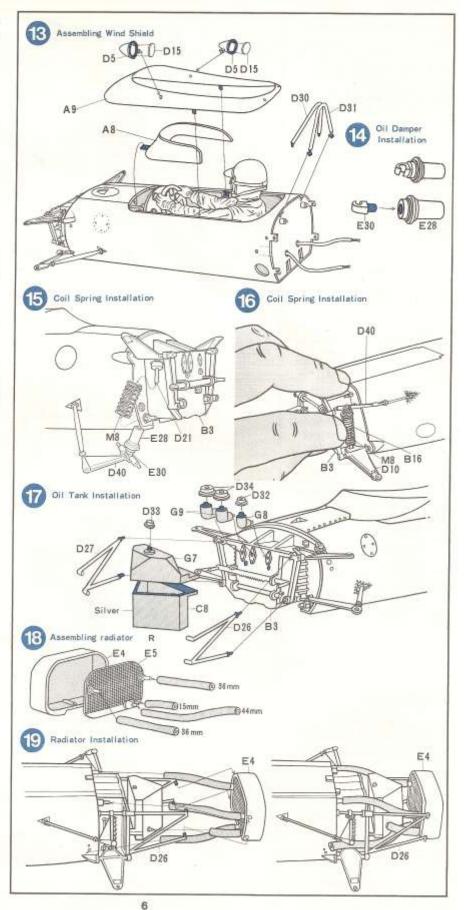


Fig. 20—Pinion Gear Installation Place motor M 13 onto pinion gear M 11 and press pinion gear onto the shaft of the motor.



Fig. 21 - Assembling Gear Box
Put motor M 13 in gear box M 10
and fix it with screws 12. Check
the gear box functions by connecting the motor leads to the battery.

Fig. 22—Assembling Engine Block Cement C3, C5, C4, and C37 to C 23 and fit gear box M 10 into there.

★ The completed picture of the front part of the model.

Fig. 23 - Assembling Engine Block (cont'd)

Cement E 1, E 2, and C 24 to engine block. After you have passed the two leads of the motor through the hole of C 27, cement C 27 to engine block.

Fig. 24 - Transmission Case Instal-

Apply cement to fix D I9 onto engine block. Then cement D 41 to D I9. Fix C6 and C9 onto engine block and fit the pins into the gear box holes. Then cement C32 onto the end.

Fig. 25—Half Shaft Installation

Apply cement to fix D 8 and D 9 by aligning E 27 positioned as illustrated. Be careful not to get cement on E 27. Cement D 1 and D 4. D 28 and D 29 respectively by aligning E 27 between them.

B)

Insert the completed half shafts D I and D 4. D 2 and D 3 into gear box. Align the hole of gear and the hole of shaft to put shaft fixing pin through. Cement Upper Transmission case C 33

Fig. 26 - Installing Engine Parts Cement E 25, E 24, and C 20 to igni-

Cement E 25, E 24, and C 20 to ignition mounting board E 21. Then cement the completed E 21 to transmission case. Now placewater pump C 15 where C 18 and C 16 are mounted already and cement this unit and the starter motor C 19 to the engine.

Place the Lucas decal onto the C 20 and E 24 Clear tube

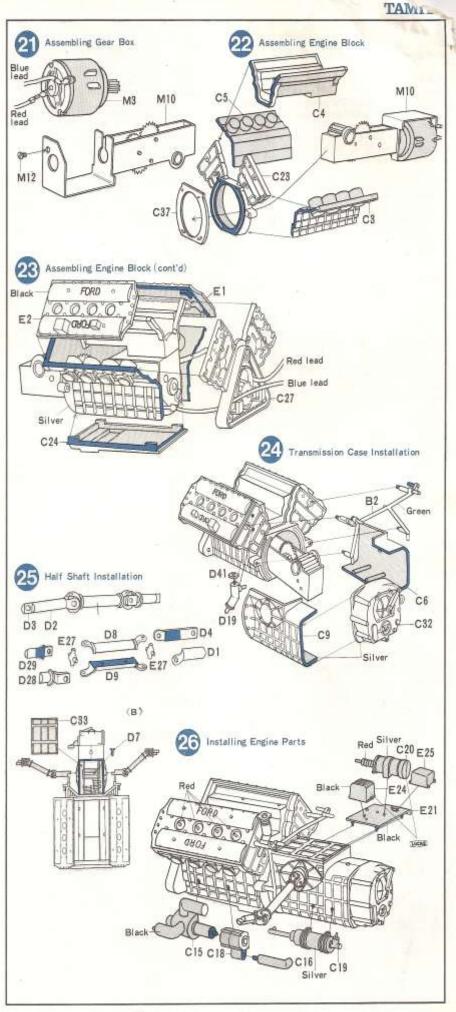


Fig. 27 - Installing Engine Parts

(cont'd) Cement C 16, C 17, C 14, and shiftrod D 46 to the right side of engine.

