

RENAULT RE-20 TURBO

PHOTO-ETCHED PARTS 1/12 ルノーRE20ターボ エッチングパーツ取付説明書



注意 ●作る前に説明図をよく読み内容を理解してから組み立ててください。また、保護者の方もお読みください。●小さなお子様のいる場所での工作はしないでください。部品やビニール袋の飲み込みなど、危険な状況が考えられます。●エッチングパーツはたいへん薄く、手などを切る恐れがあります。取り扱いには十分注意してください。

CAUTION ●Read carefully and fully understand the instructions before commencing assembly. A supervising adult should also read the instructions if a child assembles the model. ●Keep out of reach of small children. Children must not be allowed to put any parts or packaging material in their mouths. ●Extra care should be taken to avoid personal injury when handling photo-etched parts.

《瞬間接着剤について》

★通常は塗装する前に使用します。その際、接着面の油分を十分に取ってください。塗装後に接着したい場合は接着面の塗料を落としてから使用します。この時、塗料が残っていると接着力が極端に低下するので注意しましょう。
★接着剤をつけすぎると接着力が落ちるだけでなく、白化しやすくなるので注意してください。
★劣化した接着剤は使用しないでください。また不要な部品で試してから使用してください。
★使用する際は瞬間接着剤の取扱説明をよく読んでからご使用ください。

Instant cement

★Remove any paint or oil from cementing surface before affixing parts.
★Use only a small amount of cement. Too much cement will make joints turn white and lose adhesion.
★Do not use old cement. Test cement first with unnecessary parts such as sprues before use.
★Carefully read instructions on use before cementing.

TOOLS RECOMMENDED

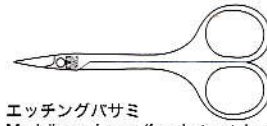
《用意する工具》

Tools recommended

瞬間接着剤
Instant cement



タミヤメタルプライマー
Tamiya metal primer



エッチングハサミ
Modeling scissors (for photo-etched parts)



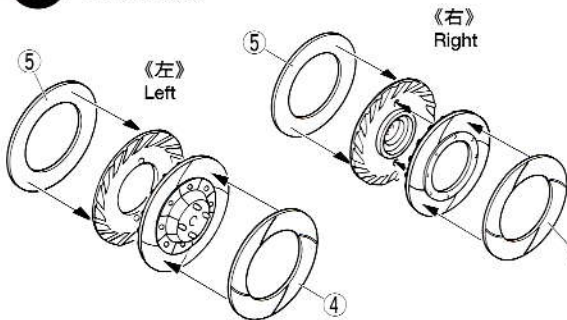
エッチングヤスリ
Diamond file (for photo-etched parts)

★エッチングパーツの切り離しには、金属専用のエッチングはさみを、パーツの余分な部分の削り出しには金属専用のダイヤモンド粒子を電着させたエッチングヤスリを、またプラスチックとエッチングとの接着にはタミヤ瞬間接着剤を、塗装する場合は下地にタミヤメタルプライマーを吹き付ける必要があります。それぞれ別途お買い求めください。

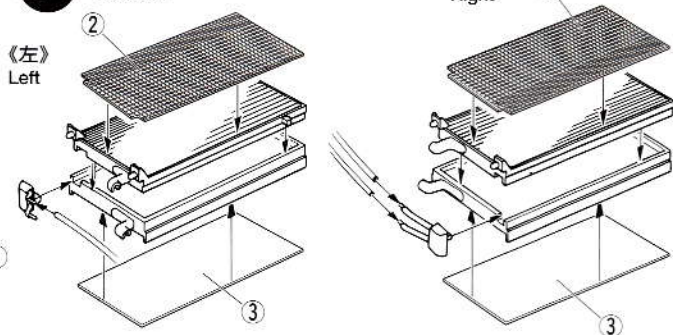
★Cut parts using modeling scissors and shape using diamond file for photo-etched parts. Affix parts with Tamiya instant (CA) cement and prime with Tamiya metal primer before painting. Tools and materials are available separately.

★この説明書の●番号は本文の説明図のナンバーと同じ物です。この番号と同じ箇所でもエッチングの取り付けをおこなってください。
Each ● number in the instructions correspond to car kit-supplied instructions' steps. Attach photo-etched parts during assembly.

