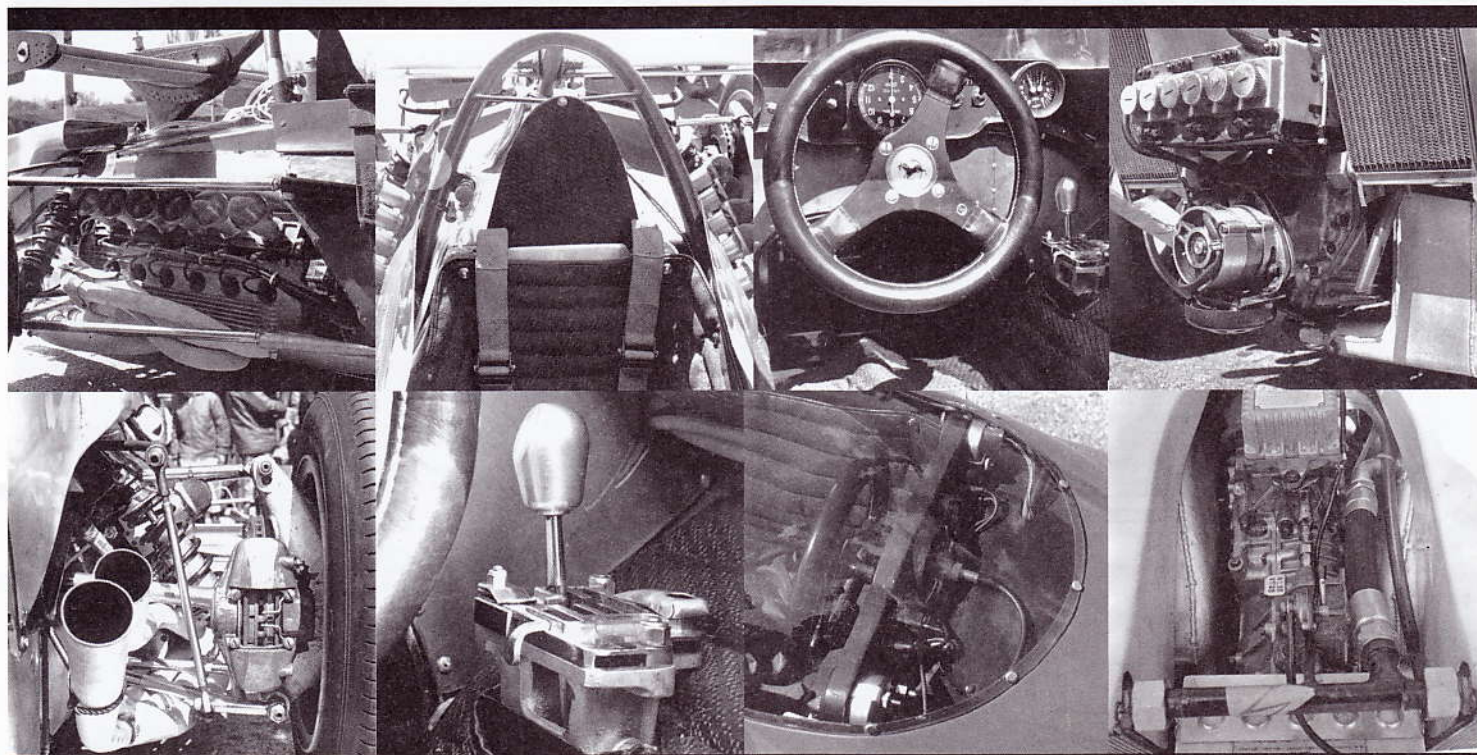


Ferrari 312B

1/12th BIG SCALE SERIES 48

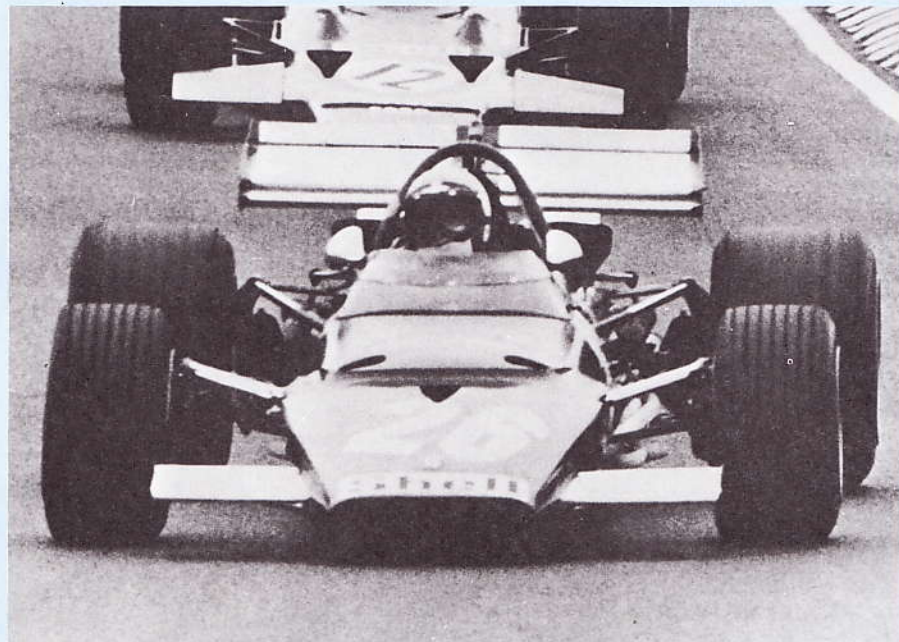


1/12 ビッグスケールシリーズ NO.48
フェラーリ312B



FERRARI 312B

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The Italian Car Manufacturing concern of Ferrari has never failed to inspire the motoring public of the world. The name "Ferrari" is synonymous with all that is best in sports and racing car design. This is especially true with the world motor racing fraternity.

It has always been, and we hope will always be every young man's dream to own and drive a Ferrari sports car. No other name in the motoring world has achieved such mystique and respect, such love and emotion. No other name has caused the hearts of true motor sports lovers to beat a little faster. Ferrari cars produced so far have shown many ingenious engineering and mechanical components which have resulted in superior performance. Such renowned body builders as Bertoni and Pininfarina have produced incredibly beautiful yet functional body styles, adding to the overall image of this manufacturer.

The excellent productions of Ferrari have achieved many brilliant records and have always been amongst the most active participants in the front line of big racing events throughout the world. This fact is as true today as it has been in the past, and will be in the future.

Ferrari's positive attitude to racing has always warmed the hearts of the enthusiast and amply met the fans' expectations. They have also been rewarded by winning many of the world's richest racing prizes. Two of the Ferrari Team's most coveted and eagerly contested international feats are the Formula I Grand Prix and the Manufacturers Championship Prize. Winning either of these is every man's dream. Established and led by Enzo Ferrari, the Ferrari Company of Maranello is comparatively young. The Commodore, which is the name by which Enzo Ferrari is known to his employees, has spent most of his life in motor racing, and it will be interesting, here, to repeat yet again a few of the remarkable exploits of this genius.

As a young man, Enzo Ferrari was a racing driver for another world-famous Italian Motor Manufacturer, Alfa-Romeo. As a young driver in 1923 Enzo Ferrari won a Race held at Ravenna and afterwards a shield was presented to him by a Mr. and Mrs. Baraca. This

shield depicted a black prancing horse on a yellow background. This spontaneous gift was the result of a great affection towards Enzo Ferrari, who resembled in many ways the son of the Baraca family who had been killed in an air battle in World War I. He is reputed to have been a great hero of the Italian Air Force and it is said that during his short career he shot down over 35 enemy aircraft. His machine always carried the prancing horse emblem. After the presentation of this shield the young Enzo Ferrari adopted this motif as his insignia and since this race every car which he either drove or manufactured carried the "Prancing Horse".

By 1929 Ferrari was in complete charge of all the Alfa-Romeo Racing activities, and formed a Racing Team, Scuderia-Ferrari. This team boasted such drivers as Nuvolari, Campari, Varzi and Chiron. Together, they stormed through the international racing calendar. However, in 1932, Alfa-Romeo withdrew their support from international motor racing, but the team, Scuderia-Ferrari, continued its activities, still based on the Alfa machines.

Before 1937, Ferrari was sufficiently far-sighted to see that the technical improvements of others would soon leave the Alfas behind, and he considered manufacturing his own machines. In 1939, Ferrari broke completely with Alfas and produced his first racing car. This was fitted with an improved version of the then popular Fiat push rod engine. The car was manufactured to race in the famous Mille Miglia of 1940. However, due to the advent of World War II this event did not take place.

The first all-Ferrari car did not, therefore, appear until the end of the Second World War in 1945. Three kinds of machine were then produced, each, however, being fitted with the same basic type of Ferrari-made engine. This was a V type, 12 cylinder OHC 1498 cc engine. Called the 125, this engine had been designed by Gioacchino Colombo, another ex-Alfa employee, who had been responsible for the Alfa TYP0 158. One of these cars was the Grand Prix version called the 125GP. Another was the racing sports car designated Compezzione, and finally a sports car for the open market. Here, then, was the start of the Ferrari empire that we know today.

Ferrari and Grand Prix Racing.

In 1946 an International Body for the control of motor sport was reformed and was called F.I.A. (Federation International Automobiles). This Federation was recognised as the Governing Body of world motor racing. As a consequence, Grand Prix and other Race Formula and Rules were laid down or amended. In the early years of the new Grand Prix Rules, Ferrari did not really excel. In 1948, the first year in which Ferrari really tried, he achieved only insignificant results. In 1949, however, the Ferrari Team won three Grand Prix with the 125GP machines. In 1950, the Drivers World Championship was inaugurated and was first won by Giuseppe Farina in an

Alfa-Romeo. Alberto Ascari, Ferrari's leading driver, won this event in 1952.

Although the Grand Prix Rules were changed fairly frequently to ensure a better spectacle for the enthusiasts and a safer race for the drivers, it is noticeable how Ferrari and the British Manufacturer, Lotus, stand out from others in their successes. To be precise, Ferrari have produced six world Champions against four from Lotus. This is a remarkable post-war achievement.

The Ferrari winners of the World Championships were Alberto Ascari for the years 1952 and 1953, the legendary Fangio won in 1956; in 1958 an Englishman, Mike Hawthorne, obtained this coveted Award in a DINO 256, and the American, Phil Hill, was Champion in 1961. John Surtees, who came into motor racing after being a Championship motor cyclist, won the Award for 1964. But the most notable of these Championships was in 1952 when Ascari won all seven of the qualifying G.P. Races in that year.

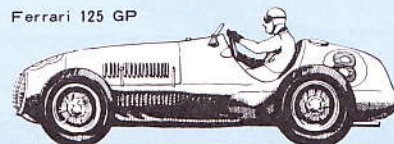
When the F.I.A. decided, in 1966, that the Formula I engine capacity should be increased to 3 litres, the Ferrari results for that year were not very successful. In that first year Surtees won the Belgian Grand Prix and Scarfiotti the Italian Grand Prix. In the course of the other Races that year, two Second, one Third and two Sixth places were recorded by the Team.

The World Championship that year was won by the Australian, Jack Brabham, who was driving a machine of his own make.

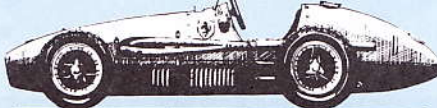
In 1967 the Ferrari Team was bedevilled by bad luck. In the very first race, the Monaco Grand Prix, their Number 1 driver, Lorenzo Bandini, was killed in a terrible accident. This left only Chris. Amon, a New Zealander, to battle for Ferrari.

Again, another lean year followed in 1968, when the only win was that scored by Jacky Ickx, a new member of the Team, who won the French Grand Prix.

Ferrari 125 GP



Ferrari 500



Still worse was to come in 1969, for Ferrari in this year did not win a single Grand Prix, the highest placing, in fact, being by Chris. Amon, who was Third in the Dutch Grand Prix. Apart from Amon, Pedro Rodriguez was the only other driver to obtain any placings that year, one Fifth and one Sixth.

The Ferrari 312B Formula I Racing Car.

After four years of racing to the 3 litre formula, Ferrari were forced to be satisfied with poor performances and placings. This obviously disheartened the Team, and especially the Boss, Enzo Ferrari. The basic trouble seemed to be the comparatively poor performance of the V 12 cylinder engine, which had been developed from the prototype sports car, the 275P2. This engine was always at a distinct disadvantage against the comparatively simple Repco and Ford Cosworth engines. Although built with as much care and precision as a Swiss watch, it was unfortunately, underpowered.

Although in theory a 12 cylinder engine has more torque than an 8 cylinder, its basic design was questionable, and to improve this, and to bring the Ferrari cars up to date, it was decided, late in 1968, that Mauro Forghieri should resign as Chief Engineer and Racing Manager for Ferrari and concentrate all his energies and efforts into the development of a completely new 3 litre engine. Thanks to his strenuous efforts a new, simplified 12 cylinder, horizontally opposed engine, the 312B, was produced. Ferrari had used the horizontally opposed layout in a previous 1.5 litre engine and Forghieri drew on this experience for his new venture. From experience he knew, for example, that with this type of layout the centre of gravity of the car could be lowered, and that the weight could also be reduced, both these factors be-



Essential Specifications:

ENGINE: Ferrari horizontally opposed 12 cylinder, 4 valve
Capacity: 2911 c.c.
Stroke: 51.5 mm
Bore: 78.5 mm
Maximum Output: 465 B.H.P. at 12,000 r.p.m.
Fuel Feed System: Lucas Fuel Injection
Plugs: Champion
Ignition: Marelli-Dinoplex

TRANSMISSION:

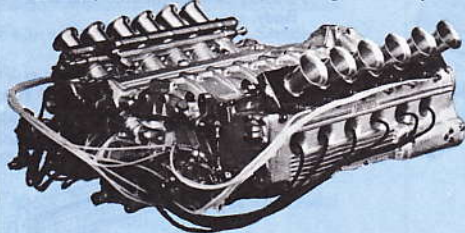
Gearbox: Ferrari 5-speed
Clutch: Borg & Beck
Chassis: Semi monocoque, steel and aluminium construction
Suspension: Double wishbones and coil springs at both front and rear.
Brakes: Girling
Steering gear: Rack & Pinion
Tyres: Firestone

MEASUREMENTS AND WEIGHT:

Overall length: 151 inches (383.54 cms.)
Body Width: 31 1/2 inches (80 cms.)
Overall height: (to top of Roll Bar) 36 inches, (91.44 cms)
Wheelbase: 92 3/4 inches (235.58 cms)
Track: Front: 54 1/2 inches (138.43 cms)
 Rear: 56 inches (142.24 cms)
Hull Weight: 543 kgs.
Fuel Capacity: Approx. 50 gallons (220 Litres)

ing desirable in any Formula 1 car. Against these benefits, the engine would be wider unless the stroke distance could be shortened. As a result, the stroke was reduced to 51.5 mm and a bore of 78.5 mm. This drastic reduction in stroke and gain in compactness gave far greater weight reductions than were at first thought feasible. The weight of the new 312B was now about 184 kg., a good 18 kg. lighter than the old engine, and believed to be less than the very light and simple Cosworth DFV-V8 engine.

The 312B cylinder block is made of aluminium alloy and divides down the centre into two halves. Efforts to keep the weight to an absolute minimum are apparent in the crankshaft, and the number of main bearings is reduced to four. The camshafts are DOHC and two at each bank are employed, one for inlet, one for exhaust. The camshaft is gear-driven to improve upon reliability. The Champion spark plugs are set in the centre of the hemispherical combustion chambers. Attached to the top of the engine are two wedge shaped oil coolers which characterise the rear view of this engine. The Lucas fuel injection system is used, but other electrics, including the Dinoplex



Ferrari "BOXER" Engine

transistorised ignition system, are by Marelli.

When first tried competitively, the 312B engine developed 455 h.p. at 11,500 r.p.m. By the middle of the season it was 460 h.p. at 11,600 r.p.m. Further developments brought this figure to 475 h.p. at 12,000 r.p.m. These performance figures are the highest attained under the present 3 litre regulations.

In marked contrast with this advanced and unique engine, the chassis is most orthodox. In fact, when compared to the progressive designs of the Lotus it is positively old fashioned. The chassis is of semi monocoque construction, mated to a steel backbone, with light alloy reinforcements.