Fig. 28 - Assembly of Fuel Injection

Pump and Distributor Cut clear tubes and black tubes to the length specified. Fit the clear tubes into C 25 before you cement C 26, E 6, C 30, and E 26. Be sure to follow the illustration for putting the black tubes through E 26.

Fig. 29—Reservoir Tank Installation Cement the pre-assembled fuel injection pump unit and distributer to the engine.

Cut rubber tube to the illustrated length and fix it through D 19.

35 mm	
32 mm	

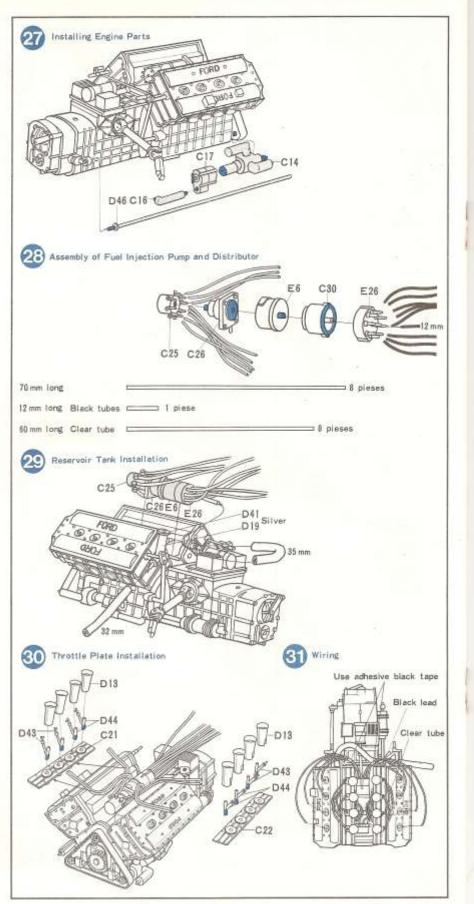
Fig. 30—Throttle Plate Installation Cement the throttle plates C21 and 22 to the engine by aligning the clear tubes positioned as illustrated. Cement D 43 and D 44 to C21 and C 22 as shown. Then cement the air intake D 18.

Fig. 31-Wiring

Study the diagram to insert clear tubes and black tubes in correct







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Fig. 32 - Exhaust Pipe Installation Cement the exhaust pipes F 1, F 2, F 3, and F 4 to the right side of engine.

Fig. 33-Exhaust Pipe Installation (cont'd)

Cament the exhaust pipes F 5. F 6. F 7, and F 8 to the left side of engine.

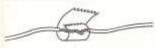
Fig. 34—Exhaust Pipe Arm Installation Fix the right and left exhaust pipes

Fix the right and left exhaust pipes through the exhaust pipe arm D 12 and cement together.

Fig. 35 - Mounting Engine on the Body

Sort out leads coming out of the body and the engine. Join the leads same color lerds together. Protect the joints with adhesive tape to prevent short circuiting. Then mount the engine on the body by fitting 10 millimeter long rubber tubes at the ends of C 15 and C 14. Make sure that the rubber tubes and the end of D 46 pass through the holes in the body before you cement the engine to the body.

Tape this connection to avoid any short circuiting.



Cut two pieces rubber tube to the illustrated length

10 mm ____



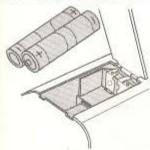


Fig. 36 - Water pipe cooler Installation

Cement the water pipe B 9 to the body and fix rubber tubes on both ends

Fig. 87—Assembling the Rear Upright

Cement E 17 to the rear upright E 18. Fit D 35 to E 18 before you cement E 7. Pass D 37 through D17 to fix it into E 18. Then cement C 2 at its tip. Cement E 29 and E 31 together before inserting into D 35. Then fix D 39 thereon and cement with C 2

Follow same procedure to assemble the right part of rear upright.