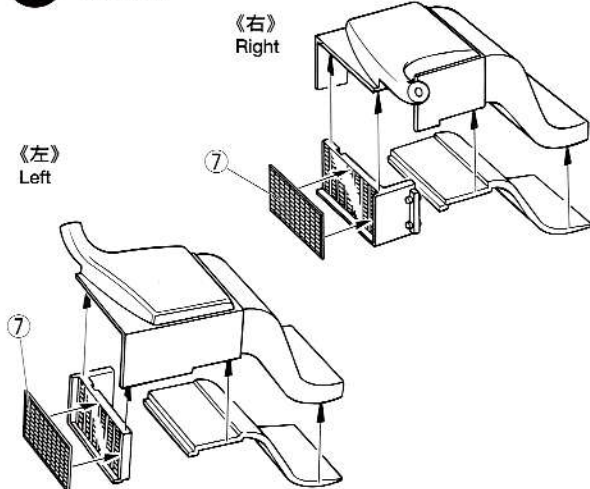
9 フロントアップライトの組み立て Front uprights



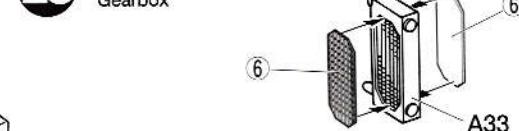
12 ラジエターの組み立て Radiator



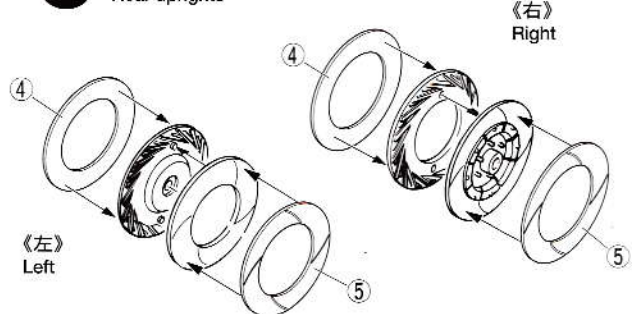
19 インタークーラーの組み立て Intercooler



25 ギヤボックスの組み立て Gearbox



30 リアアップライトの組み立て Rear uprights





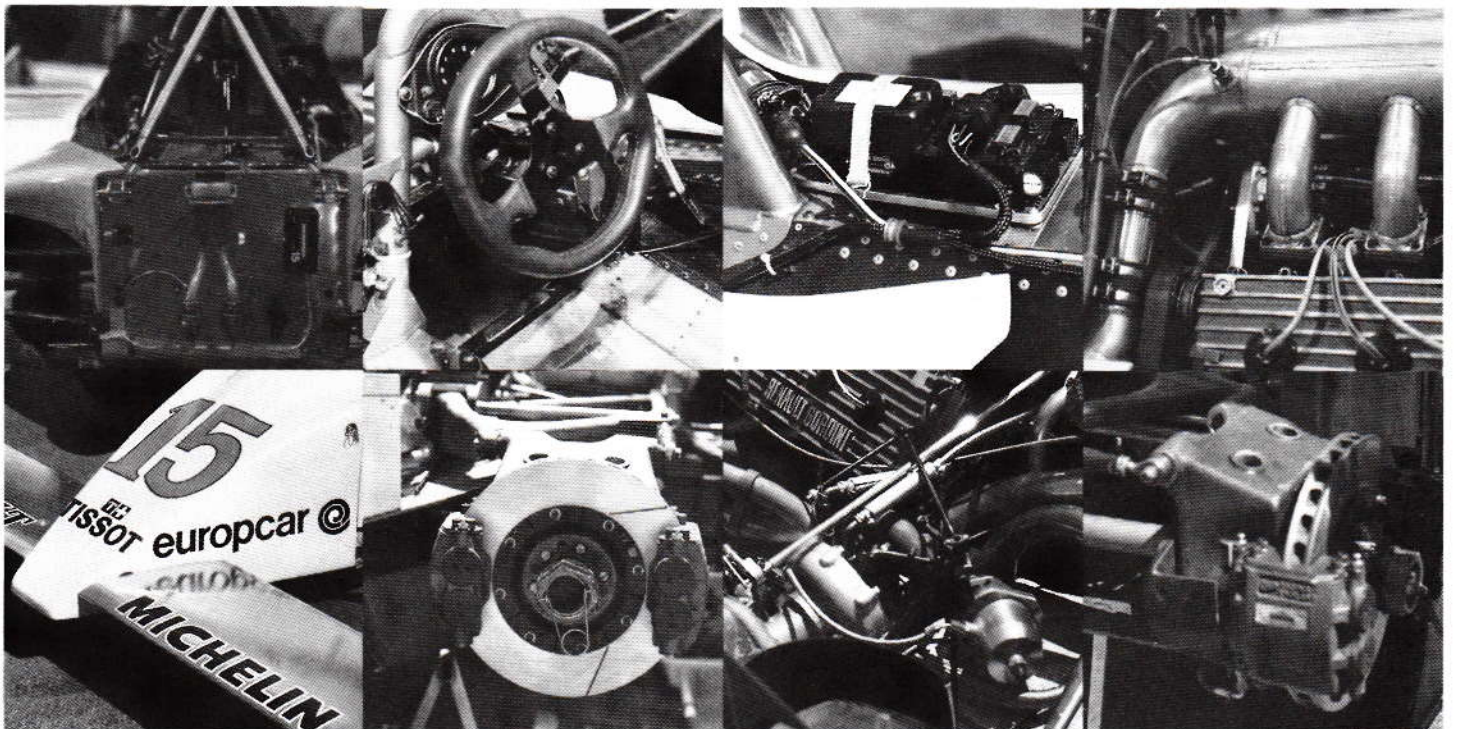
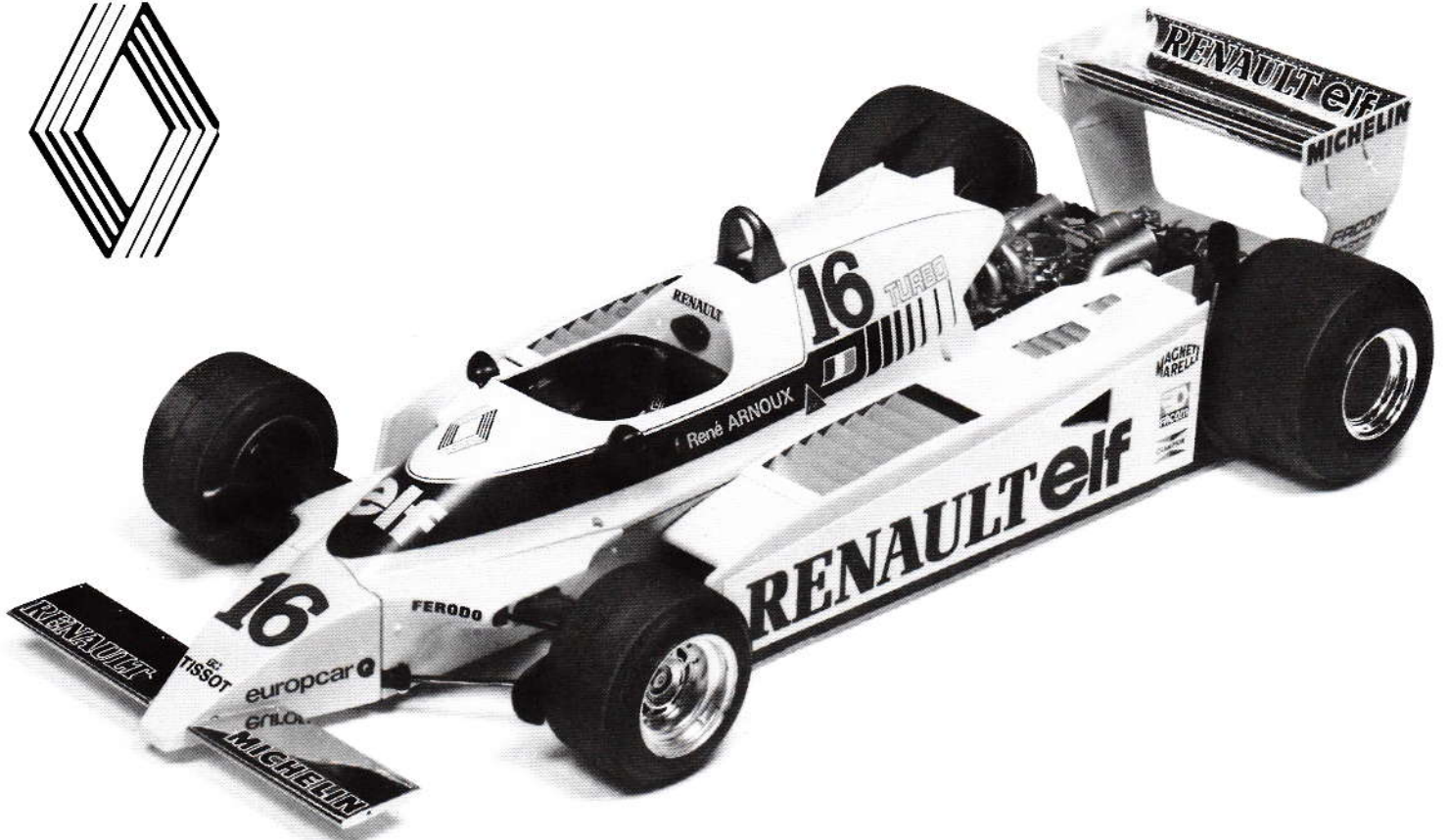
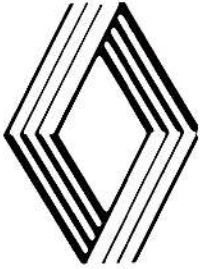
RENAULT RE 20 TURBO

1:12 SCALE

Length 389 mm
Width 184 mm
Height 88 mm

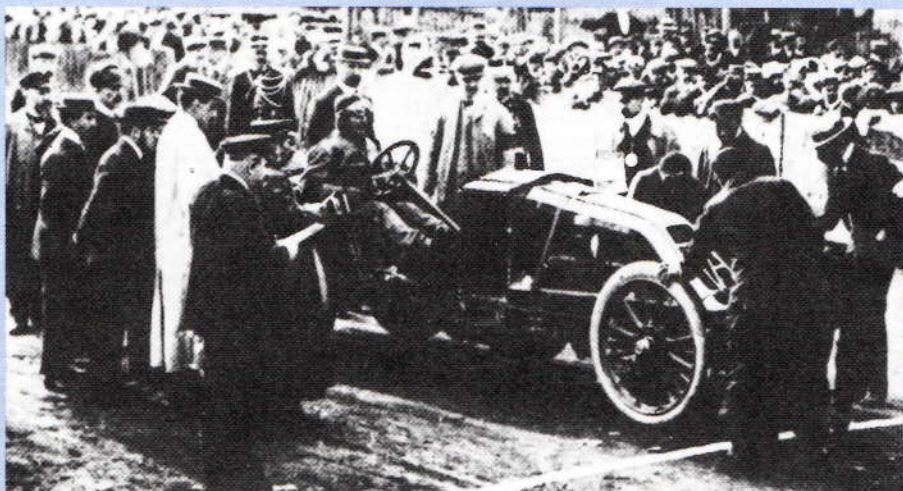
MOVABLE FRONT & REAR SUSPENSION
TURBOCHARGED 6 CYLINDER ENGINE
STEERABLE FRONT WHEELS
MOVABLE SIDE SKIRTS

BIG SCALE 24 ★★ **TAMIYA**
TAMIYA, INC.
3-7 ONDAWARA, SHIZUOKA-CITY, JAPAN



RENAULT RE 20 TURBO

Eighty two years have past since Renault first entered competition in auto racing, and they are now very close to adding formula 1 to a long string of victories which began in 1906 with their first win in Grand Prix racing. In the last decade, the Regie Renault, France's giant state-owned motor vehicle manufacturer, has grown out of all recognition as a force in international auto racing. Although the first win for Renault came way back in 1906, the name of the company did not automatically become associated with auto racing, on a big scale, until the early 1970's. Having been involved in small-scale racing and rallying programmes in the sixties, Renault entered the sphere of international competition as a result of a new and far-sighted top management commitment, the impetus for which came from a brilliant association between Renault, Alpine, Gordini and the Elf petroleum combine. In 1971 and 1973, the Renault-Alpine A110 rally cars won the World Rally Championship. In 1974 the A114 Group 6 car was driven to victory in the European Sports Car Championship for 2 litre sports-prototypes. In 76 and 77 Renault won the European Formula 2 championship, and then in 1978 the big sports car win came their way with Pierre Jaussaud and Didier Pironi driving the Renault-Alpine A442B Turbocharged to victory in the Le Mans 24 hour race. It was at this time that the momentous decision was taken to enter formula 1 racing. The growing competitiveness of the Renault turbo engine is now giving rise to real concern among the entrants of the conventionally engined Grand Prix cars, so much so, that there is now talk of outlawing turbo engines on the circuit. And it is not surprising when you consider that the Renault EF1 turbo engine is only a 1-1/2 litre six cylinder engine developing over 500 BHP. Both Ferrari and Alfa Romeo have begun developing turbocharged F1 engines as a result of the success of Renault. The heart of this surprising Formula 1 racer is an engine



developed by François Castaing and his team and in the EF1 it has a capacity of 1492cc with twin turbines. The twin turbined engine was first used in the Renault-Elf RS10 'ground effects' F1 racer in 1979. The earlier RS-01 Renault, which came on the scene to F-1 racing in 1977-78 utilized a single blower turbine and was plagued with problems even though the concept was sound and the results promising. After the development of the twin turbined EF-1 proved feasible, it was fitted to the RS10 chassis and brought victory to Renault when Jean-Pierre Jabouille drove it to first place and Rene Arnoux drove one to third place in the 1979 French Grand Prix. Engine reliability remained a frustrating problem throughout the year, while the bugs were being worked out of the engines, and in 1980 these two outstanding drivers won the Brazilian, South African and Austrian Grand Prix's in exciting style with the RE-20 racer. Gaining more and more experience in turbocharged driving and engineering the Regie's formula 1 project is of tremendous importance to the automotive world. Because of the remarkable achievement of extracting in excess of 500BHP from a 1-1/2 litre

engine, it is no coincidence that other companies are keen on the development of turbocharged engines. The turbo's rev up to 100,000 RPM and the exhaust flow can hit the turbine at more than 1000 degrees Centigrade. The increased boost necessary to extract 500BHP from the small capacity F1 engine creates enormous thermal problems which the Renault-Gordini engineers have had to solve while actively engaged in a full scale competition program. New light metals have been found and the quality of steels had been improved, and a tremendous knowledge of cooling, lubrication, metallurgy, machining and assembly are being developed. All of these new techniques will be passed on to mass production car manufacturing. The turbocharged engine regains the energy of the exhaust gases, which are lost in normal breathing engines, so it is enormously more efficient. Turbocharging thus contributes to the saving of energy, and it also can reduce the manufacturers financial investment in the production of different models of cars by being able to utilize the same basic engine block, thereby reducing the cost of the vehicle to the consumer.