The rear end of the chassis is designed on the cantilever principle and projects behind the cockpit. At the extreme end a sturdy, steel bulkhead is fitted. This is further strengthened by a triangular support plate projecting behind the roll bar. The engine itself is placed below this cantilever sub-frame, the front being fitted by six bolts directly behind the cockpit. The rear section is mounted on to a bulkhead by means of a ring shaped plate which also serves as a clutch housing. The suspension system is also of orthodox design. The front consists of wishbone and A arms; the coil and spring damper unit made by Koni is mounted inside the body. The rear suspension consists of upper and lower arms and is a 4-link system by way of using twin radius rods. The rear coil spring dampers are also made by Koni. Immediately behind the cockpit, mounted above the engine, there is an aerofoil of the split type. This means that the right and left halves can be adjusted independently.

Aerofoil were first extensively used by Chaparral in motor racing. However, it is believed that Ferrari was the first to use these separately adjustable aerofoils in a Formula 1 Race. Cars with large aerofoils were used in great numbers in the world of Formula 1 racing, but because of accidents caused by these wings coming adrift, cars with suspension mounted aerofoils were prohibited to participate in the Monaco Grand Prix Race of 1969. After this, the size was severely limited by the F.I.A., and in the succeeding Dutch Grand Prix, much smaller wings were used for the first time, but with the introduction of the slot-flap as used on aircraft, the efficiency of the smaller wings was said to be greatly increased. The tyres are made by Firestone. The performance of this vital link between car and road has recently become an increasingly important factor in winning races. It is obvious that as the performance of racing cars improves, the tyres have to take much more punishment. This has resulted in such a severe rivalry between the various tyre manufacturers that it has virtually become a "tyre war". All types of

variations in uses of tyres have been tried and in the materials of manufacture and tread patterns, sometimes there are four types in one car, i.e. they are not always the same throughout. Different tread patterns and materials are used on a single car according to the changing conditions of the circuit.

The hull weight of the 312B was around 545 kg. at the start of the 1970 season. This was later reduced to 543 kg. This light weight was second only to the Lotus which had a power weight ratio of about 1:1.24, the best ever achieved by a car of this kind.

Recent records of the 312B engine are as follows:-

In the first half of 1970 the Ferrari Team was plagued by troubles, which are usual when a new design is first introduced.

Jacky Ickx joined the Ferrari Team, and during the middle of the season two other drivers joined. They were Ignatio Giunti and Clay Regazzoni. The strengthened Team's first entry was at the South African Grand Prix, the first race of the season. Unfortunately, they had to retire from the Race due to engine trouble.

In the next, the Spanish Grand Prix, Ickx's machine was put out of action, due to an accident.

Then again, in the Monaco Grand Prix of that year, retirement was the order of the day owing to a break-up of the drive shafts.

However, the season was not entirely without success, as in the Belgian Grand Prix, Giunti, a newcomer to the Team, won a prize, the first one for the car, for obtaining Fourth place, and at the Dutch Grand Prix, which is the fifth of the Season, Ickx obtained Third place and Regazzoni came in Fourth. Thanks to the results of these three drivers, the Ferrari Team could at last look forward to a brighter future.

In the French Grand Prix, Ickx established the highest road speed record at practice and got the pole position for the first time that year, but unfortunately during the actual race he was unable to keep up this performance and retired. Giunti, driving another Ferrari, finished in Fourteenth place.

In the 7th race of the season, the British Grand Prix, Ickx at one time was leading, but due to mechanical trouble was forced to retire. However Regazzoni continued, and managed to finish in Fourth place.

In the German Grand Prix, the eighth race of the season, Ickx battled for first place with Jochen Rindt of the Lotus Team, but unfortunately finished in second place by the very narrow margin of only 0.7 seconds. Regazzoni also led the rest for a brief period, but unfortunately was forced to retire.

As has already been stated, in the first half of the 1970 season the Ferrari Team was not in good shape. However, its strength greatly improved, and when the result of the German Grand Prix was announced it was increasingly apparent that the prospect of great success was within their grasp.

In the Austrian Grand Prix, which was the 9th race of the season, the 312B displayed its great qualities to the full and at long last the Ferrari Team won. In this race, Ferrari allowed three drivers to enter, and in practice, Regazzoni got second place, Ickx third and Giunto fifth. In the actual Race the Ferraris led the others in the first half with Ickx leading, Regazzoni in Second and Giunto in Fourth place. However, Giunto was forced into the pits with a flat tyre on the 38th lap, but in spite of this he came back and finished in Seventh place, but throughout the race Ickx and Regazzoni continued in the first two places and finished First and Second.

This victory was the first for two years, the last one being in 1968 when Ickx won the French Grand Prix.

In the Italian Grand Prix, the tenth race of the season, Regazzoni was victorious. The event was hailed with great joy by the Team, but this success was marred by tragedy, because Jochen Rindt, the Ace Driver for Lotus, was killed during practice. He crashed violently against the guard rails on the south curve of the famous Monza Circuit. At the time of his tragic death Rindt had already got five victories and was the strongest candidate for the World Championship. He was far ahead in points over all his competitors.

In the Canadian Grand Prix, the eleventh of the season, Ickx and Regazzoni held Second and Third places respectively for the first half of the Race. Later, Jackie Stewart, who was leading, was forced to retire in the 32nd lap, leaving the two Ferrari drivers in First and Second places.

In the American Grand Prix, Emerson Fittipaldi, a

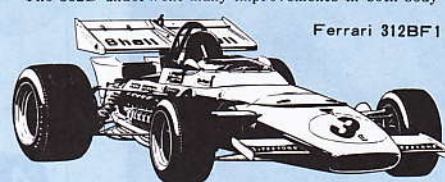
GRAND PRIX '70	CAR NUMBER DRIVER	RESULT
South Africa G.P	17-J-Ickx	Retire
Spanish G.P	2-J-Ickx	Retire
Monaco G.P	26-J-Ickx	Retire
Belgian G.P	27-J-Ickx 28-I-Giunti	8 4
Dutch G.P	25-J-Ickx 26-C-Regazzoni	3 4
French G.P	10-J-Ickx 11-I-Giunti	Retire 14
British G.P	3-J-Ickx 4-C-Regazzoni	Retire 4
German G.P	10-J-Ickx 15-C-Regazzoni	2 Retire
Austrian G.P	12-J-Ickx 27-C-Regazzoni 14-I-Giunti	1 2 7
Italian G.P	2-J-Ickx 4-C-Regazzoni 6-I-Giunti	Retire 1 Retire
Canadian G.P	18-J-Ickx 19-C-Regazzoni	1 2
U.S. G.P	3-J-Ickx 4-C-Regazzoni	4 13
Mexican G.P	3-J-Ickx 4-C-Regazzoni	1 2
'71 South Africa G.P	4-J-Ickx 5-C-Regazzoni 6-M-Andretti	8 3 1
Spanish G.P	4-J-Ickx 5-C-Regazzoni 6-M-Andretti	2 Retire Retire

newcomer to the Lotus Team, won the Race and thereby restored victory to Lotus, and incidentally filled the gap left by the death of Jochen Rindt. Ickx, of the Ferrari Team, finished in Fourth place. The result of this Race gave the World Championship posthumously to Rindt.

In the final race of the season, the Mexican Grand Prix, Ferrari obtained First and Second places for the third time. This really crowned the list of their efforts for the season. Immediately after the start Regazzoni was leading, with Stewart in Second and Ickx in Third place. Later, however, Ickx took the lead with Stewart in Second, and Regazzoni in Third place. When, in the 33rd lap Stewart retired, victory for the Ferraris was certain.

The 1971 Season.

The 312B underwent many improvements in both body



Ferrari 312BF1

and suspension. After modification it was called the 312B-2. The shape of the body was changed into a wedge. This shape was regarded as more efficient and amenable to pneumo-dynamical force. The rear suspension was also radically altered. As previously stated, the 1970 car had quite an orthodox rear suspension system. The new modification was based on a bell crank which was made of five steel pipes, incorporating the coil spring damper unit laid horizontally. The aim of this new arrangement was to reduce loads on the spring and also to improve the road holding. Furthermore the oil tanks were moved to a new location behind the roll bar and were streamlined.

With these improvements the Ferrari Team has made rather a good start in the 1971 season. In the South African Grand Prix, the first of the year, Mario Andretti, a newcomer to the Team, was the winner, and Regazzoni obtained Third place. Ickx finished Eighth, due to a puncture.

In the second race of the season, the Spanish Grand Prix, Ickx finished in Second place, though unfortunately, both Regazzoni and Andretti were forced to retire.

In the Monaco Grand Prix, the third race of the season, Ickx finished in Third Place.

As will be seen from these results, the performance of the machine has been greatly improved, and the combination of Ferrari with Ickx, Andretti and Regazzoni as drivers, stands a very good chance of winning the World Championship for this year.

Please read this
before commencing
assembly.



★Always use glue very sparingly. Too much glue will spoil your finished model.
★Before applying glue, construct each part and section to ensure that you are fitting the parts correctly.
★Before starting to build your kit, check all the parts.
★Where parts are shaded blue in these Instructions, it means that they are either to be flattened by heating, or are to be glued together with plastic cement.
★You will probably find it easier to paint smaller parts whilst they are still on the runner.
★To enhance the final appearance of your model, you may insert thin fuse wire into the vinyl tubing, so that it retains its shape over a period of time.
★Where plated plastic parts are to be cemented, gently scrape off the plating to expose the plastic. This ensures a good adhesion, since the plastic cement will not bond on the plated parts.

Figure 1. Construction of Nose Cowling.

Since the right and left spoilers G4 and G5 are different, do not confuse them when you are gluing them on to Part B1. Parts G1 and G3 are also differently shaped and care should be taken that they are fitted on the correct side respectively.

Figure 2. Construction of Wing.

The right and left wing parts are different shapes. So cut each individually as you need them for construction from the runner, but do not remove them both at the same time.

Figure 3. Construction of Oil Tanks.

First construct the oil tank as shown. Then glue Part D68 on to it. Next glue the respective parts on to D58. Lastly glue Part D58 on to the oil tank in the position indicated in the diagram.

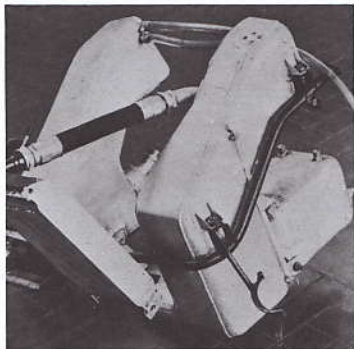


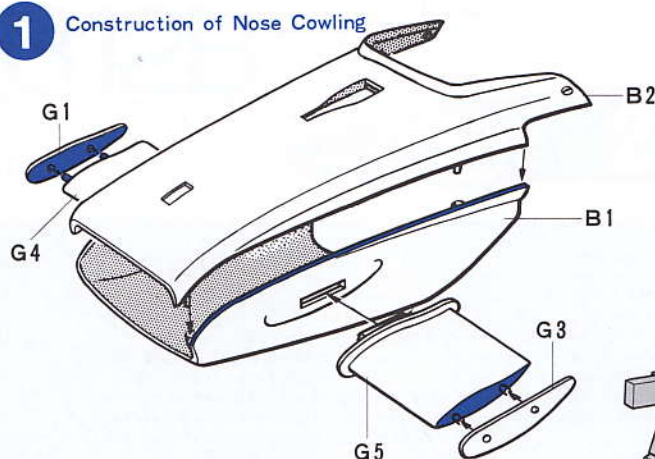
Figure 4. Construction of Oil Cooler.

Having constructed the oil cooler as shown in the diagram, connect the pins of Parts J6 and J16 with rubber pipe. Part D35 will also serve as a stopper for the exhaust.

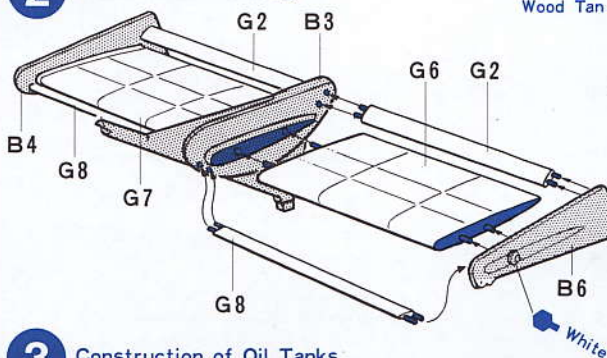
PAINTING

As well as improving the look of your completed model, detailed painting will give you greater satisfaction in the end. You will find painting hints on each page of these instructions to assist you while building your Ferrari 312B, and to help you create a truly realistic model.

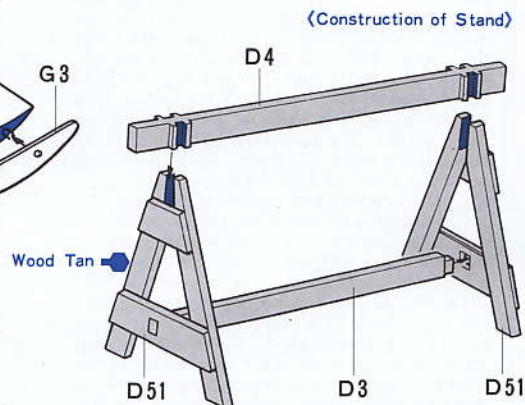
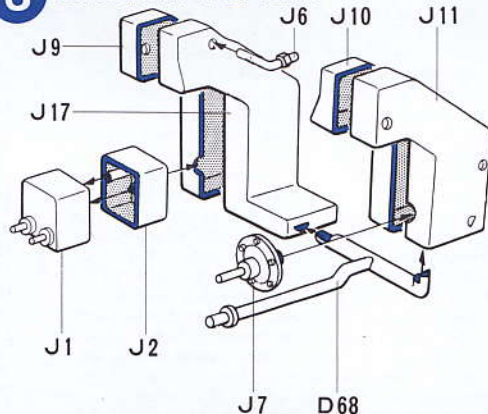
1 Construction of Nose Cowling



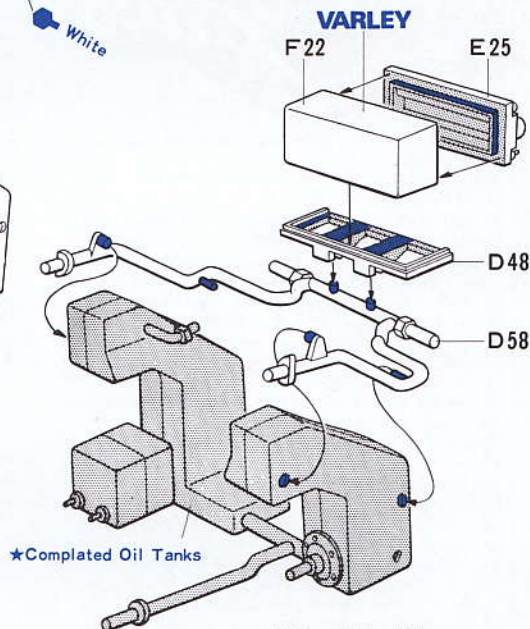
2 Construction of Wing



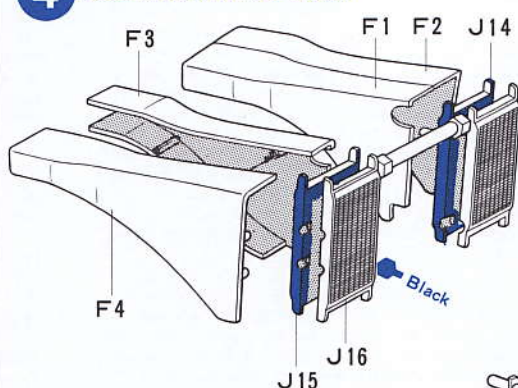
3 Construction of Oil Tanks



Construct two these Stands to display half Completed Engine, Body, etc.