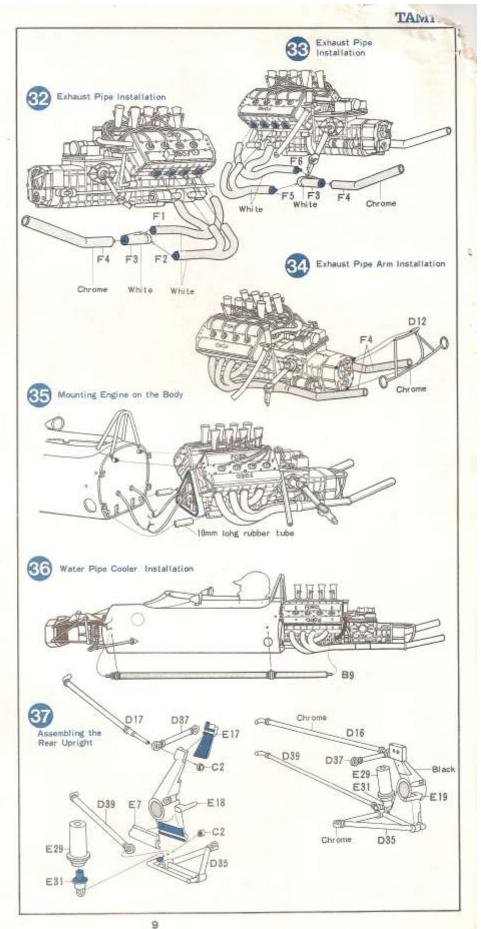


Fig 38—Rear Upright Installation Fix D 35 and D 37 to B 2 and ce-ment them individually to C 2. Then heat fix B 2 to D 22. Fix universal joint to the right rear up-right E 19. Fit M 9 into E 29 and insert D 22. Then Fix Then Fix D 16 and D39 to the body and cement B 6 and B 4.



Coment G10 to G11, then attach air Cooler G6 and cap D47 Cement assembled oil tank to top of transmission case.

Install the left part of rear upright in same way as above (Fig. 38). Then pass B 12 and B 13 through D 20 before you cement them to B 2.

Fig. 40 - Assembling the Stabilizer

Pass D 24 through D 23 and heat fix. Fix D 23 to the protrusion from E 19 and heat fix again. Then insert the tip of D 20 into D 24. Cement C 29 to E 18 and E 19.

*Be sure to fix D-24 onto the curved end of D-23 as shown in diagram.



Fig. 41 - Assembling the Front Upright

Pass C11 thru D6 and fix same to front upright E22. Then pass D18 thru E22 and secure with E10. Fix C10 to E22 and disc caliner C28 to E22. Assemble the other front upright E23 in the same manner.



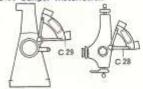
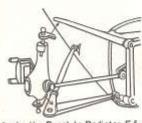


Fig. 42-Front Upright Installation Cement C 10 to tip of D 11 and C 11 to that of D 42 according to diagram. Be sure not to let cement spill over D 6 and D 14.

Fig. 43—Front Upright Installation Cement C 11 and C 10 respectively to the ends of D 10 and D 40 as illustrated.



Apply the Decal to Radiater E 5

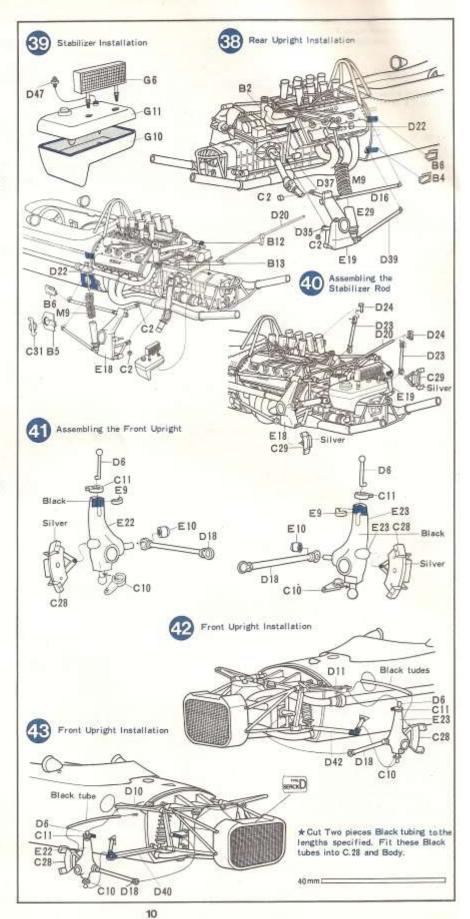


Fig. 44 - Assembling the Nose Cowl-

ing Cement G5 to nose cowling A7. Ce-ment A3 to A4 from the inside. Then fix A7 to the body by using M7.