In addition to the unique turbocharged engine, the Renault-Elf RE-20 Formula 1 racer is also a fine example of a winged, ground effect car. Ground-effect in auto racing came into being in the mid 70s with an attempt to obtain better ground adhesion, using proven aerodynamic principles applied to racing vehicles. Maximum power of formula 1 cars is around 500BHP, and this power will only do good if it is transferred to the wheels/tyres and then onto the roadway. Adhesion dictates acceleration, retardation, and cornering speeds. Certainly tyres have made prodigious progress, and it is still being made. It is not enough however. Grip still needs to be increased. Weight-increase offers no advantage as, although it increases adhesion, inertia in acceleration and in cornering power is increased in proportion. There is another highly effective approach. Suction obtained through a near vacuum cleaner layout. This system was used on the American Chaparral some years ago but it was outlawed by regulations. In 1978, the Brabham team tried to camouflage a similar system, but the racing authorities also stopped them after they had won one race. Most racer bodywork, thanks to the inattention of car designers, develop lift at speed due to the bottom of the car being flat, and the top convex, sloping down at the rear. They found that they could help neutralize this lift by installing inverted airfoiled wings at the rear of the car. This worked to a degree, but the drag also slowed down the car. To actually achieve the desired effect, it was found that evolutionary shapes of delicate and precise definition were found to be necessary. To reverse the lift generated by the sidepods of racers, the Lotus engineers evolved a counter-measure against lateral air movement, by installing body skirts. The adding of the side skirts which made contact with the track and moved vertically in rails doubled the down thrust, and this new system was dubbed "ground effect,"



and all F-1 participants promptly adopted this system for their new racers. There is still a great deal of discussion going on in F-1 circles as to the legality of ground effect racers, and it is only a fine interpretation of the regulations that still allow them to be used.

Turbocharged engines and ground effect car bodies have the entire formula 1 racing group up in the air, and as of this writing it is not known if it will survive. Auto racing is an expensive proposition. Millions are spent annually by many companies for the betterment of the auto industry, which in the end benefits us with better automotive products and vehicles.

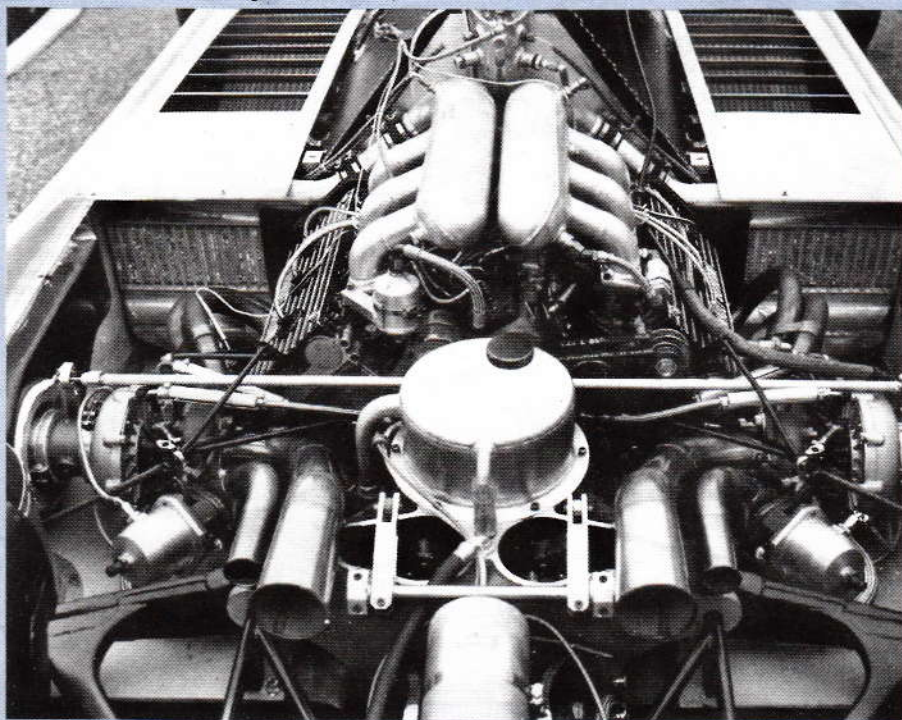
The Regie Renault firm is to be lauded for their forward thinking and progressive designs. This French company is in Grand Prix racing for both technical development and international prestige. The former is being made available to the Renault engineers constantly. The latter has come about with their magnificent RE-20 turbocharged ground effect, formula one racer.

«Results of Renault RE-20 in '80 Grand Prix's»

	J.P. Jabouille	R. Arnoux
Argentine G.P.	Retired	Retired
Brazilian G.P.	Retired (Poll Position)	Win
South African G.P.	Retired (Poll Position)	Win
U.S. G.P. West	10th place	9th place
Belgium G.P.	Retired	4th place
Monaco G.P.	Retired	Retired
French G.P.	Retired	5th place
British G.P.	Retired	Running, not classified.
German G.P.	Retired	Retired
Austrian G.P.	Win	9th place (Poll Position)
Dutch G.P.	Retired	2nd place (Poll Position)
Italian G.P.	Retired	10th place (Poll Position)
Canadian G.P.	Retired	Retired
U.S. G.P.	Did not enter	7th place

«Specifications of Renault RE-20»

Sponsor	: Elf
Designer(s)	: Renault Sport Design Team
Team manager(s)	: Gerard Larrousse/Jean Sage
Chief mechanic(s)	: Daniel Champion/ Christian Pouchelon
No. of chassis built	: 5
ENGINE	
Type	: Renault EF1 V6
Fuel and oil	: Elf
Sparking plugs	: Champion
TRANSMISSION	
Gearbox/speeds	: Hewland FGA400 (5)
Clutch	: A.P.
CHASSIS	
Front and rear suspension	: Top rocker arms, bottom wishbones, inboard springs
Suspension dampers	: Koni/de Carbon
Wheel diameter	: 13/15 in front, 13 in rear
Wheel rim width	: 11 in front, 18 in rear
Tyres	: Michelin
Brakes	: Automotive Products
Brake pads	: Ferodo
DIMENSIONS	
Wheelbase	: 112.6 in/2860mm
Track	: 67 in/1706mm front, 60 in/1531mm rear
Formula weight	: 1356 lb/615kg



READ BEFORE ASSEMBLY.

ERST LESEN — DANN BAUEN.



★ Study thoroughly the instructions and photographs before beginning construction.

★ You will need a sharp knife; a small screwdriver; side cutters and a fine file.

★ Do not break parts away from the plastic sprue. Cut them carefully with a knife or sidecutters.

★ Use a good grade of polystyrene cement, but use only enough for a good bond. Apply cement to both surfaces that are to be joined.

● This mark denotes the colour to be painted.

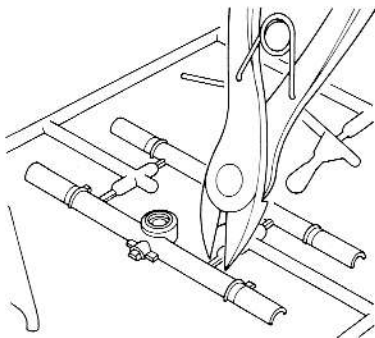
★ Vor Beginn die Bauanleitung studieren und den Nummern nach die Elemente zusammenbauen.

★ Bauteile nicht vom Spritzling abbrechen, vorsichtig abschneiden oder abwicken, Teil vor Kleben zusammenhalten, auf genauen Sitz achten. Nicht zuviel Klebstoff verwenden. Kleine Teile hält man mit Pinzette fest.

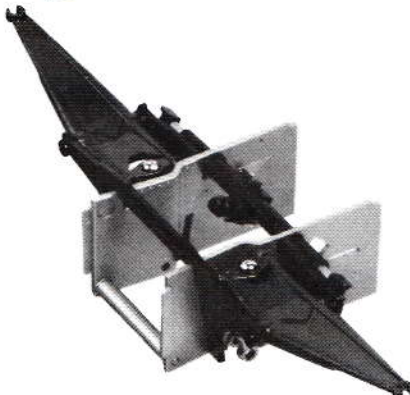
★ Abziehbilder vorsichtig von der Unterlage im Wasser abschieben, auf richtigen Sitz achten und gut trocknen lassen.