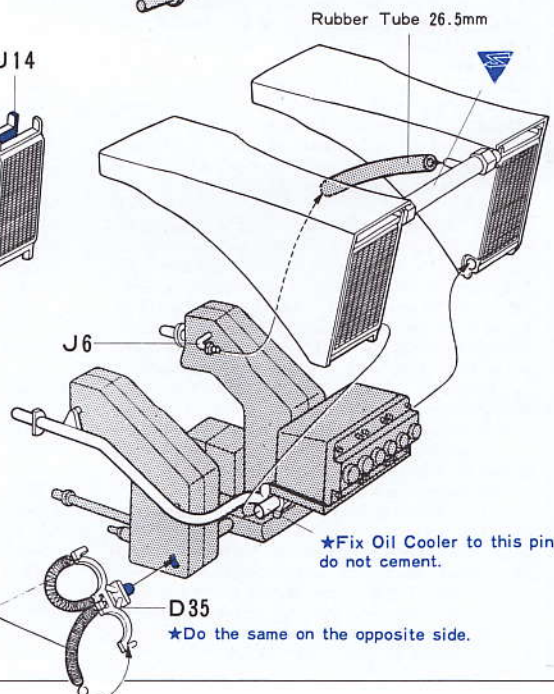
4 Construction of Oil Cooler



Open the top part of M11 with a screwdriver.



Use as Muffler Support on Diagram 30.



★Fix Oil Cooler to this pin, do not cement.

★Do the same on the opposite side.

Figure 5. Construction of Radiator.
Attach the metal part "L" shaped on D26 using B16, then assemble it. The shapes of parts D62 and D61 are different. So make sure you do not confuse them when fixing them.

Figure 6. Construction of Front Suspension.

Construct D63 and D67. Glue Part J8 disc on to part D47. Construct the other side with identical parts in the same way as shown in the diagram.

(Front Upright)

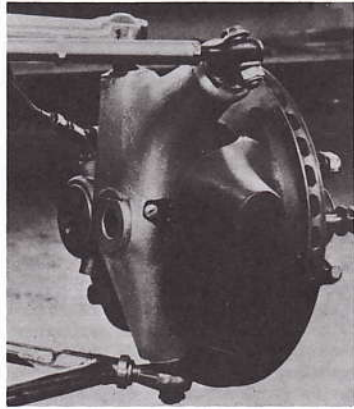


Figure 7. Construction of Shock Absorbers.

Glue respective Decals on to parts D42 and D45. Glue Parts D42 and D43 together and pass M3 through both. Then insert H20 into the unit as shown in the diagram. Construct two pairs.

Figure 8. Construction of Universal Joint.

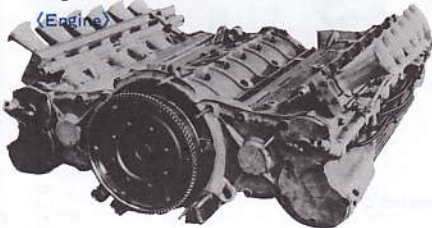
Be careful not to apply cement on to Part H22. Construct 2 joints as shown in the diagram.

Figure 9. Installation of Ignition Plugs.

Holding Parts D28 with the tweezers, cement them straight into Parts E22 and E21.

Figure 10. Construction of Engine.
Firstly, glue Parts E6 and E5 together. Then construct Parts E24 and E15, also E22 and E21. Glue Parts E9, E8, E1 and H11 together and fix on to upper engine E6.

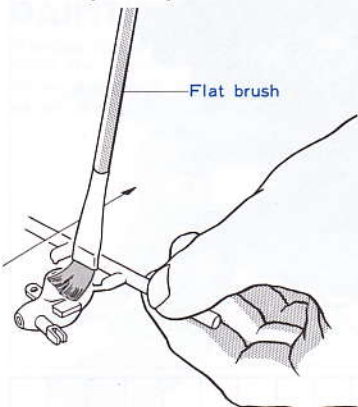
(Engine)



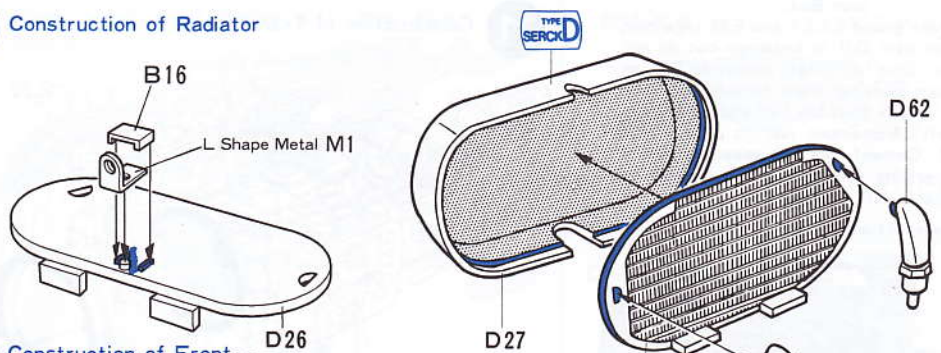
PAINTING

Painting Uprights.

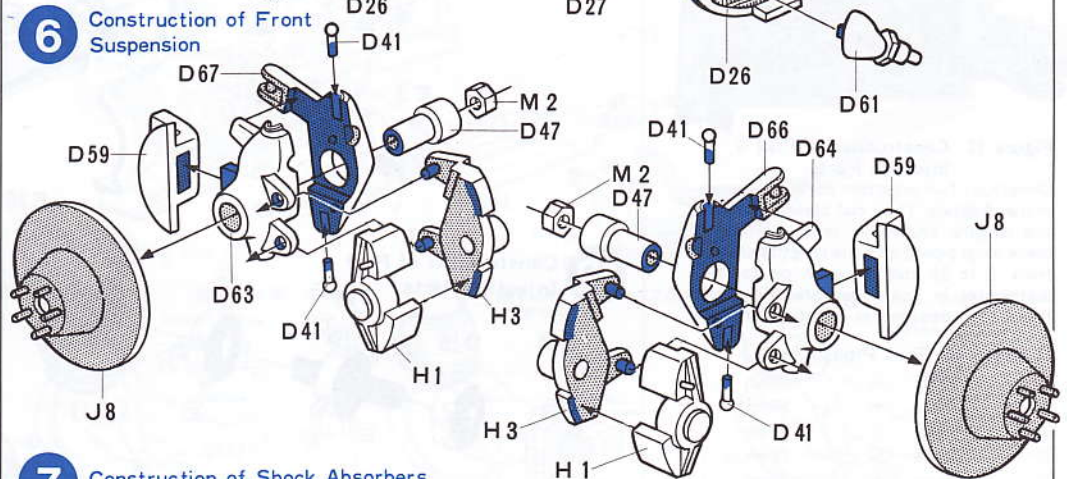
Small parts like the uprights should first be cleaned with a firm flat brush and then painted while still on the sprue. Only cut them from the sprue when they are dry.



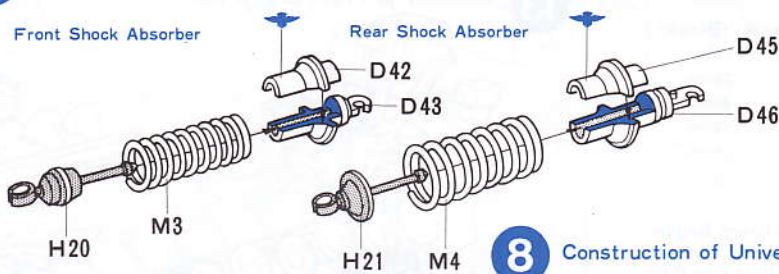
5 Construction of Radiator



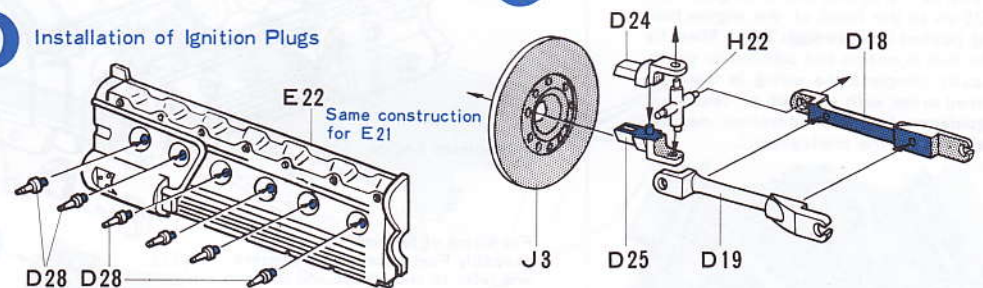
6 Construction of Front Suspension



7 Construction of Shock Absorbers



9 Installation of Ignition Plugs



10 Construction of Engine

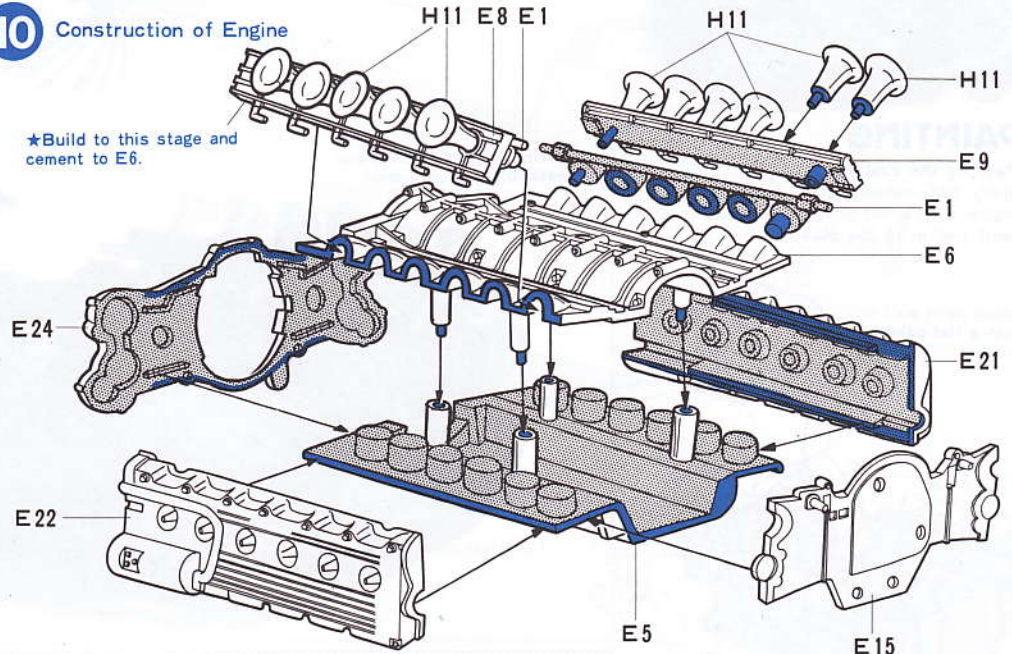


Figure 11. Construction of Transmission Box.

Before gluing E3, E4 and E28 together, place part D31 in between but do not glue. Glue half shaft pieces to D31 as shown, passing them through E3 and E4. Check that the half shaft revolves freely. Remember not to glue Parts H22. Cement this sub-assembly on to the engine. Place relative Decals on to parts E17 and E18.

<Transmission>

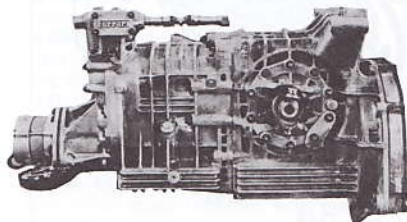


Figure 12. Construction of Fuel Injection Parts.

Construct fuel injection parts as shown in the diagram. Then cut clear vinyl into the lengths shown A to L. Cut the black vinyl piping into the lengths shown from 1 to 12 and fix each on to the distributor in this order, starting from the place specified in the diagram.

<Length of Fuel Pipes (Clear)>

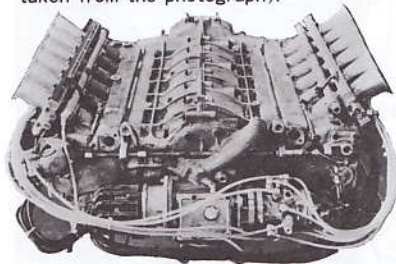
A — 60mm	G — 45mm
B — 75mm	H — 50mm
C — 80mm	I — 50mm
D — 90mm	J — 70mm
E — 100mm	K — 80mm
F — 110mm	L — 80mm

<Length of Ignition Cords (Black)>

1 — 28mm	7 — 75mm
2 — 33mm	8 — 79mm
3 — 42mm	9 — 88mm
4 — 51mm	10 — 96mm
5 — 60mm	11 — 105mm
6 — 70mm	12 — 120mm

Figure 13. Assembly of Front Engine Parts.

First, fix Parts D40 and then glue Part E19 on to the front of the engine, having passed D50 through E19. Then fix the fuel injection and distributor parts. Lastly, complete the wiring in the numbered order with the help of tweezers. (guidance for this operation may be taken from the photograph).

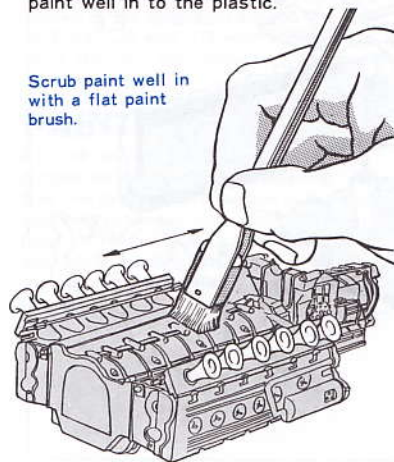


PAINTING

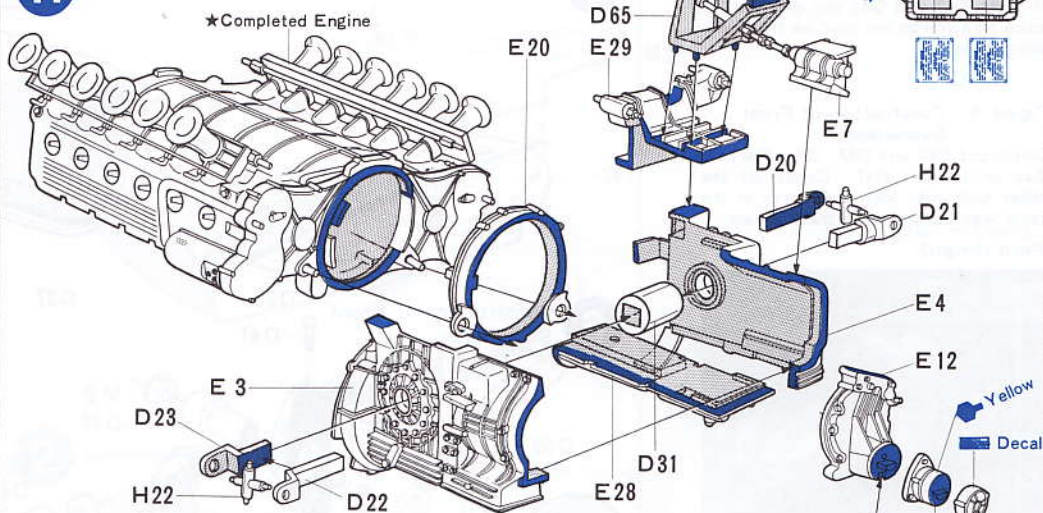
Painting the Engine.

Apply flat metallic grey paint to the engine with a flat brush and scrub the paint well in to the plastic.

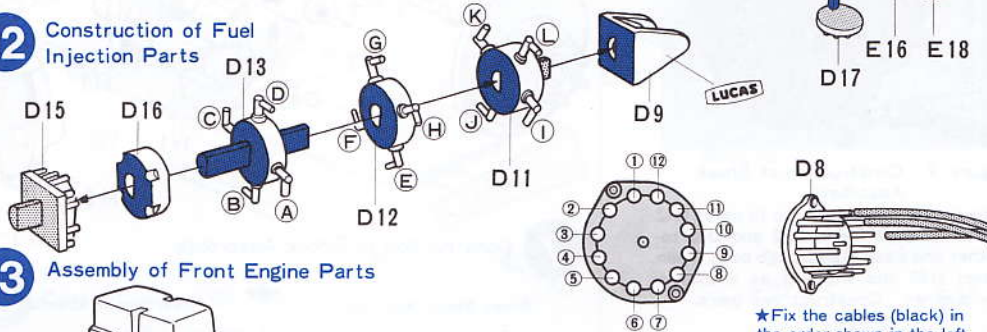
Scrub paint well in with a flat paint brush.