Fig. 45 - Front and Rear Aerofoil Instal lation

Cement rear Aerofoil G3 to G1 and front aerofoil G4 to G2. Rear aerofoil support G1 should be shortened at the point as shown by arrow.

Fig. 46 - Assembling the wheels Assemble front wheels by cementing F9 to F10, and rear wheels by ce-menting F7 to F8. After cementing E15 to the front brake disc E13, fix it to F9.

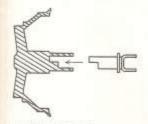
Similarly cement E15 to E14 and fix it to F7. Be sure that cement has been well dried before you fit the front tyres and rear tyres on the wheels.

Fig. 47 - Front Wheel and Front aerofoil Installation

Fix assembled front wheels as per Fig. 46 to upright E22 using C13. Then coment front aerofoil to front upright.

Fig. 48-Rear Wheel and Rear aer ofoil Installation

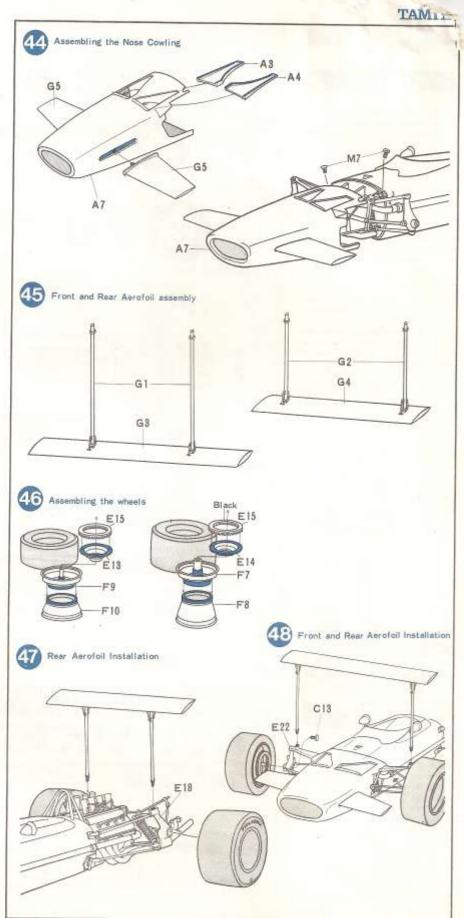
Insert and cement rear wheel into the half shaft coming from the rear upright E18. Make adjustments as shown. Then cement rear serofoll to the rear upright E18.



Rear Wheel (inside) Half Shaft







PAINTING APPLYING DECALS

Instructions for painting and the use of the decals and stickers supplied with this kit are shown on this page. Certain paint and decal work will have been described already during the assembly of the kit. This stage of construction of your kit is most important to obtain a really realistic model.

Only use paints made for application to plastic. Decals and stickers must not be applied until paint is dry. Small parts should be pre-painted while still on the twig.

Since Players, the manufacturer of Gold Leaf cigarettes, started sponsoring Team Lotus in May 1968, the colours of the Lotus 49 have become very bright. Three colours are used as shown on the illustration, Red. Gold and White.

The lines running along the body are slightly below the pipe. The centre of the pipe and the upper edge of the line should be in the same place. For detailed paintwork on the engine, refer to the assembly instructions.

The exterior of the oil cooler should be silver, the interior black. The steering wheel rim and seat should be painted mat black. The front part from the connecting line of the muffler should be steel gray or black and the rear part should be chrome colour.

In the South African Grand Prix the aerofoils and the racing number 'l' were painted red. In the Mexican Grand Prix the colour was blue (the same shade as that used in the Union Jack) and the racing number was '10'.



Painting the Tyre

Paint lettering in Gold on the tyres, as indicated. This will greatly enhance the look of the finished model.