● Zeichen für Bemalung

■ : Parts to be cemented
 ■ : hier ankleben



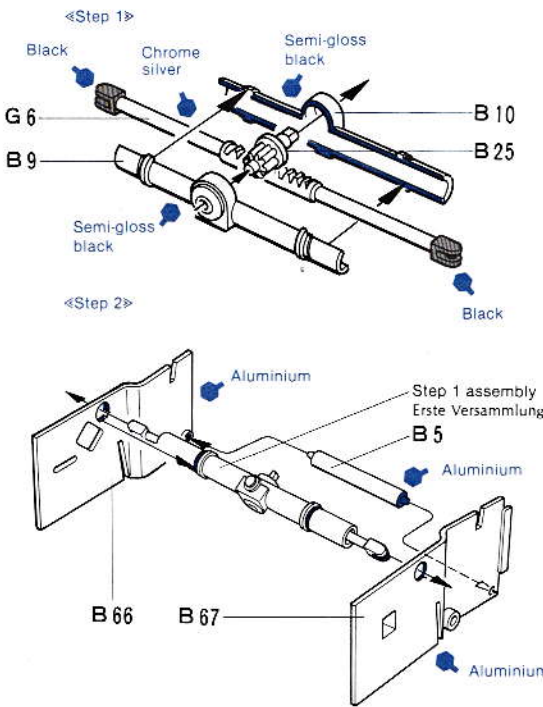
2 «Front Upper Arm»
 «Vord. Achsarm»



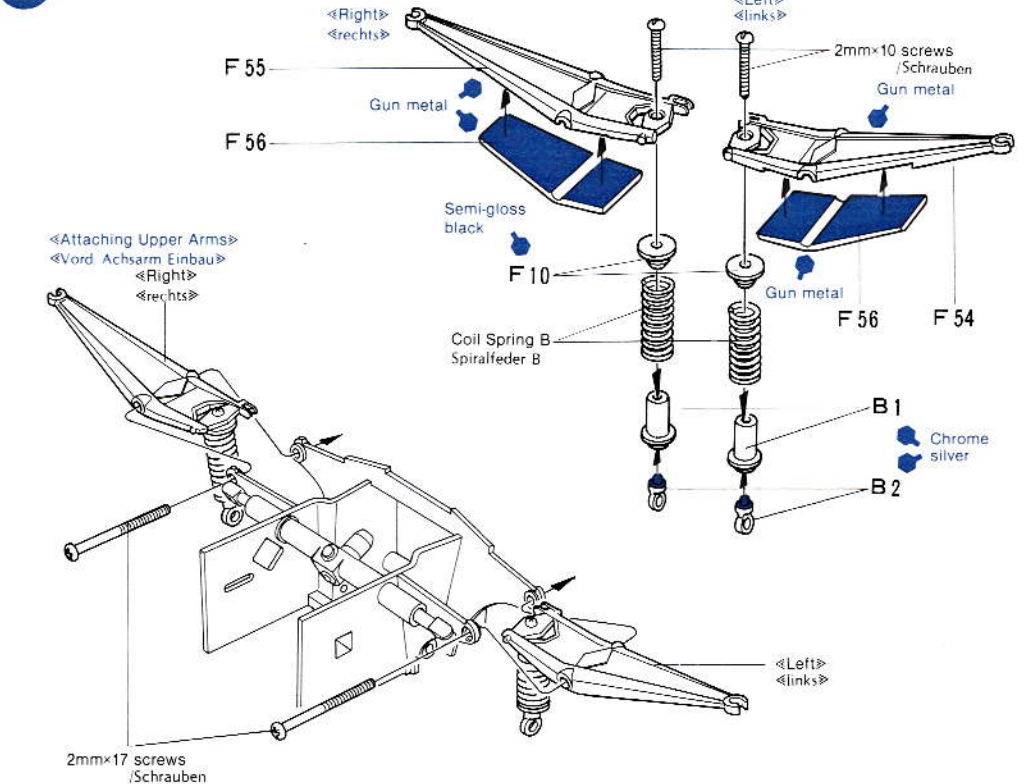
3 «Throttle Cable»
 «Gaszug»



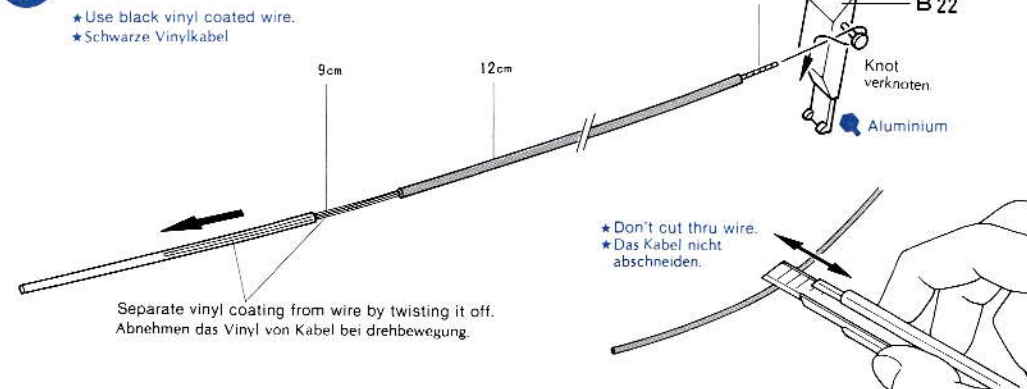
1 Steering Gear Box
 Lenkgetriebe



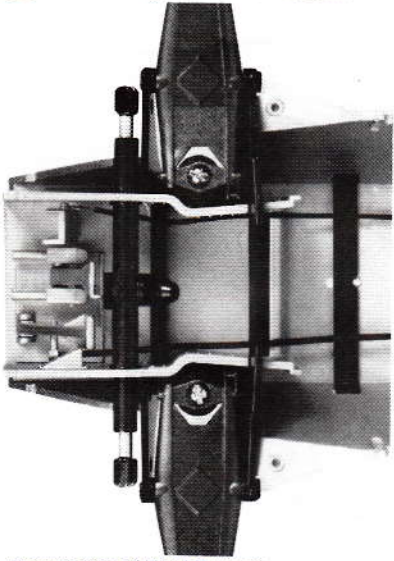
2 Front Upper Arm
 Vord. Achsarm



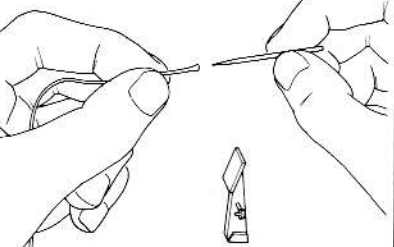
3 Throttle Cable
 Gaszug



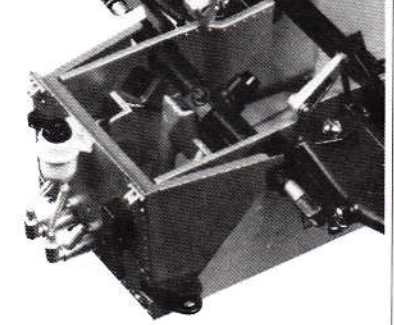
4 «Attached Front Upper Arm»
«Zusammengebauter Vord. Achsarm»



«Installation of Vinyl Tubing»
«Einbau Vinylschlauch»
If tubing is too tight, enlarge end with a round toothpick.
Wenn Vinylschlauch zu klein, mit Zahnstocher etwas dehnen.

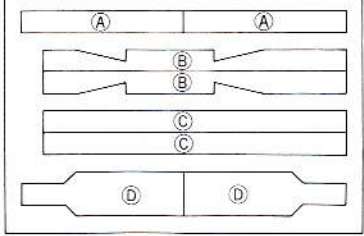


5 «Front Bulkhead»
«Feuerwand»

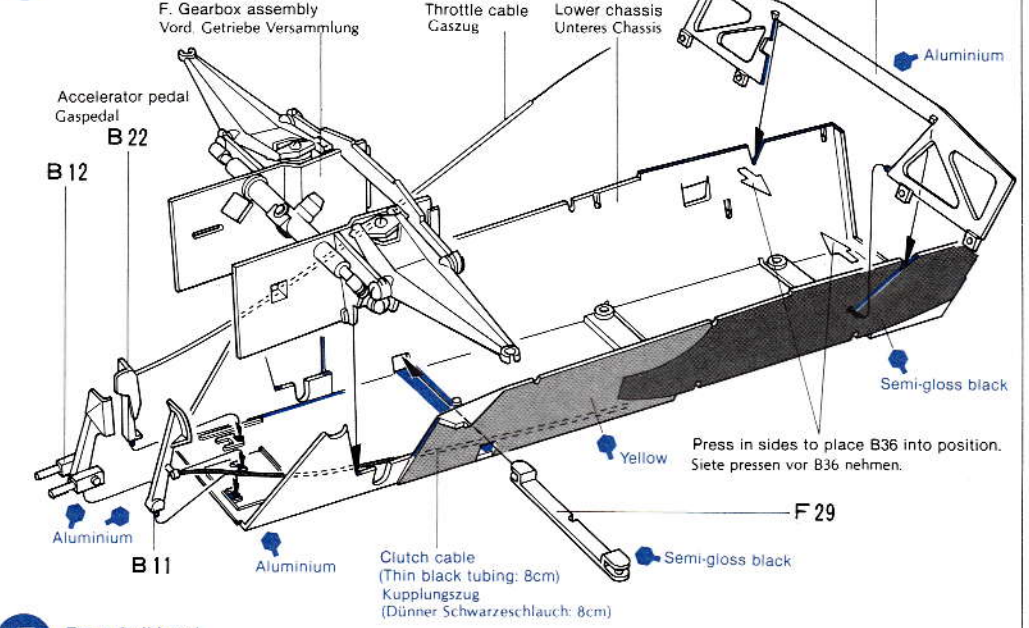


6 «Seat Belts»
«Sitz-Gürtel»

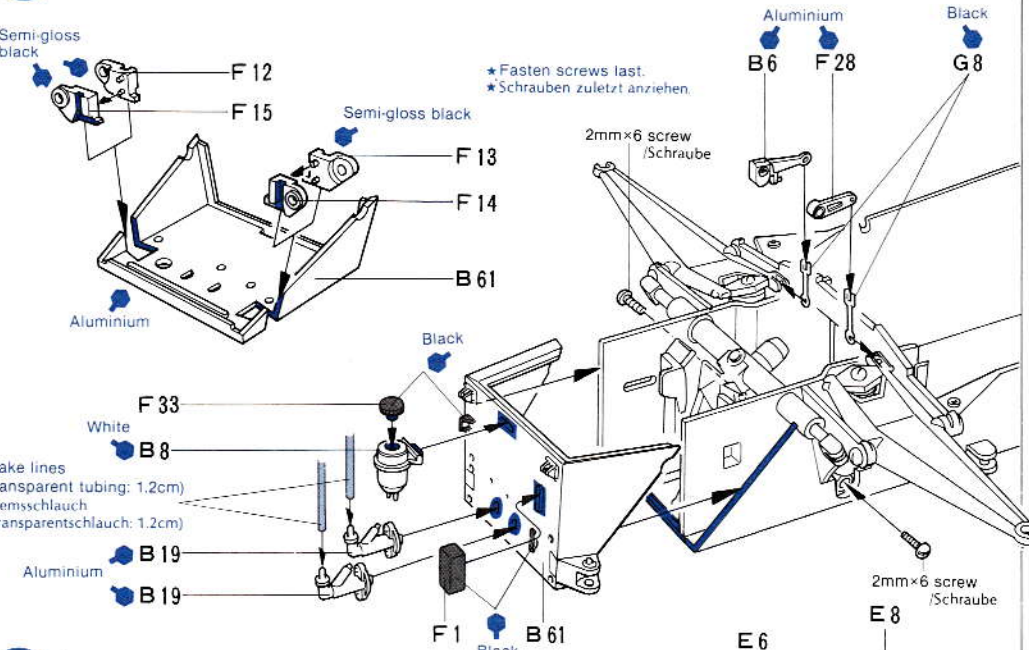
Seat belts are of self sticking tape. Pattern is shown below.
Für Gurte-Klebeband benutzen.