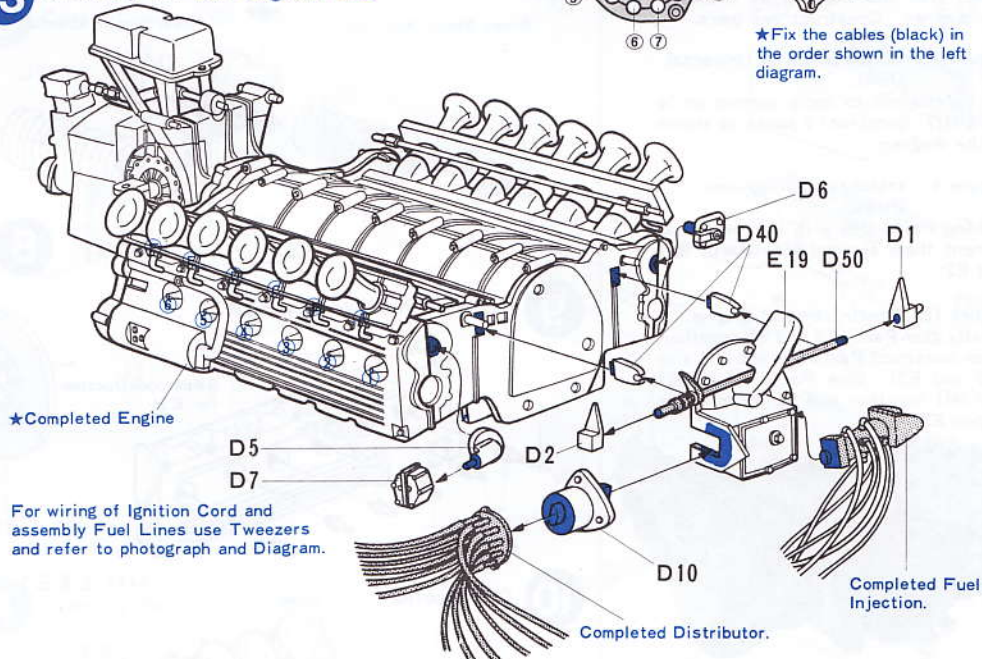
11 Construction of Transmission Box



12 Construction of Fuel Injection Parts



13 Assembly of Front Engine Parts



Wiring of Ignition Cord and assembly of Fuel Lines.

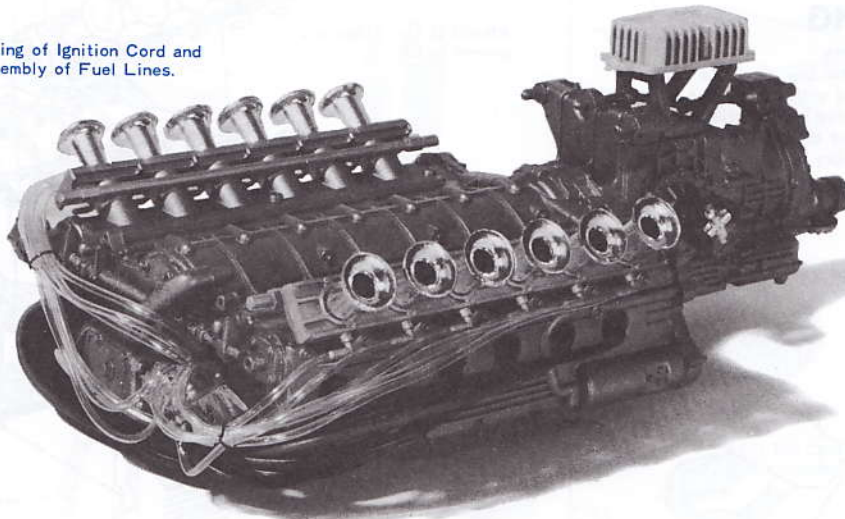


Figure 14. Fixing the Exhaust System Assembly.

Fix exhaust pipes on to the engine as shown in the diagram.

Photo of Completed Engine

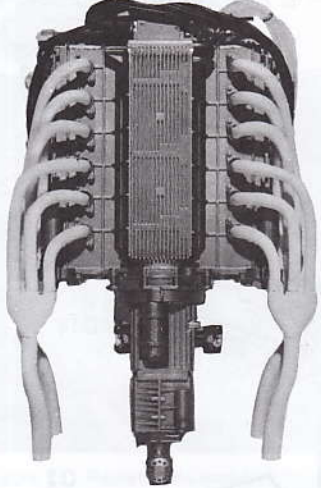


Figure 15. Painting the Driver.

First, select which driver you wish to reproduce: J. Ickx, M. Andretti or C. Regazzoni. Paint the driver in accordance with which of these you have selected. Remember, the driver cannot be painted once he has been placed and fixed into the car.

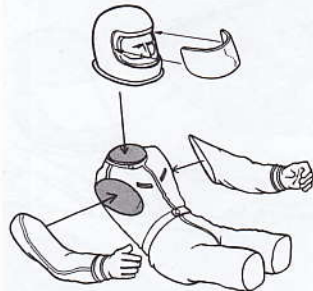


Figure 16. Cockpit Construction.

Glue the stickers on to the dashboard. Make sure you finish painting the interior of the cockpit at this stage. Assemble the cockpit as shown in the diagram.



Figure 17. Fixing of the Seat Belt.
First place the driver into his seat. Then fix the seat belt as shown in the diagram.

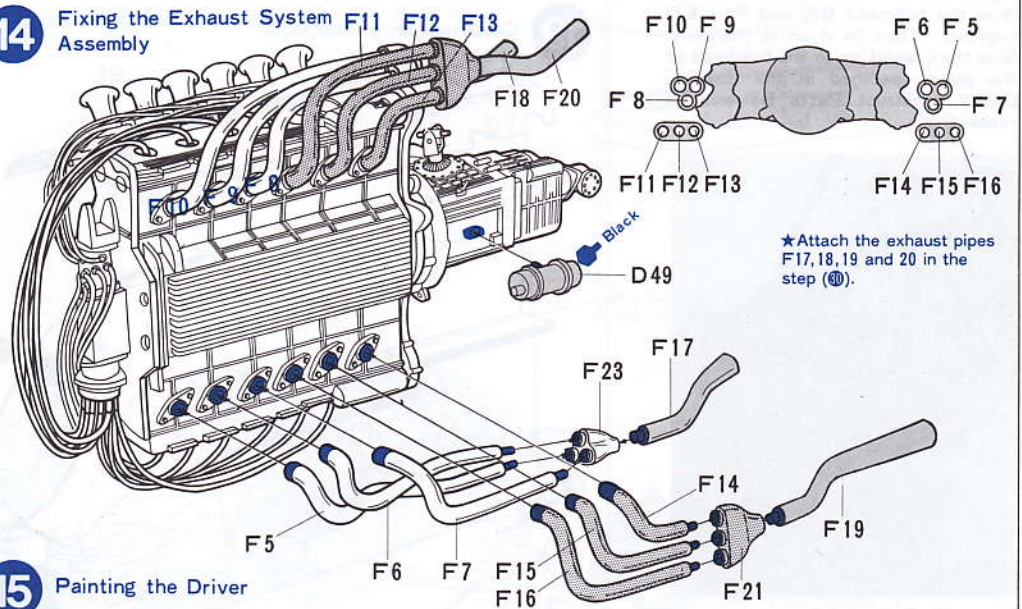
Figure 18. Body Parts Construction.
Attach the metal parts "L" shaped to the part (C2) with using B16.

PAINTING

Painting the driver.
Paint the driver all over in white. When dry paint in facial and overall detail using a fine thin brush.



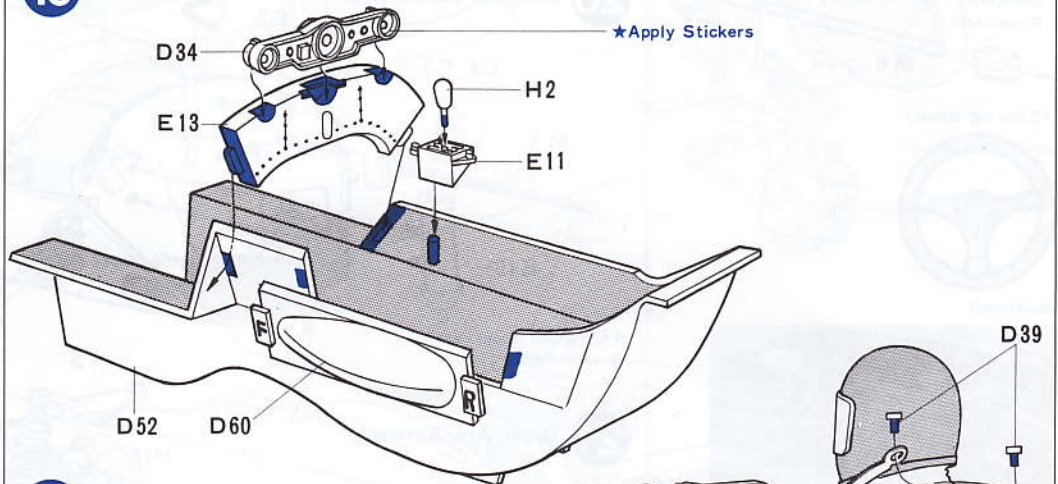
14 Fixing the Exhaust System Assembly



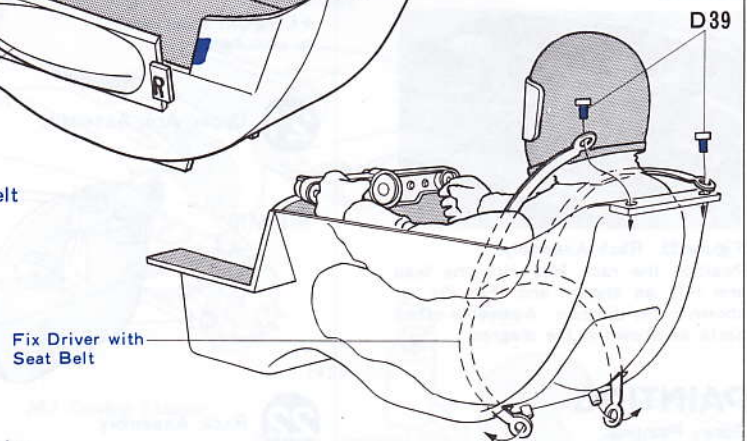
15 Painting the Driver



16 Cockpit Construction



17 Fixing of the Seat Belt



18 Body Parts Construction

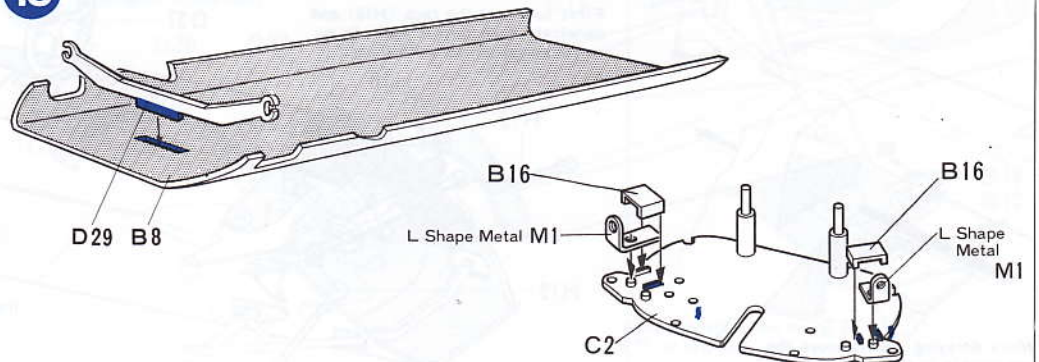


Figure 19. Construction of the Body.
Glue the bulkhead B10 and Part E23 together. Then fix it on to the body. Glue the cockpit on to the bulkhead at the place specified in the diagram. Lastly, construct Parts B8 and C3 respectively.



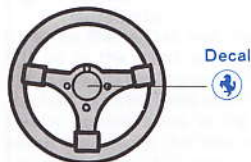
Figure 20. Bulkhead Construction.
Fix C2 and the parts which have been assembled in Figure 18 on to the body, and assemble further as shown in the diagram. Allow the coil springs M5 to project out, in the position shown in Figure 21.

Figure 21. Upper Arm Assembly.
Position the shaft M6 through Part E13. Whilst so doing, construct the upper arm as if to hold it in between those two parts. Fix, but do not glue, Parts H14. Ensure that you do not confuse the right H13 and left H14.

<Insert of Pinion Gear>



<Steering Wheel>

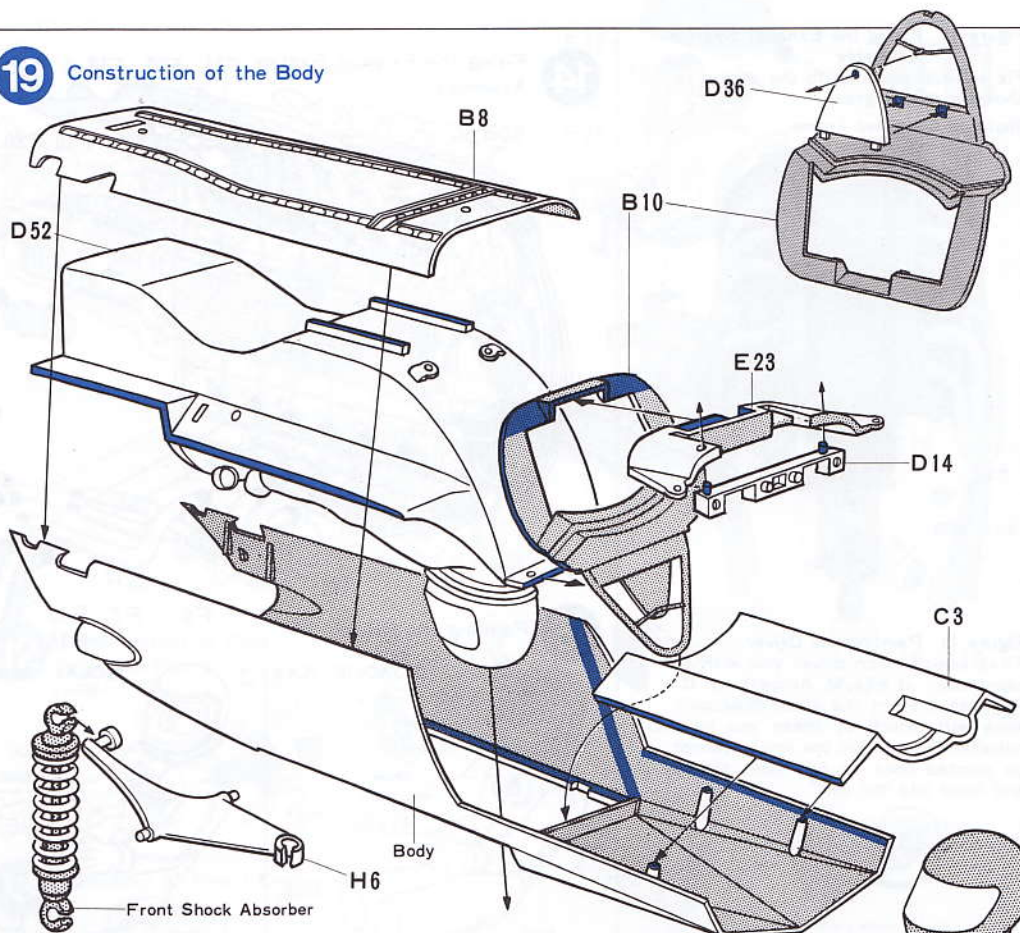


<Bulkhead>

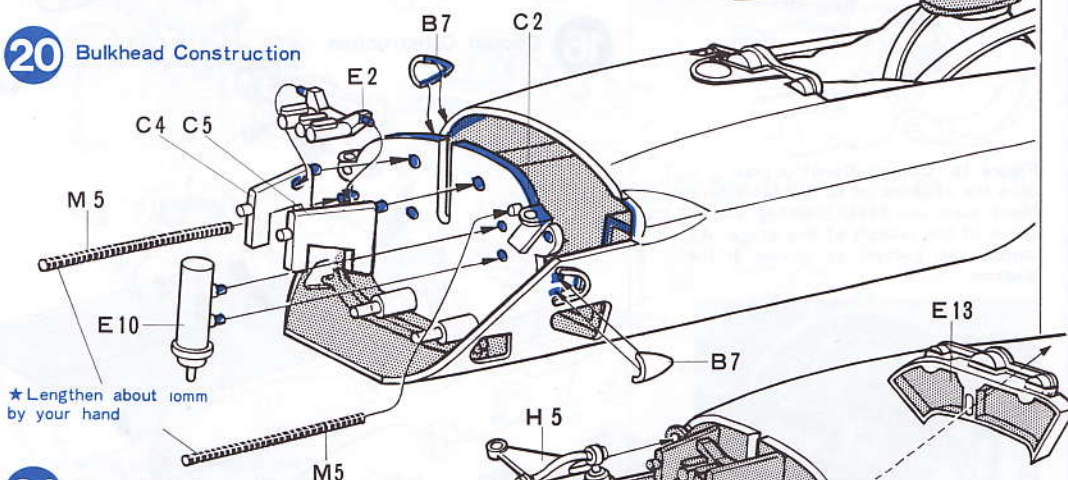


Figure 22. Rack Assembly.
Position the rack H10 into the lead arm H12 as shown, and then fix as shown in the diagram. Assemble other parts as shown in the diagram.

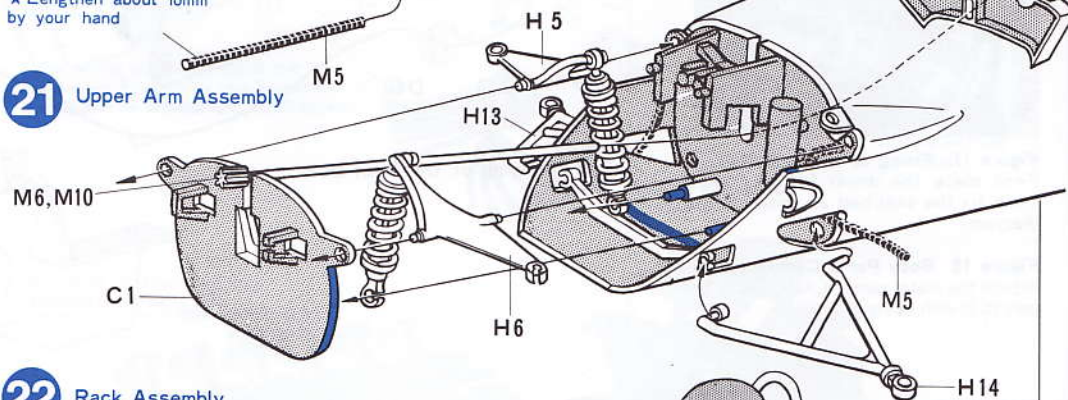
19 Construction of the Body



20 Bulkhead Construction

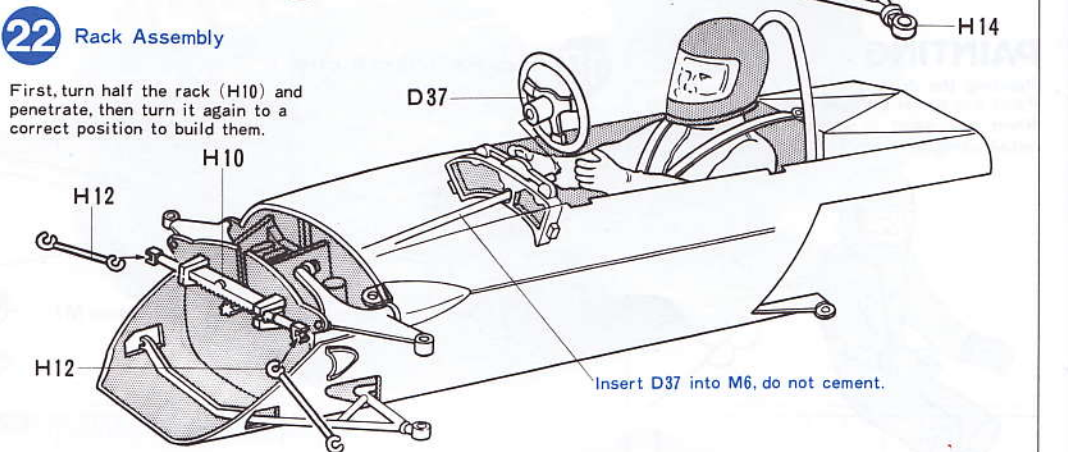


21 Upper Arm Assembly



22 Rack Assembly

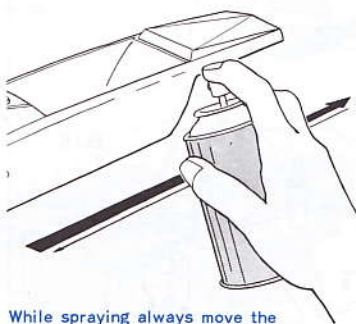
First, turn half the rack (H10) and penetrate, then turn it again to a correct position to build them.



PAINTING

Spray Painting.

The body may be spray painted.



While spraying always move the can quickly in the same direction.

Figure 23. Assembly of the Uprights and clear parts.

Fasten the uprights at the top and the bottom with Parts D41. Then fix B9 and clear part on to the body. Finally, assemble and glue Part E14 on to the body.

(Radiator)

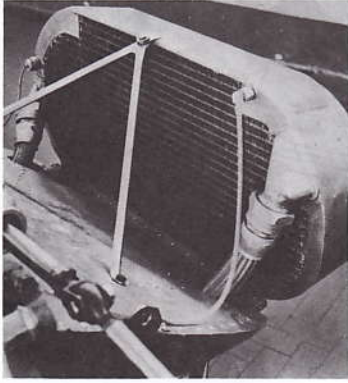


Figure 24. Radiator Assembly.

Fix the rubber piping on to the radiator. Then glue the whole assembly on to the body. Be sure not to glue, but just assemble, part B11. Assemble other parts as shown in the diagram.

(Radiator Hose)

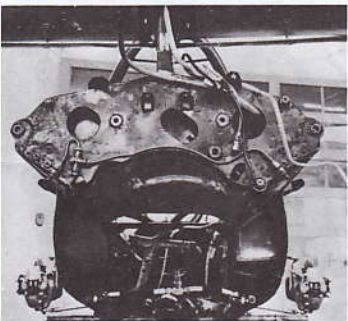


Figure 25. Nose Cowling Assembly.
Fasten the nose cowling with the three flat screws provided, as shown in the diagram.

Figure 26. Bulkhead Assembly.

Glue bulkheads D32 and D33 together. Also glue the respective radius arm stoppers on to the body beforehand, as shown.

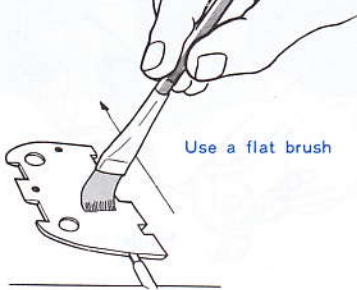
(Rear Bulkhead)



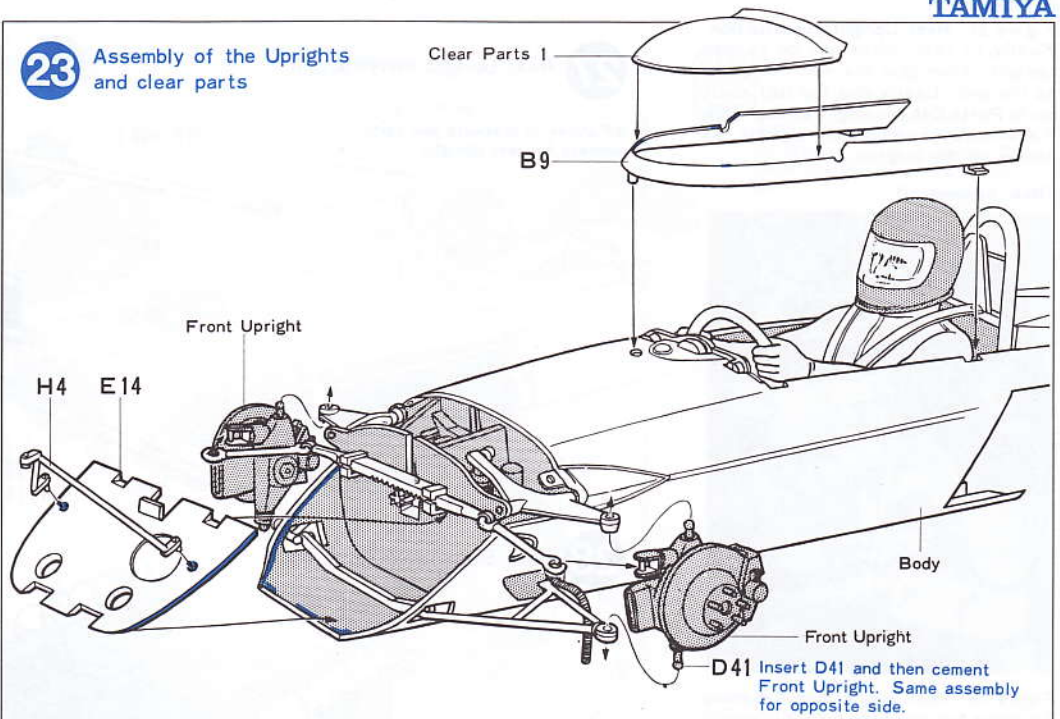
PAINTING

Using a Flat Brush.

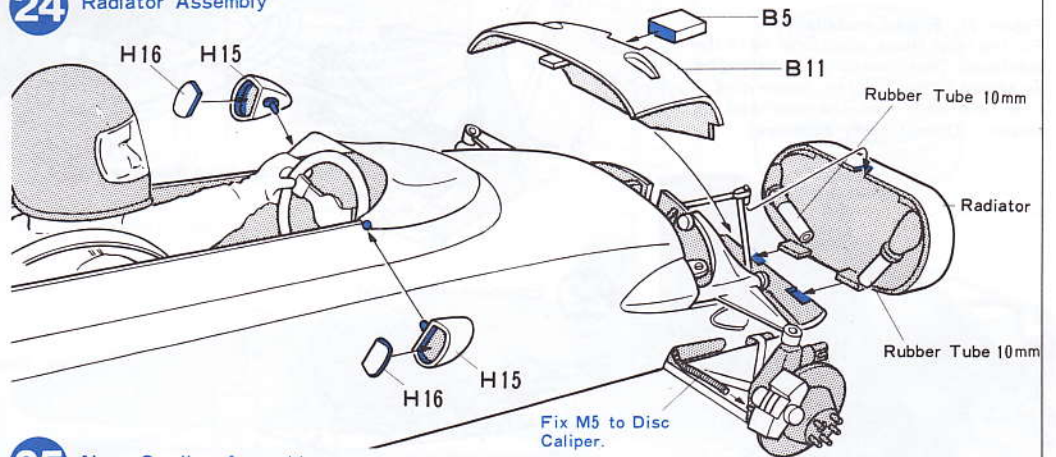
For flat surfaces a thicker flat brush is required. Always paint small parts while they are still on the sprue.



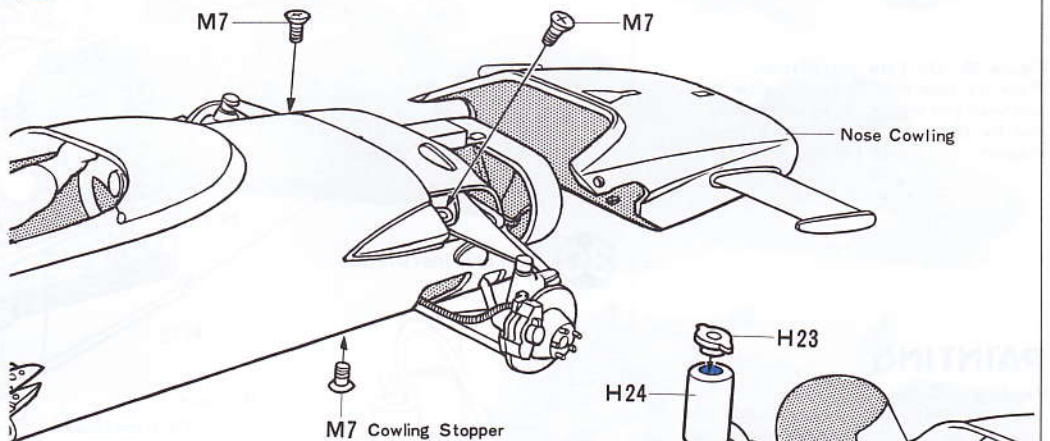
23 Assembly of the Uprights and clear parts



24 Radiator Assembly



25 Nose Cowling Assembly



26 Bulkhead Assembly

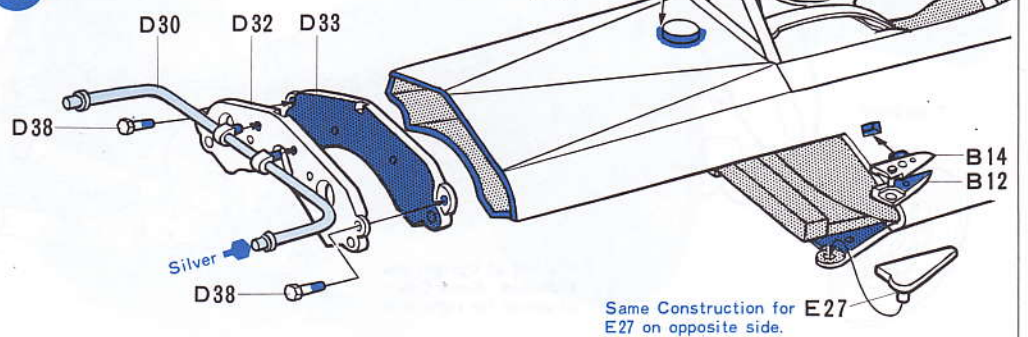


Figure 27. Rear Upright construction. Firstly, fix rear radius arm on to rear upright. Then glue the disc caliper on to the unit. Lastly glue the half shaft on to Parts D44, passing it through D55. Take care to assemble exactly as shown on the diagram.

<Rear Suspension>

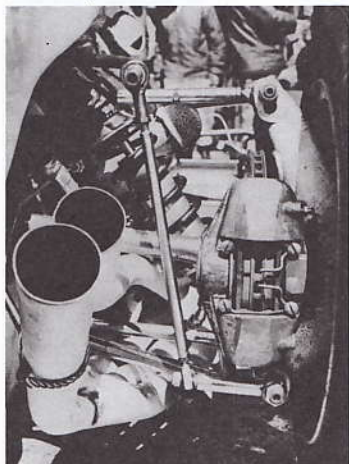


Figure 28. Rear Suspension Assembly. Fix lower arm on to the engine, connecting the half shafts to Parts H22 (Do not apply adhesive).

Figure 29. Engine Installation. Fix the rear shock absorbers on to the bulkhead. Then carefully fix the engine as shown in the diagram, suspending it from the body and the bulkhead as shown. (Do not apply adhesive).

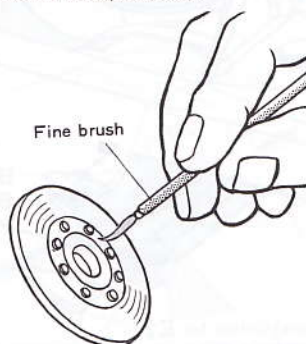


Figure 30. Oil Tank Installation. Place oil tank into the hole below the bulkhead and engine. In so doing, insert and fix the exhaust into the exhaust stopper. Fix Parts H9.

PAINTING

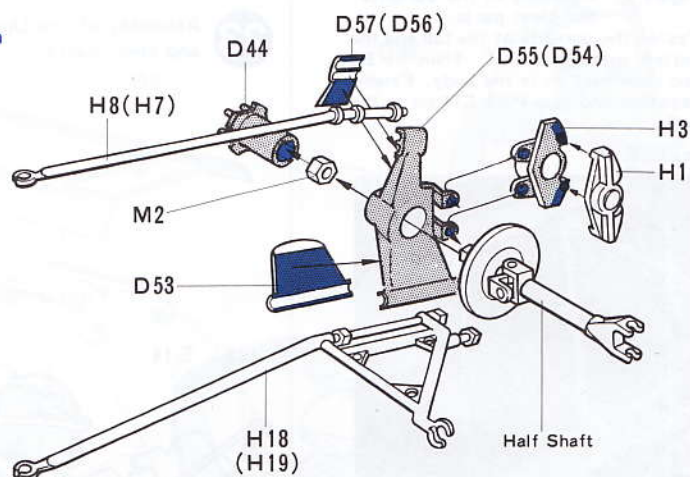
Painting in Detail

Increase the realism of your model by painting in your own detail on the engine, discs etc. Use a fine brush to accentuate nuts, bolts etc.