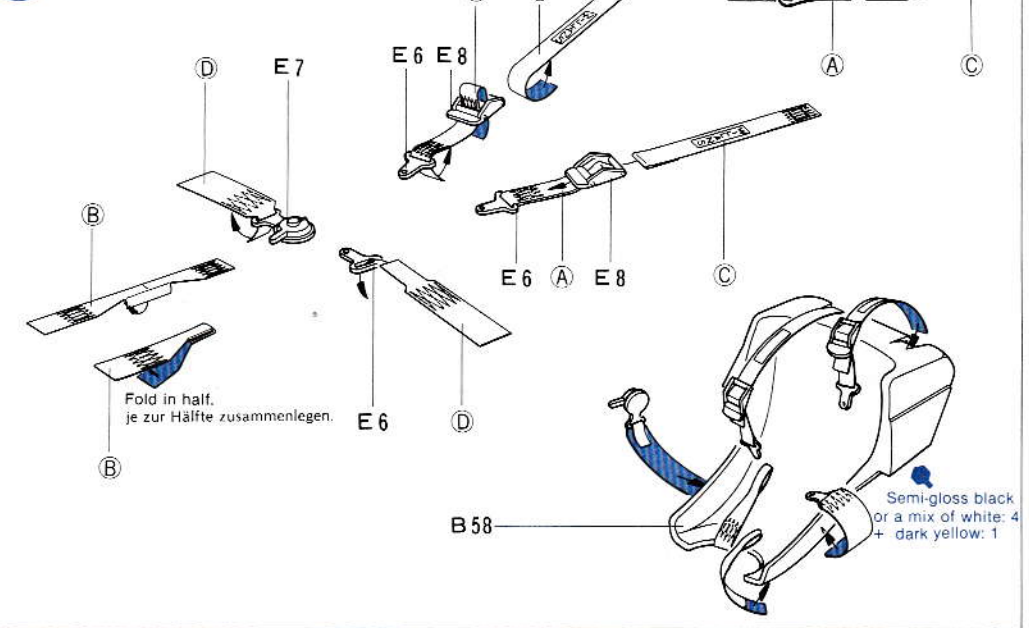
4 Attaching Front Upper Arms
Vord. Achsarm Einbau



5 Front Bulkhead
Feuerwand

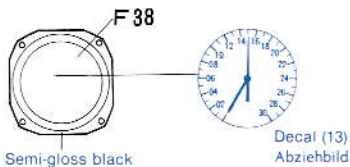


6 Seat Belts
Sitz-Gürtel

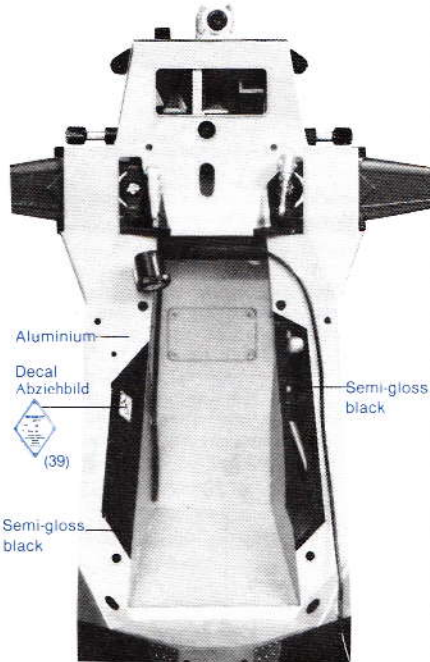


7 <<Chassis>>

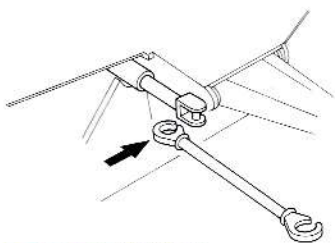
<<Decals for Boost Meter>>
<<Abziehbilder für Druckmesser>>



<<Painting and Applying Decals>>
<<Bemalung und Abziehbilder>>

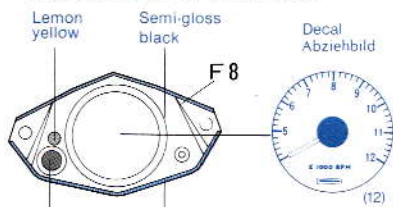


<<Linking Parts>>
<<Gelenkteile>>
★ Just snap in place.
★ Vorsichtig eindrücken.



8 <<Front Roll Bar>> <<Vord. Überroll-Bügel>>

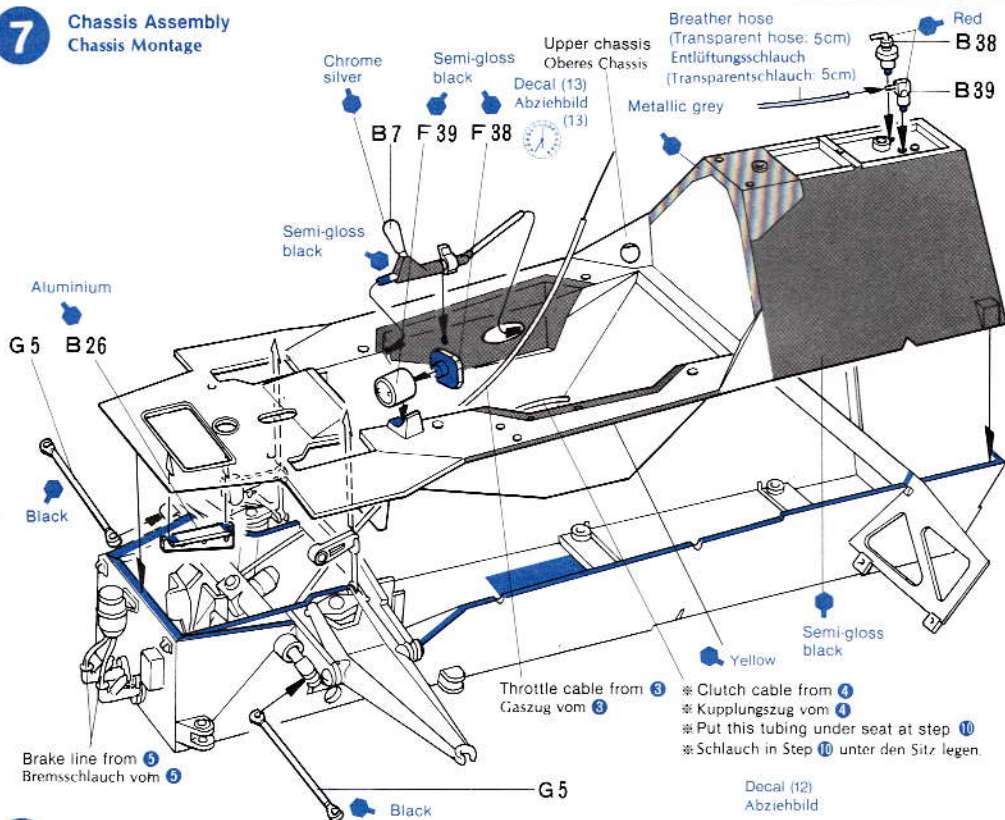
<<Decals for Tachometers>>
<<Abziehbilder für der Tachometers>>



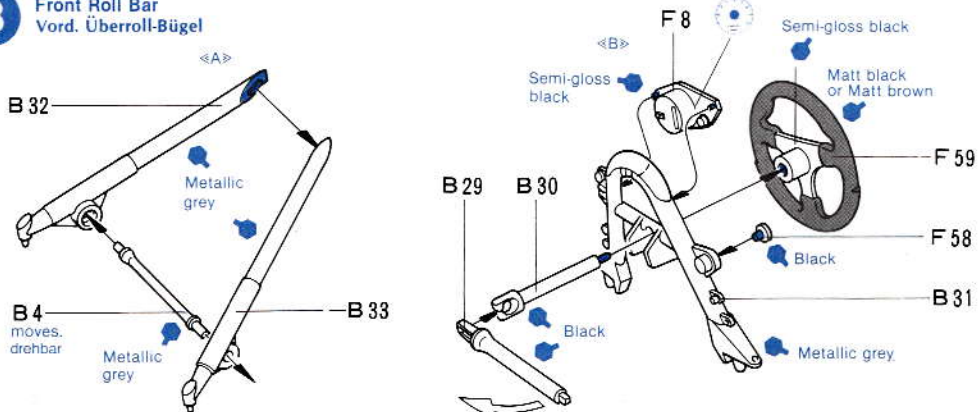
9 <<Front Uprights>> <<Vord. Achs-Lager>>