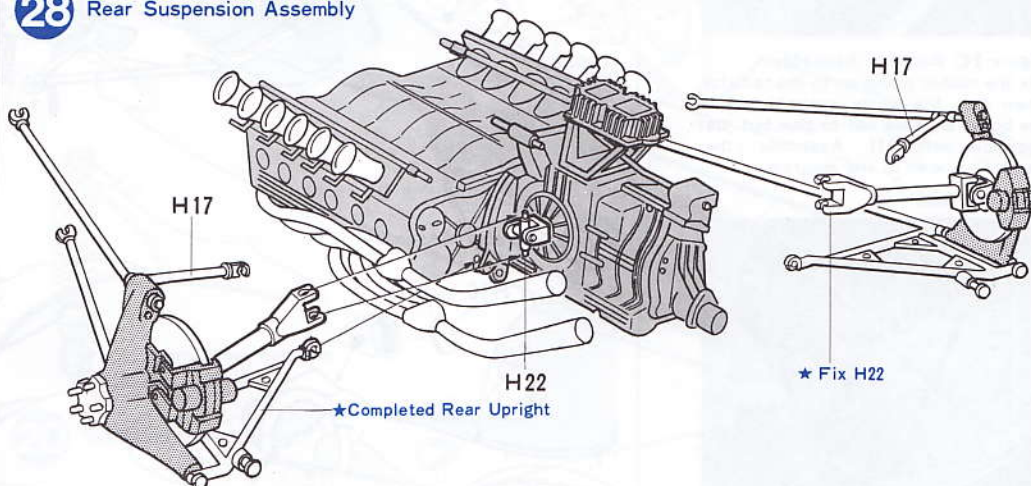


27 Rear Upright construction

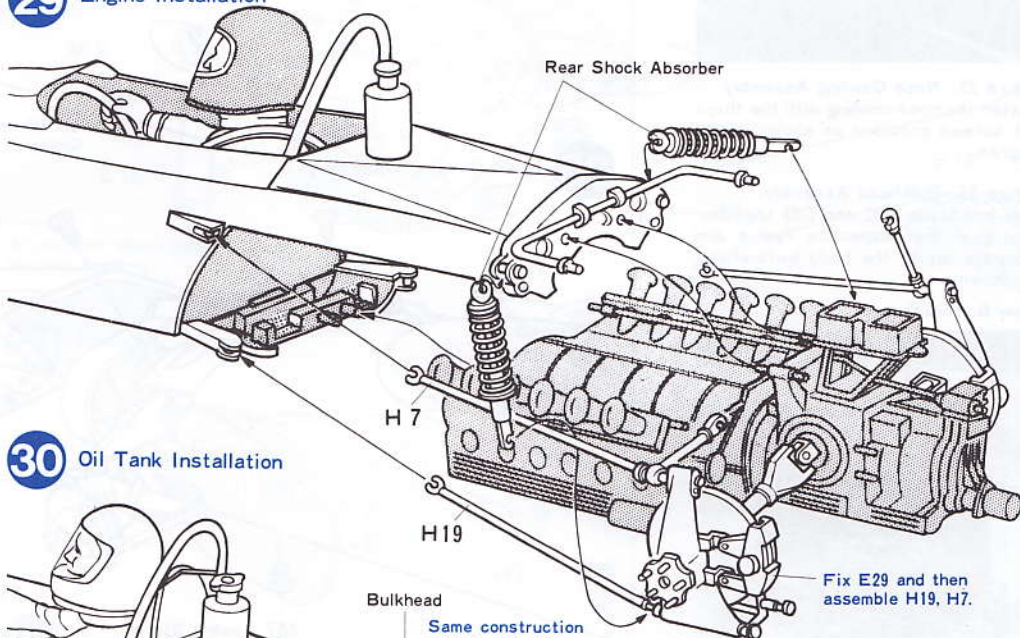
★Figures in brackets are part numbers for left Upright.



28 Rear Suspension Assembly



29 Engine Installation



30 Oil Tank Installation

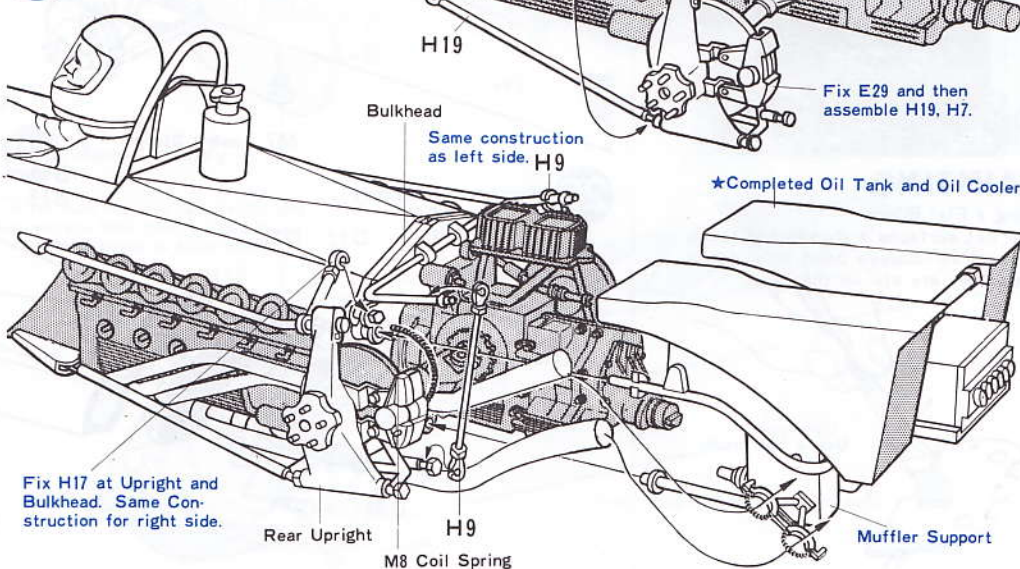


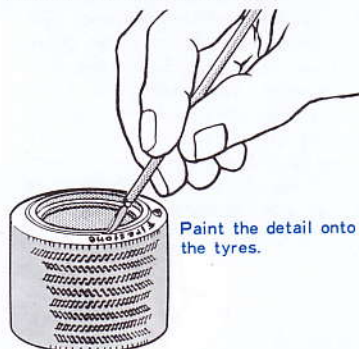
Figure 31. Wheel, Tyre and Wing Assembly.

Construct the wheels first, including the tyres. Then fasten them on to the uprights with the screws M8 and M9. The short screws are for the rear, the long ones for the front. Cement the wing on to the roll bar and bulkhead.

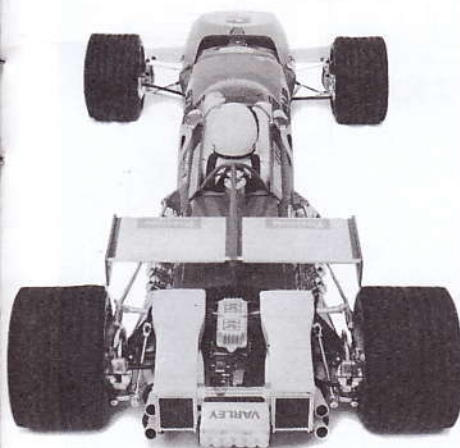
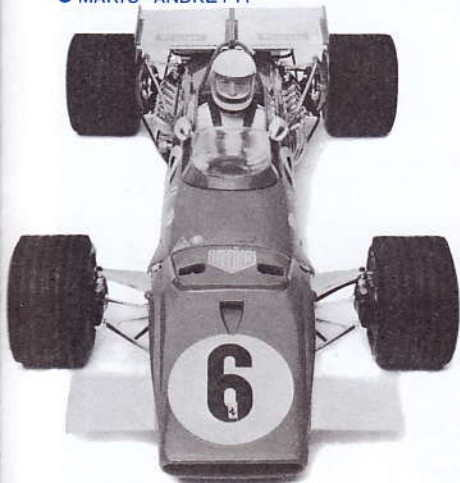
PAINTING

Finishing

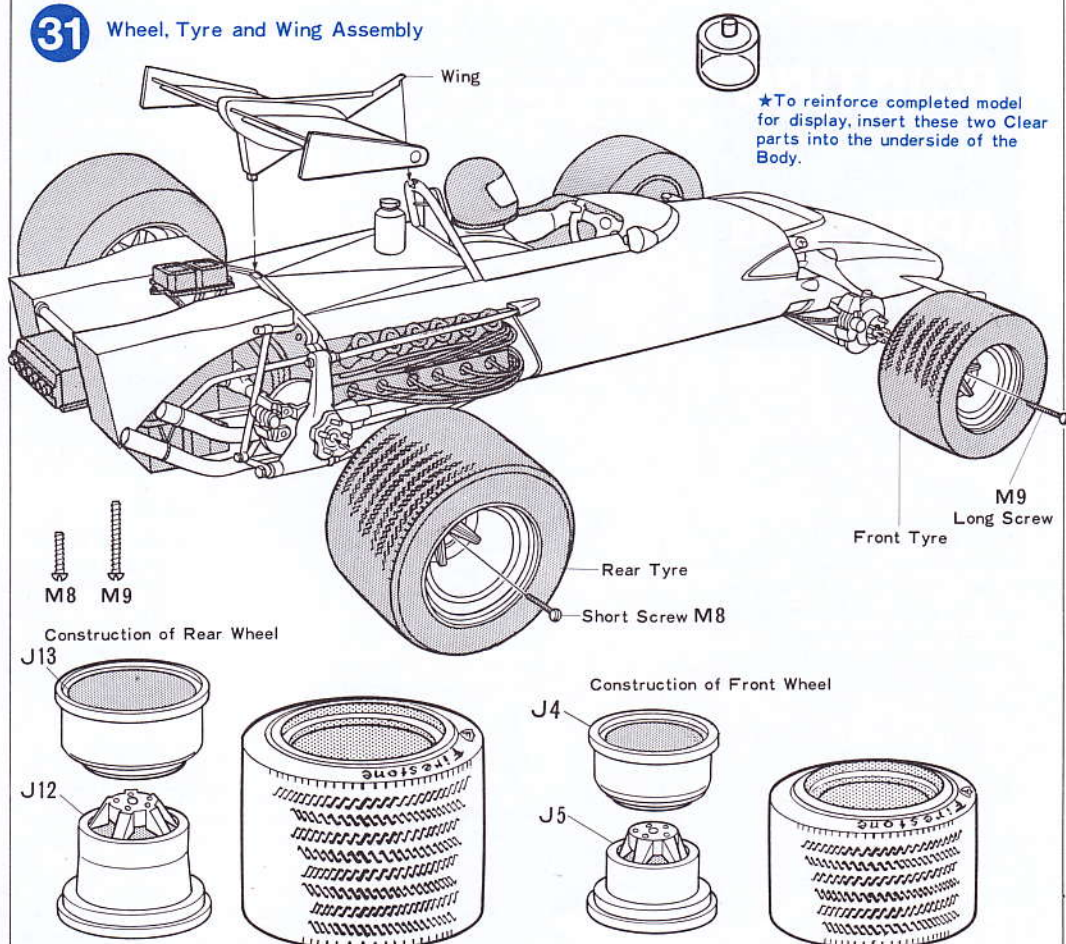
Use a fine liner brush to paint the detail onto the tyres. The completed model can be polished with wax to improve the finish still more.



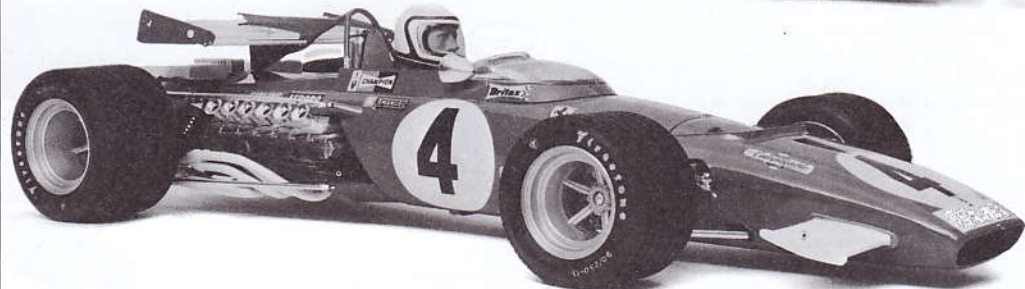
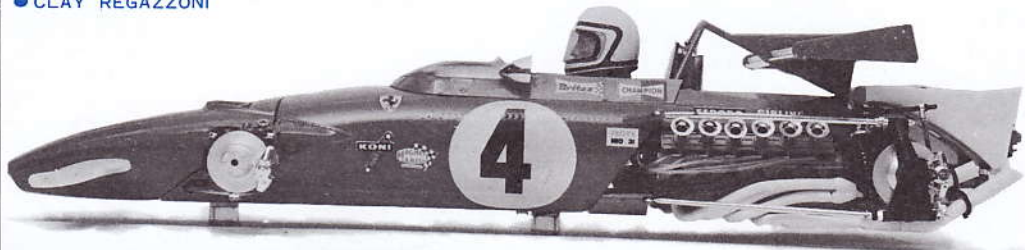
● MARIO ANDRETTI



31 Wheel, Tyre and Wing Assembly



● CLAY REGAZZONI



● JACKY ICKX

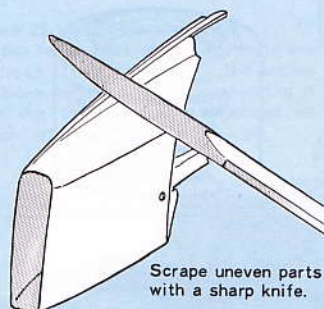


PAINTING

APPLYING DECALS

PAINTING

Painting should not be done simply to differentiate parts, but to accentuate the shape and function of each part. You are recommended to use various different colours with this kit and they are listed in columns two and three.



Scrape uneven parts with a sharp knife.

BEFORE PAINTING

Before starting to paint clean the plastic with a soft cloth to remove dust, dirt, hand stains etc. A neutral cleaner may be used to ensure a really clean surface.

Paint will not cover bad cementing, so this needs removing with either a knife or very fine sand-paper. Also cut or file away any uneven bits of plastic on the parts that may have been caused during moulding. Your model is going to look much better when completed, if you paint as many parts as you can. Small parts and internal parts should be painted while still on the sprue. However parts which fit together can be first constructed, the joining lines smoothed and finally painted, before assembly onto the model. This applies particularly where joining parts are to be painted in the same colour.



Thinner brush

Flat brush

Instructions for Brush Painting.
Plastic does not take paint well. It is therefore most important to remove all dust, dirt, hand stains, etc. But for a good finish, do not thin the paint more than necessary for smooth covering.

Brush painting of the wider body areas should be evenly applied in either a lengthwise or breadthwise direction. Always remember paint is inflammable.

COLOURS NEEDED FOR THIS KIT.



★BLACK

Gloss black to give a metallic impression on black parts.



★CHROME / BRIGHT SILVER

Bright silver to touch up plated parts and to paint nuts, bolts etc.



★SILVER

Slightly frosted dull colour for the rough metallic-coloured surfaces.



★Metallic Grey

Iron or steel colour for reproduction of casting parts.



★GOLD

Ferrari wheels are painted gold.



★YELLOW

Required for the transistor box on the rear of the Ferrari.



★IVORY WHITE

White tinged with yellow for painting the driver.



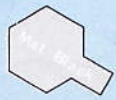
★FLESH

Needed for the drivers face. Add some brown to give extra light and shade to the features.



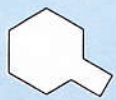
★ITALIAN RED

The racing colour of the Ferrari Team.



★MAT BLACK

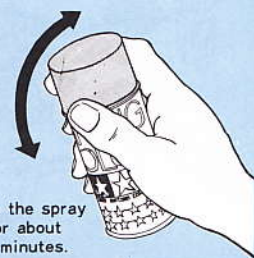
To be used for the inside of the body, cockpit etc.



SPRAY PAINTING HINTS

Firstly always spray indoors in windless and dust-free conditions. Spread newspaper under your work. Mix the paint well by shaking the can for three minutes and then test spray against some cardboard from about 20 cm, checking that the paint is properly mixed. When spraying the car body, hold the can about 20 cm from the plastic, moving the can quickly always in the same direction and ensure an even application. A good tip is to imagine you are spray-

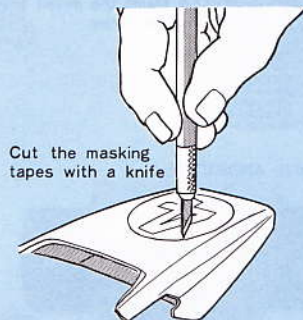
ing a larger surface, i.e. the surrounding newspaper - you will then probably achieve a more even finish.



Shake the spray can for about three minutes.

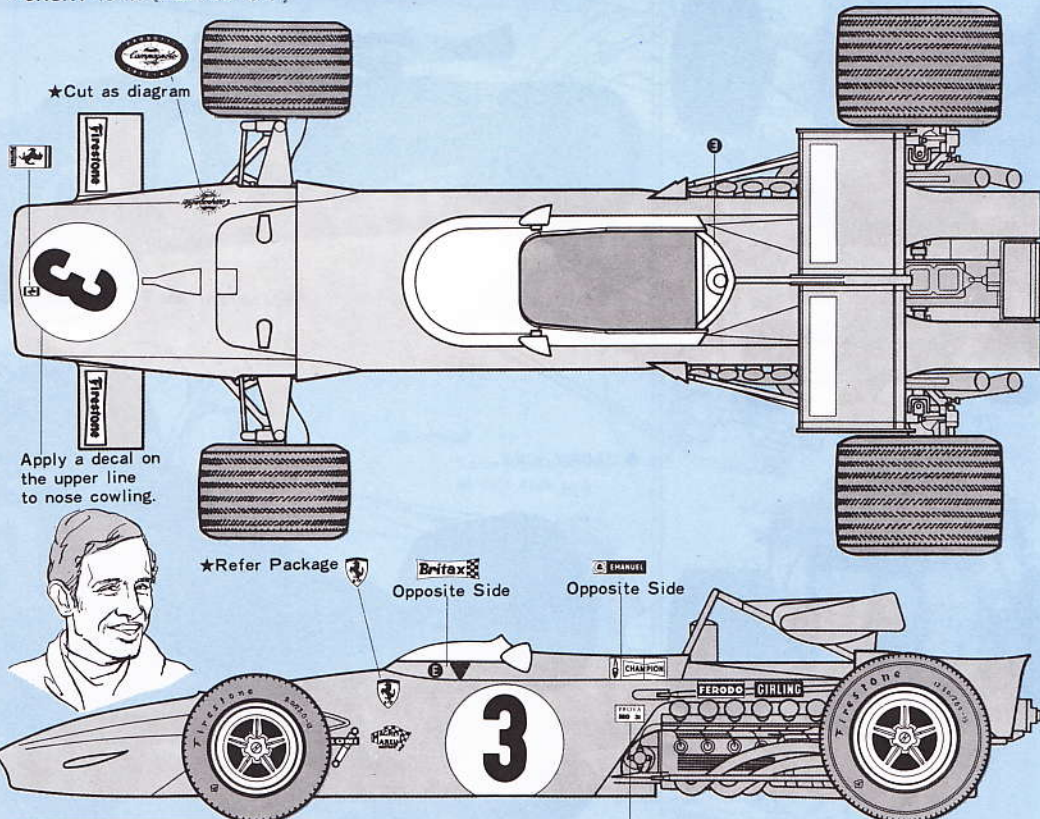
PAINTING WITH MASKING TAPE

When the paint is completely dry apply masking tape or sticky paper (not cellotape) over the whole area of the body. Draw out the required shape you want onto the paper with a hard pencil, then cut the paper along the lines you have drawn very carefully. Then remove the paper not required to mask the body. Finally press the mask firmly down on to the plastic to ensure it seals it from the paint. Then paint as instructed in previous paragraphs.



Cut the masking tapes with a knife

• JACKY-ICKX (MEXICO G-P)



★Cut as diagram

Apply a decal on the upper line to nose cowl.

★Refer Package

Brifax Opposite Side

CHAMPION Opposite Side

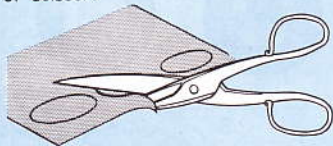
Do not apply opposite side.

APPLYING DECALS

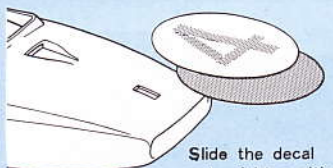
The illustrations on this page show the positions of the decals. More precise instructions for some decals will be found in the step by step building instructions.

1. Before applying decals clean the surface of the plastic well with a soft cloth.
2. Cut the decal from the decal sheet before applying it to the plastic.
3. Place the decal in water. When the paper wrinkles take it out and place it on a cloth or towel.

Cut with a pair of scissors



4. A minute or two later slide the decal from the paper into position onto the kit.
5. You can move the decal gently into position on the plastic with some water on the end of your finger.



Slide the decal onto right position

6. When in position force any air bubbles out from under the decals and absorb all the water by pressing and gently wiping with a soft cloth. When applying decals to an uneven or curved surface, press a warm moist cloth onto the decal. This will moisten and warm it to ensure a good application onto the plastic.

Press the decal down with a soft cloth



HAND PAINTING CAR NUMBERS

The numbers shown below are proper size for the kit. Trace the number required onto tracing paper and from this mark it out on the car body with a hard pencil. Then refer to instructions for painting with masking tape.

AUSTRIAN G.P.-J-ICKX

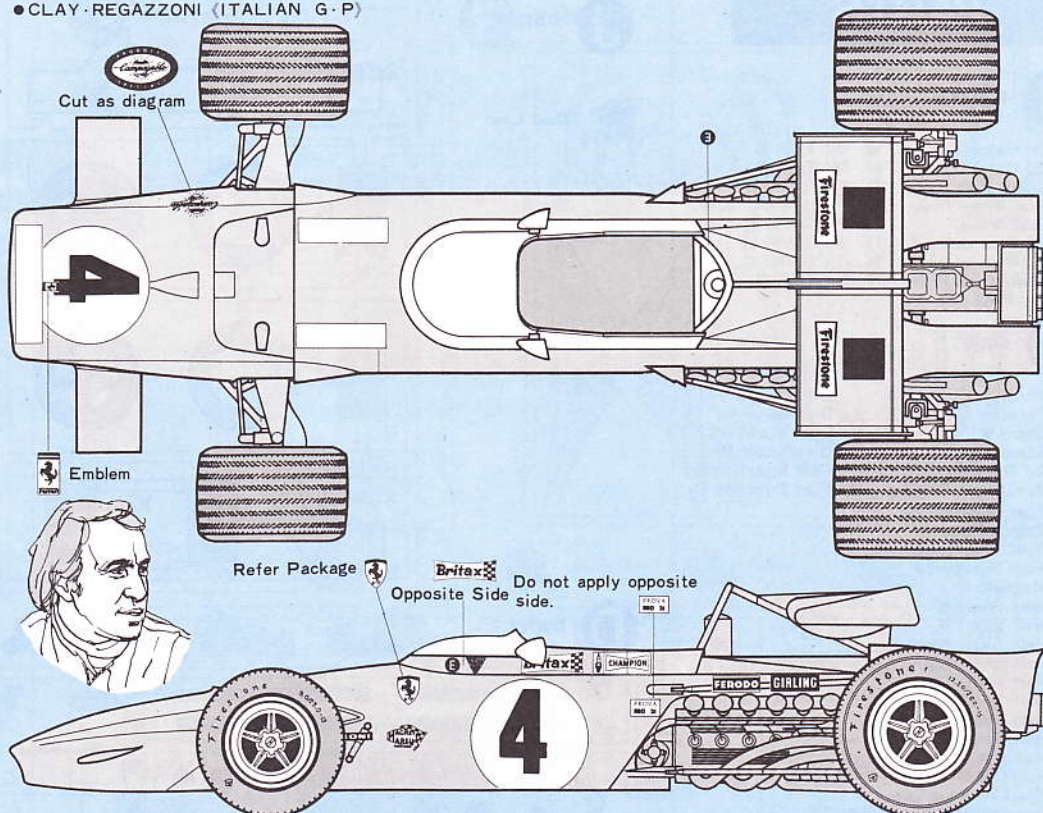
AUSTRIAN G.P.
C-REGAZZONI

CANADIAN G.P.-J-ICKX

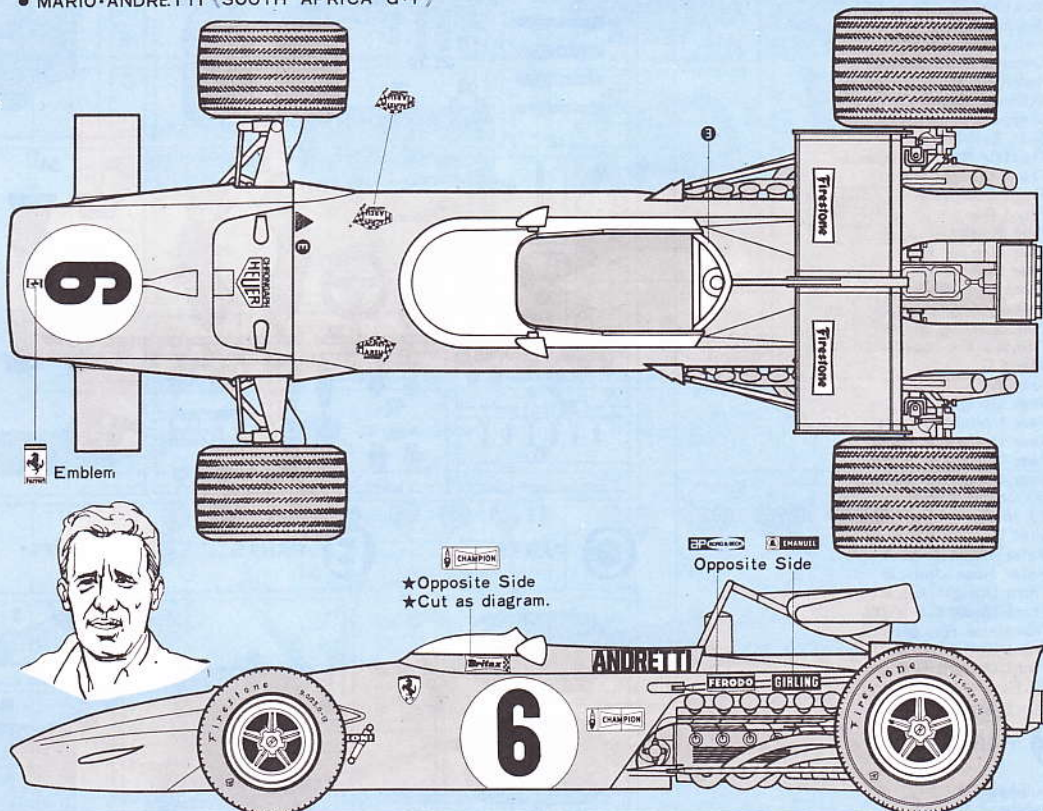
CANADIAN G.P.-C-REGAZZONI

SPANISH G.P.-J-ICKX

● CLAY·REGAZZONI (ITALIAN G·P)



● MARIO·ANDRETTI (SOUTH AFRICA G·P)



12 27 18 19 2

PARTS

J PARTS

1. Oil Catch Tank A
2. Oil Catch Tank B
3. Brake Disc Rear
4. Rear Wheel Inner
5. Rear Wheel
6. Oil Pipe Joint A
7. Oil Pipe Joint B
8. Brake Disc Front
9. Oil Tank A
10. Oil Tank B
11. Oil Tank C
12. Front Wheel
13. Front Wheel Inner
14. Oil Cooler A
15. Oil Cooler B
16. Oil Cooler C
17. Oil Tank D

D PARTS

1. Throttle Linkage A
2. Throttle Linkage B
3. Stand A
4. Stand B
5. Oil Pump A
6. Cam Shaft Bearing
13. Fuel Injection D
14. Engine Mount
15. Fuel Injection E
16. Fuel Injection F
17. Magneto C
18. Half Shaft E
19. Half Shaft F
20. Half Shaft Right B
21. Half Shaft Right A
22. Half Shaft Left A
23. Half Shaft B
24. Half Shaft C
25. Half Shaft D
26. Radiator A
27. Radiator B
28. Sparking Plug
29. Front Lower Arm Stopper
30. Stabilizer
31. Half Shaft Stopper Parts
32. Bulkhead B
33. Bulkhead C
34. Instrument Panel
35. Exhaust Pipe Stopper
36. Headrest
37. Steering Wheel
38. Stopper
39. Seat Belt Stopper Pin
40. Throttle Rod Receptacle
41. Front Upright Parts
42. Front Damper B
43. Front Damper C
44. Rear Wheel Stopper
45. Rear Damper B
46. Rear Damper C
47. Front Disc Stopper
48. Battery Mount
49. Self Starting Motor
50. Throttle link Rod
51. Stand C
52. Seat A
53. Rear Upright A
54. Rear Upright B Left
55. Rear Upright B Right
56. Rear Upright C Right
57. Rear Upright C Left
58. Oil Cooler Arm
59. Air Intake
60. Seat B
61. Water Hose Joint A
62. Water Hose Joint B
63. Front Upright A Left
64. Front Upright A Right
65. Transistor Box Mount
66. Front Upright B Left
67. Front Upright B Right
68. Oil Pipe

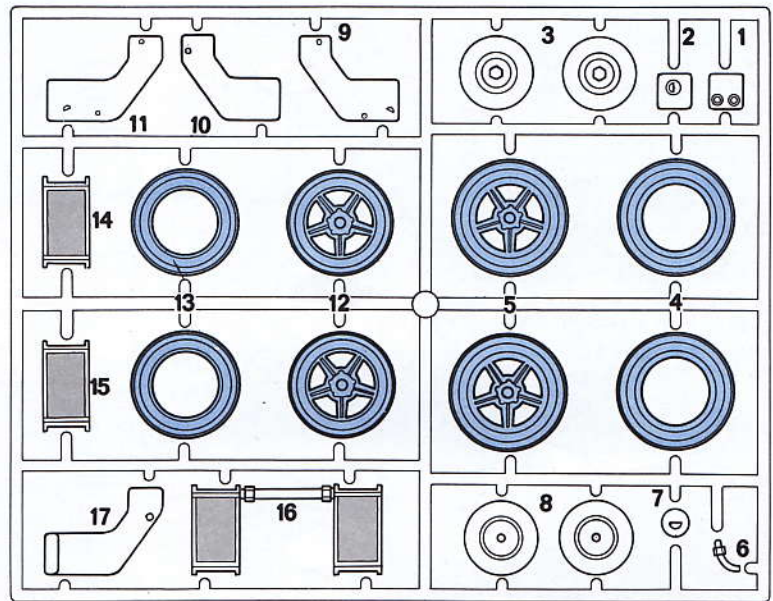
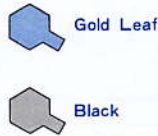
C PARTS