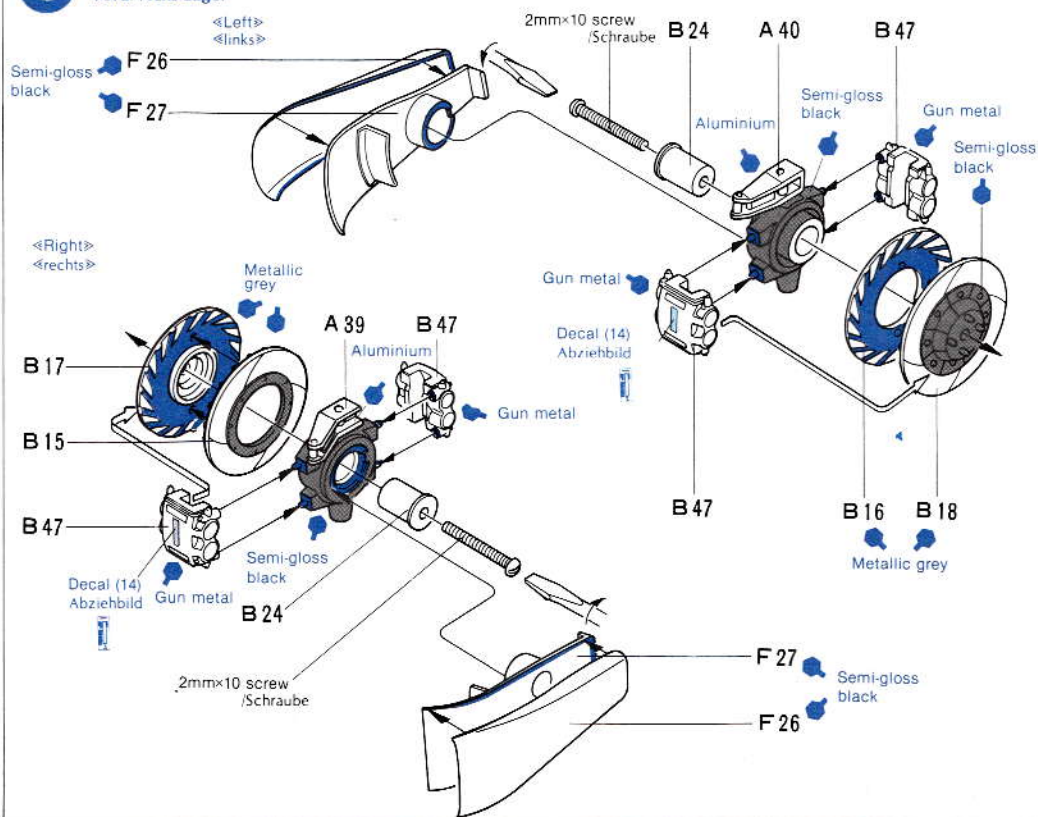
7 Chassis Assembly Chassis Montage



8 Front Roll Bar Vord. Überroll-Bügel



9 Front Uprights Vord. Achs-Lager

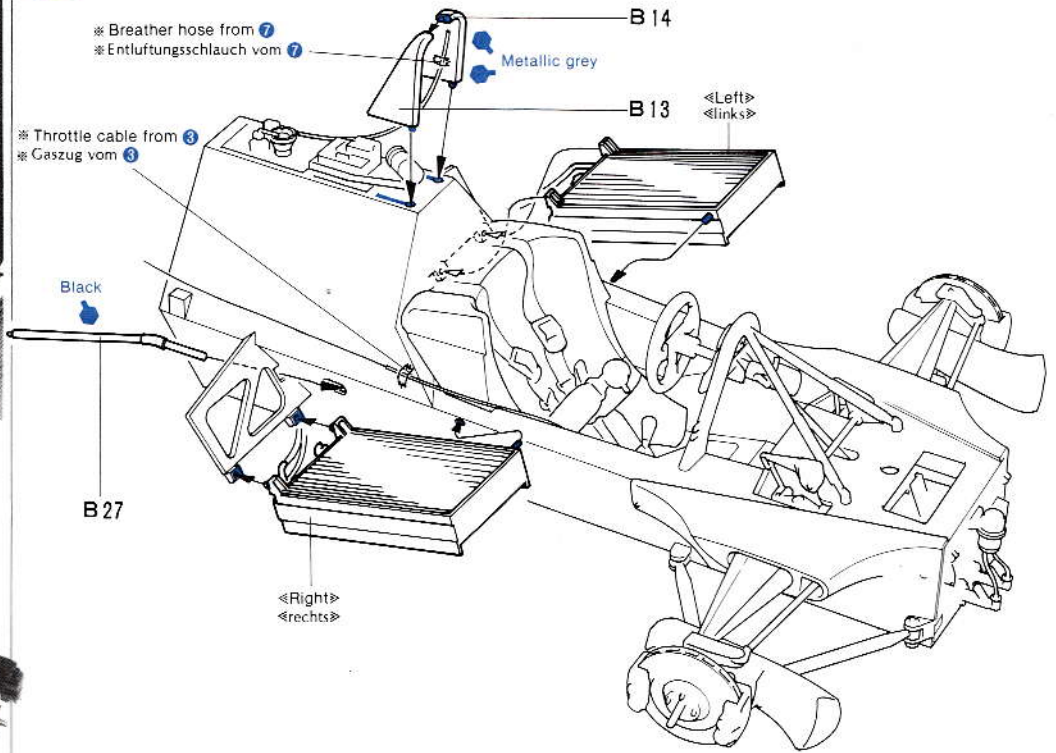


13 «Attached Radiator»
«Einbaute Kühler»

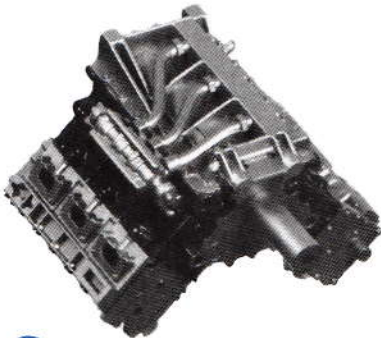


13 Attaching Radiators
Kühler Einbau

※ Hold with cellophane tape temporarily.
※ mit Tesa festhalten

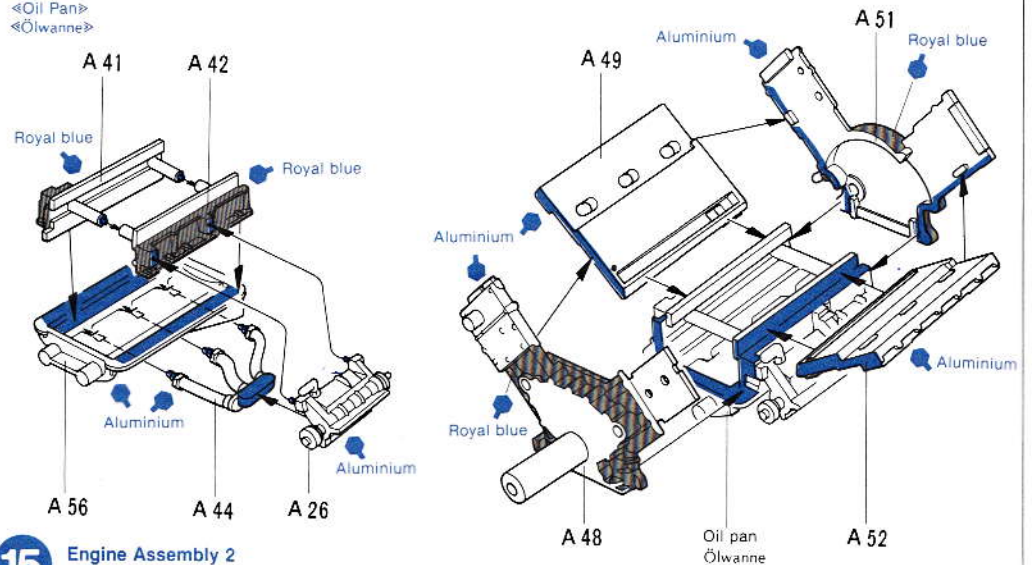


14 «Engine Assembly 1»
«Motorenbau 1»

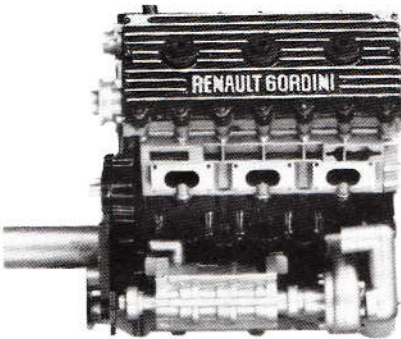


14 Engine Assembly 1
Motorenbau 1

«Oil Pan»
«Ölwanne»