1. Bulkhead D
2. Bulkhead E
3. Middle Lower Body Part
4. Bulkhead G Right
5. Bulkhead G Left

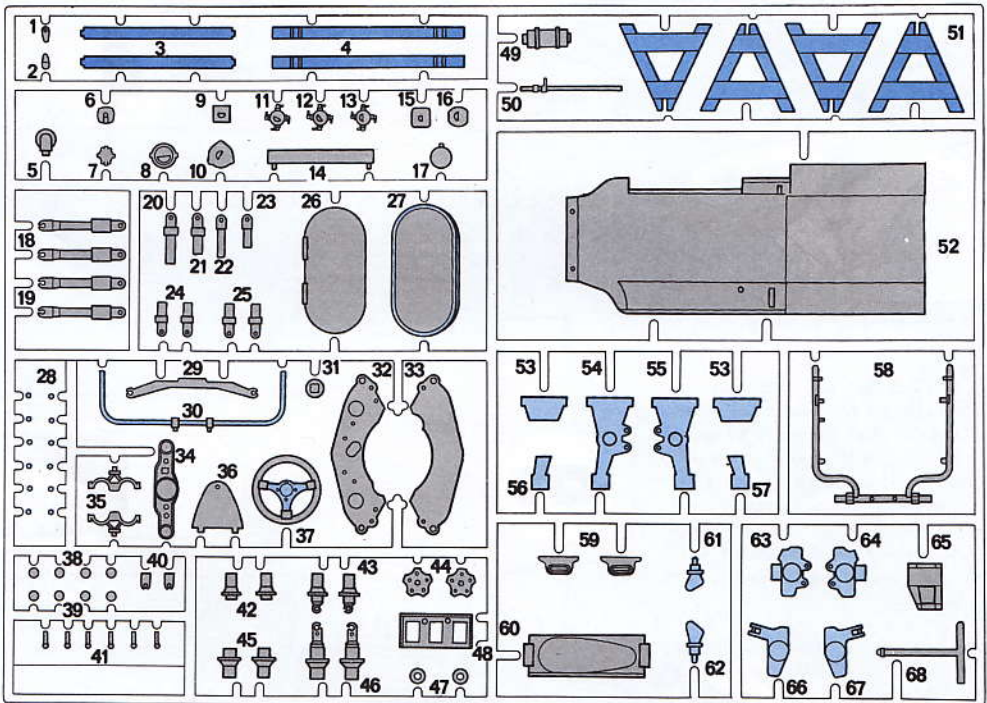
B PARTS

1. Nose Cowling Lower
2. Nose Cowling Upper
3. Wing Support
4. Wing Fairing Plate Right
5. Nose Cowling B Air Duct
6. Wing Fairing Plate Left
7. Body Parts
8. Body B
9. Wind Shield B
10. Bulkhead H
11. Nose Cowling B
12. Radius Arm Support A Right
13. Radius Arm Support A Left
14. Radius Arm Support B Left
15. Radius Arm Support B Right
16. Catch stopper

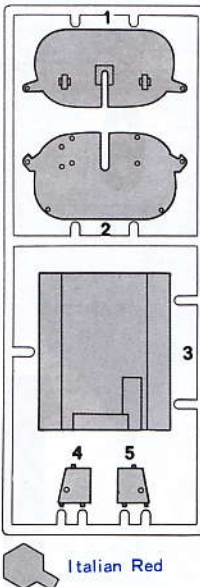
J PARTS



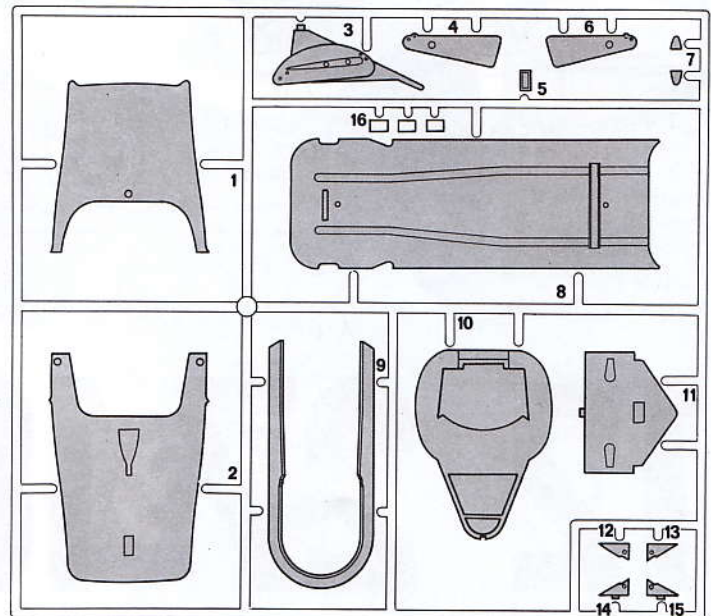
D PARTS



C PARTS



B PARTS



PARTS



PARTS



PARTS

1. Front Fin Fairing Right
2. Wing B
3. Front Fin Fairing Left
6. Wing A Left
4. Front Fin Left
7. Wing A Right
5. Front Fin Right
8. Wing C



PARTS

1. Air Duct Right A
11. Exhaust Pipe
2. Air Duct Right B
12. Exhaust Pipe
3. Air Duct Left A
13. Exhaust Pipe
4. Air Duct Left B
14. Exhaust Pipe
5. Exhaust Pipe
15. Exhaust Pipe
6. Exhaust Pipe
16. Exhaust Pipe
7. Exhaust Pipe
17. Exhaust Pipe
8. Exhaust Pipe
18. Exhaust Pipe
9. Exhaust Pipe
19. Exhaust Pipe
10. Exhaust Pipe
20. Exhaust Pipe
21. Exhaust Pipe Joint A
22. Battery Case
23. Exhaust Pipe Joint B



PARTS

1. Intake Manifold
2. Master Cylinder
3. Transmission Left
4. Transmission Right
5. Engine Lower
6. Engine Upper
7. Gear Shift Train
8. Throttle Plate Right
9. Throttle Plate Left
10. Automatic Fire Extinguisher
11. Gear Shaft Lever Guide
12. Transmission Rear
13. Bulkhead A
14. Bulkhead F
15. Engine Front A
16. Magneto A
17. Transistor Box
18. Magneto B
19. Engine Front B
20. Clutch Case
21. Cam Cover Left
22. Cam Cover Right
23. Lower Arm Support
24. Engine Rear
25. Battery
26. Lower Arm Stopper B Right
27. Lower Arm Stopper B Left
28. Transmission Lower
29. Transmission Upper



PARTS

1. Disc Brake Caliper A
2. Shift Lever Knob
3. Disc Brake Caliper B
4. Radiator Arm
5. Upper Arm Right
6. Upper Arm Left
7. Radius Arm Left
8. Radius Arm Right
9. Stabilizer Rod
10. Rack
11. Air Funnel
12. Lead Arm
13. Front Lower Arm Right
14. Front Lower Arm Left
15. Rear View Mirror A
16. Rear View Mirror B
17. I Arm
18. Lower Arm Right
19. Lower Arm Left
20. Front Damper A
21. Rear Damper B
22. Universal Joint Cross
23. Fuel Tank Cap
24. Refuel Duct



PARTS

1. Body
- SEAT PARTS
1. Seat Belt
- CLEAR PARTS
1. Wind Shield
2. Display Stand
3. Driver's Helmet Visor

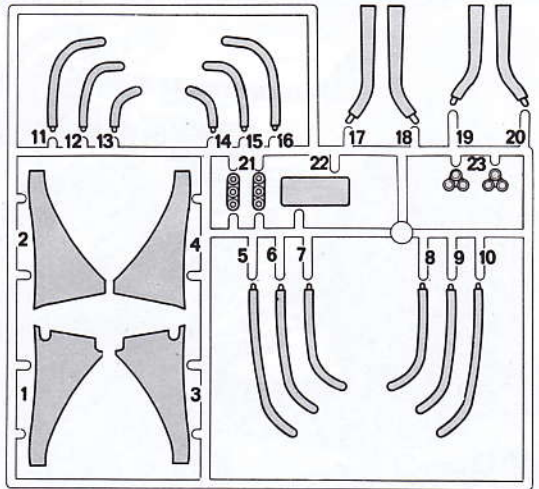


PARTS

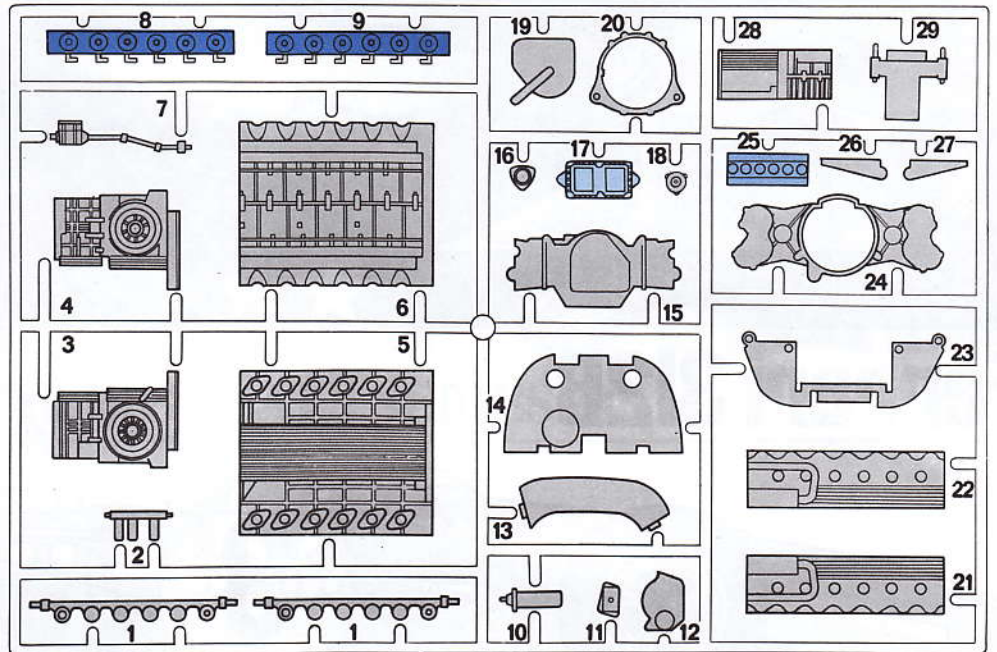
1. L Shape Metal (3)
3. Spring (small-2)
2. Nut (4)
4. Spring (large-2)
5. Coil Spring (4)
6. Steering Shaft
7. Cowling Securing Screw(3)
8. Wheel Securing Screw (short-2)
9. Wheel Securing Screw (long-2)
10. Pinion Gear
11. Muffler Support Spring (4)



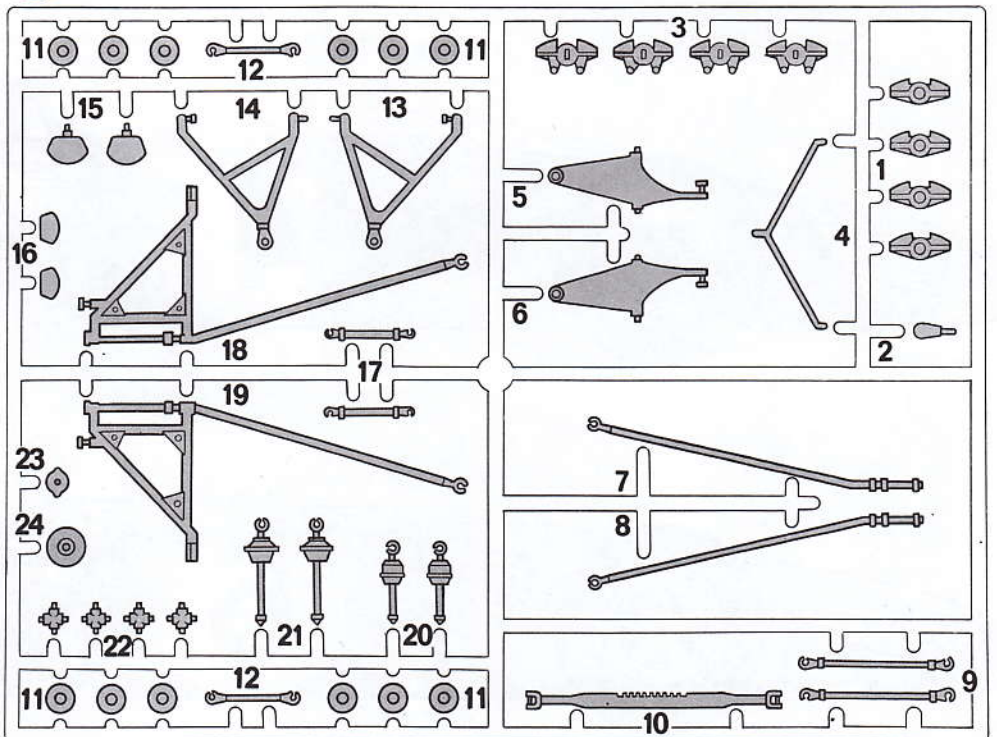
PARTS

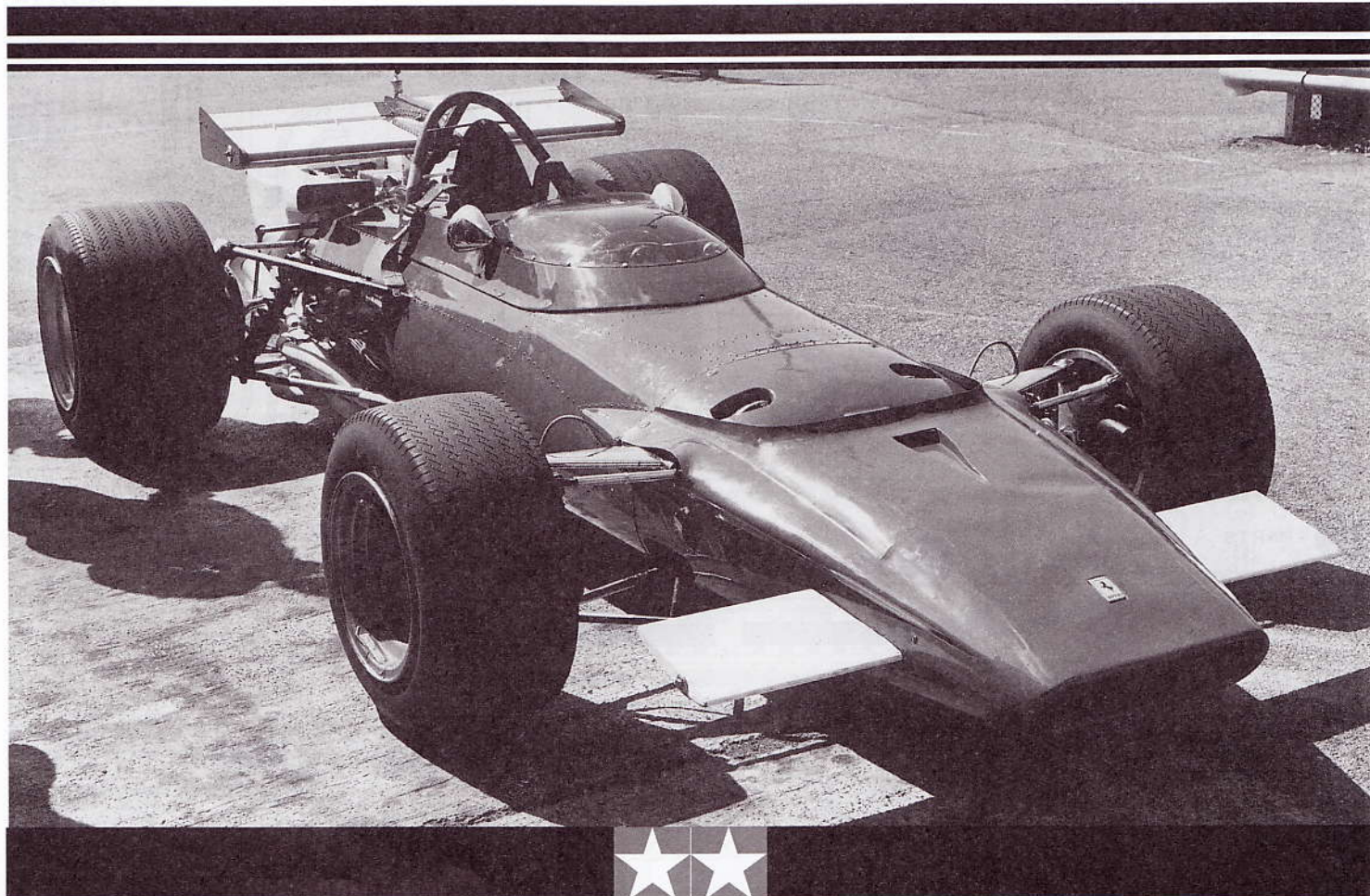


PARTS



PARTS





Ferrari 312B