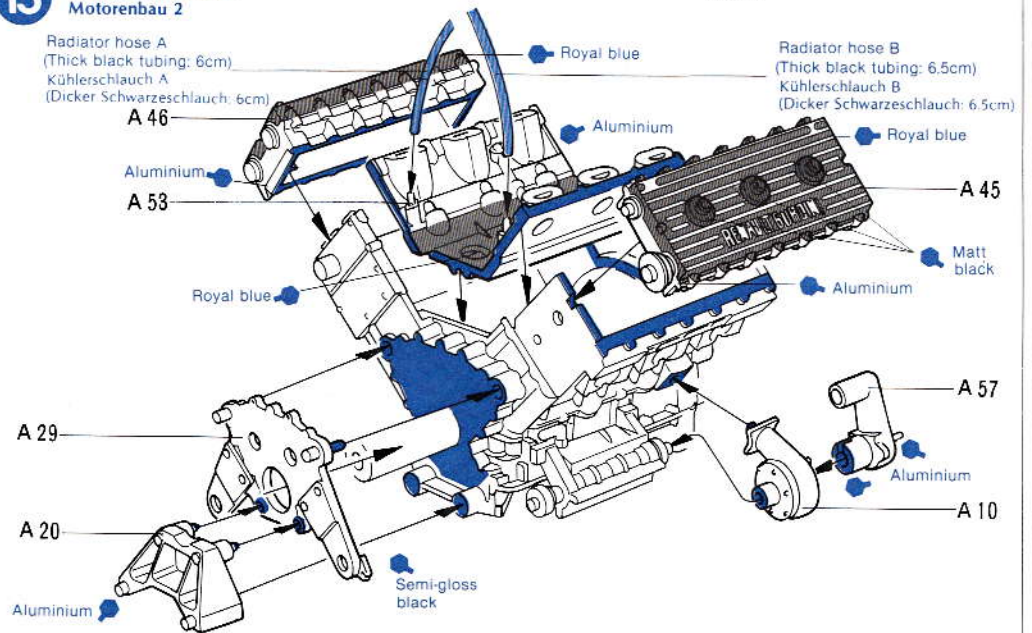
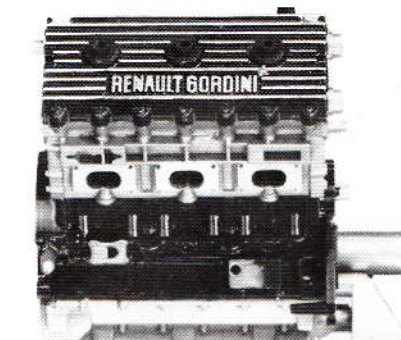
15 «Engine Assembly 2»
«Motorenbau 2»



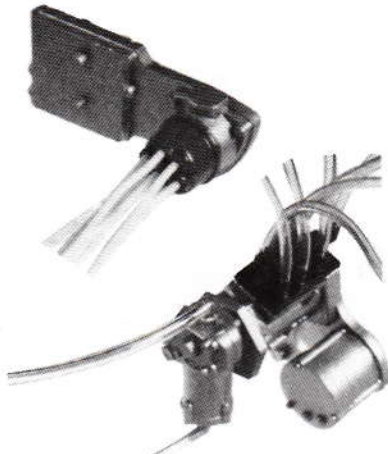
15 Engine Assembly 2
Motorenbau 2

Radiator hose A
(Thick black tubing: 6cm)
Kühlerschlauch A
(Dicker Schwarzeschlauch: 6cm)

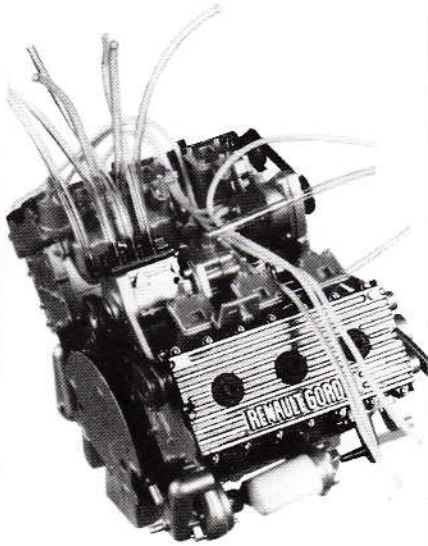
Radiator hose B
(Thick black tubing: 6.5cm)
Kühlerschlauch B
(Dicker Schwarzeschlauch: 6.5cm)



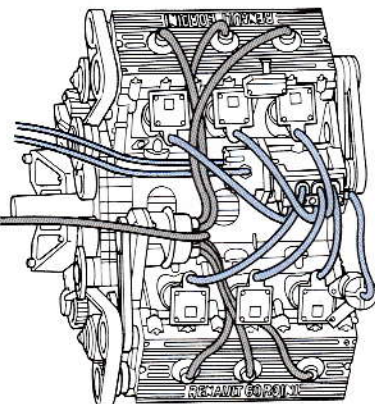
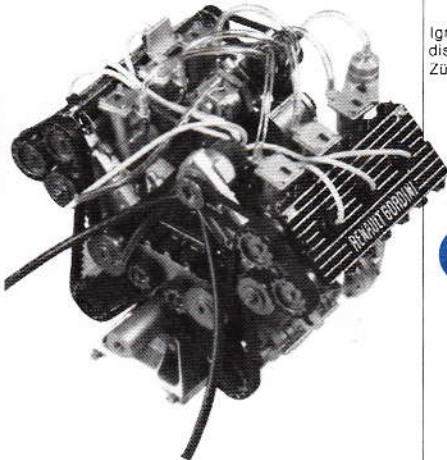
16 «Fuel Pump and Ignition»
«Kraftstoffpumps und Einspritzanlage»



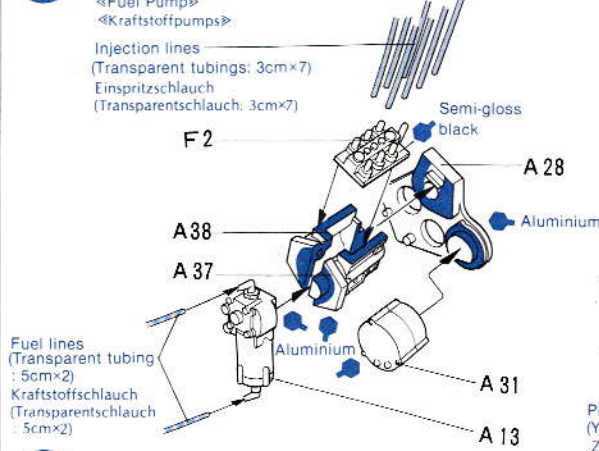
17 «Reference Photo»
«Bezugbild»



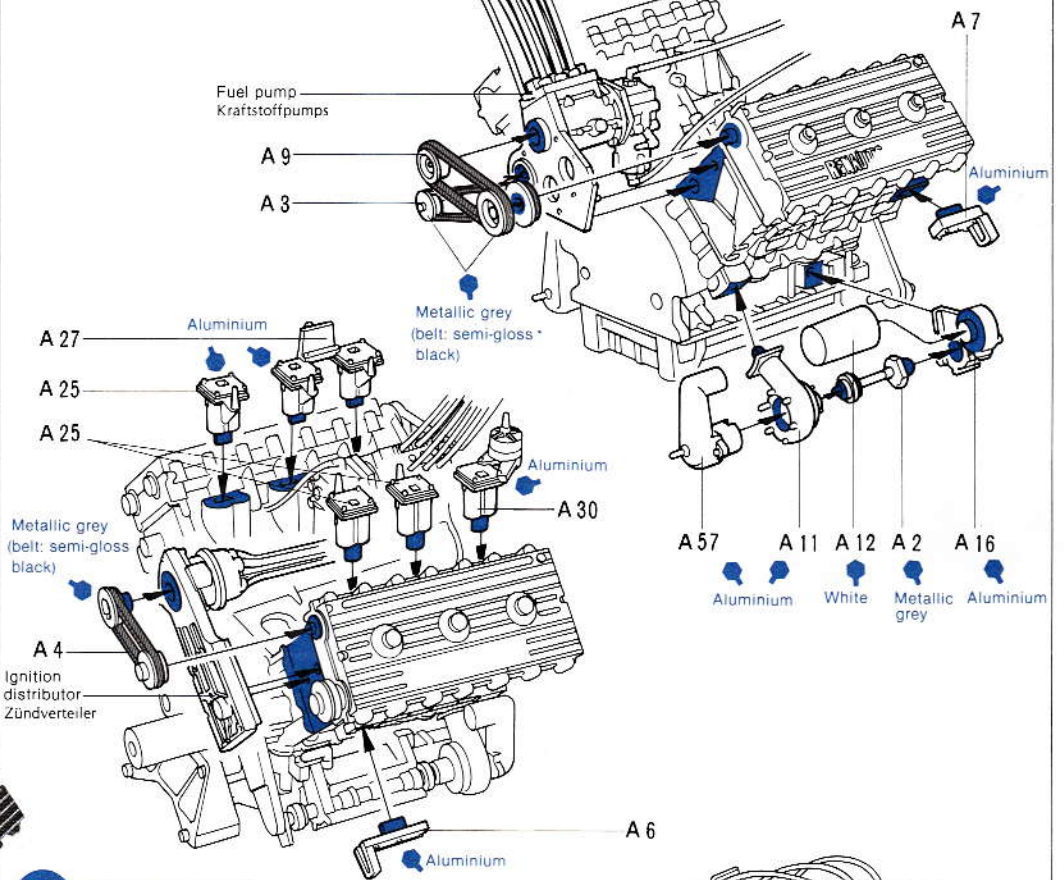
18 «Belt Attachment»
«Keilriemen Einbau»



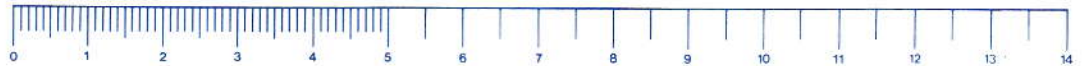
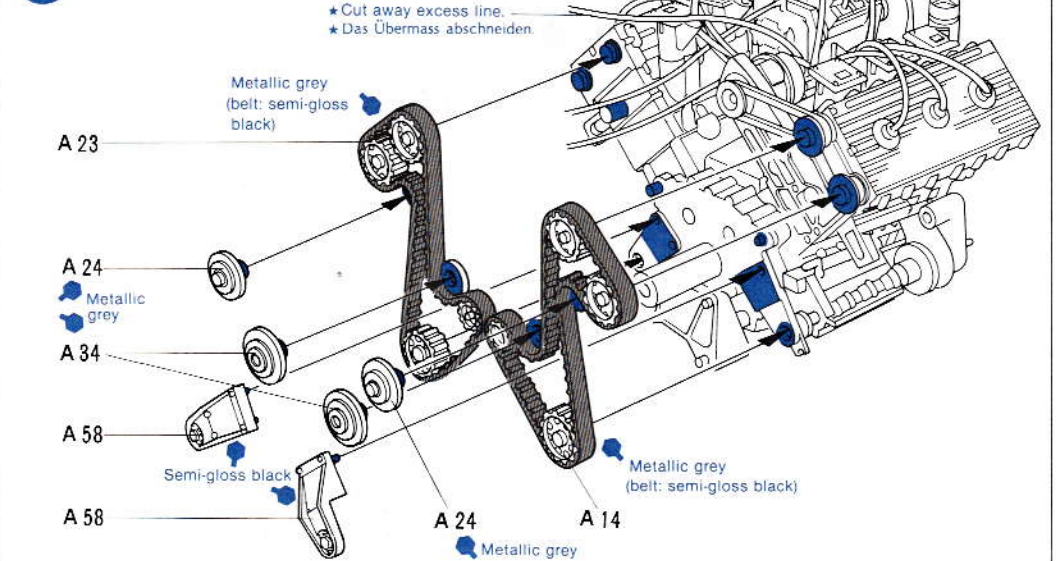
16 Engine Assembly 3
Motorenbau 3



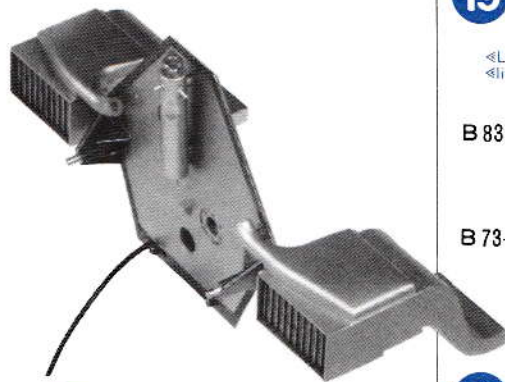
17 Engine Assembly 4
Motorenbau 4



18 Engine Assembly 5
Motorenbau 5



20 «Rear Bulkhead Assembly»
«Hint. Feuerwand Einbau»



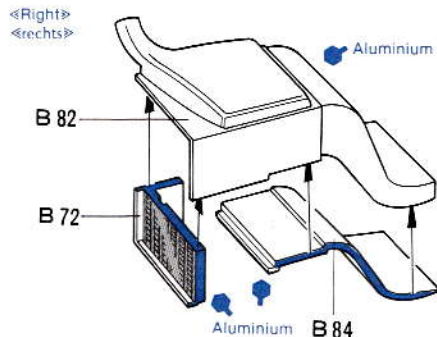
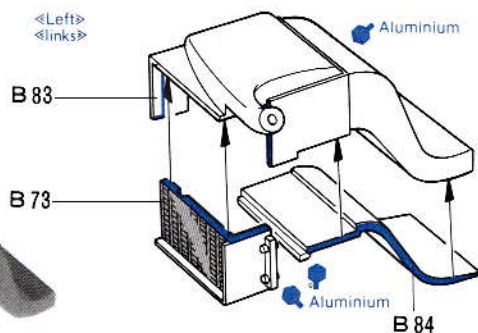
21 «Power Turbine»
«Kraft Turbine»



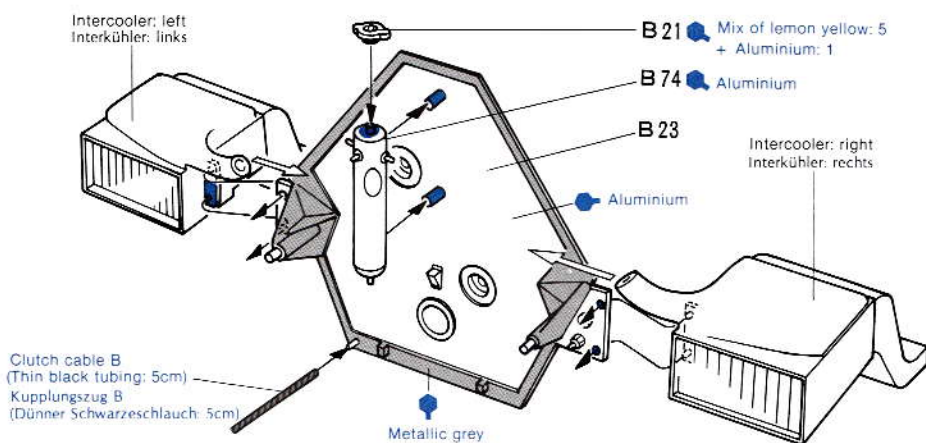
22 «Compressor Turbine»
«Kompressionsraum»



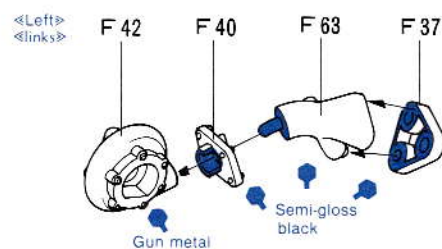
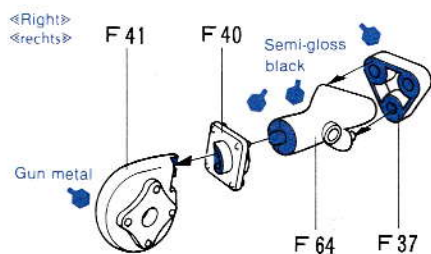
19 Intercooler
Interkühler



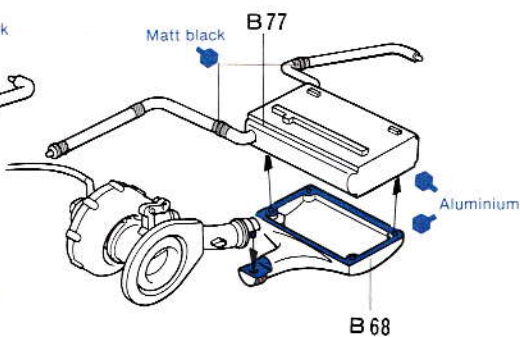
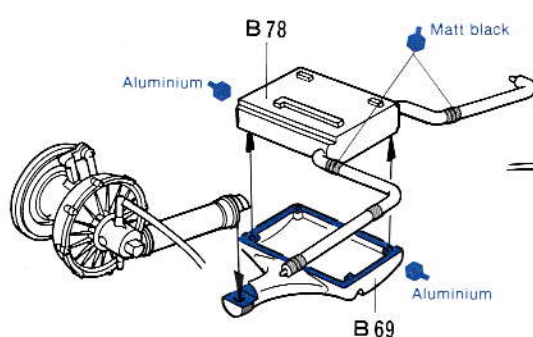
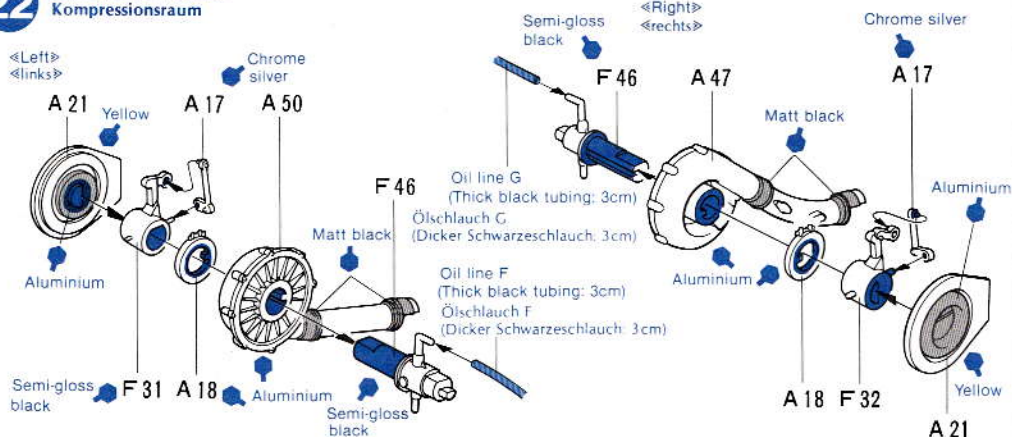
20 Rear Bulkhead
Hint. Feuerwand



21 Power Turbine
Kraft Turbine



22 Compressor Turbine
Kompressionsraum



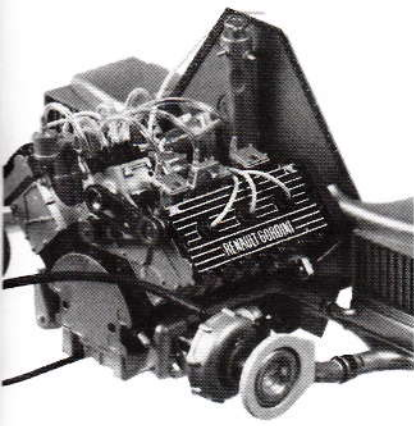
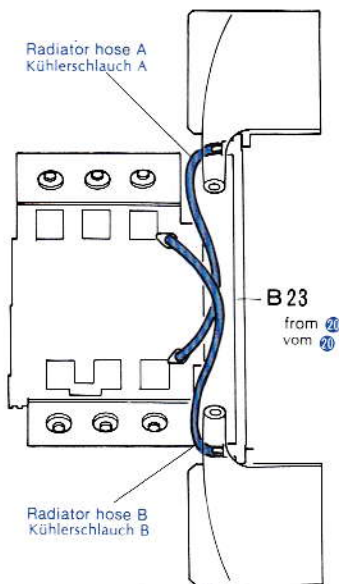
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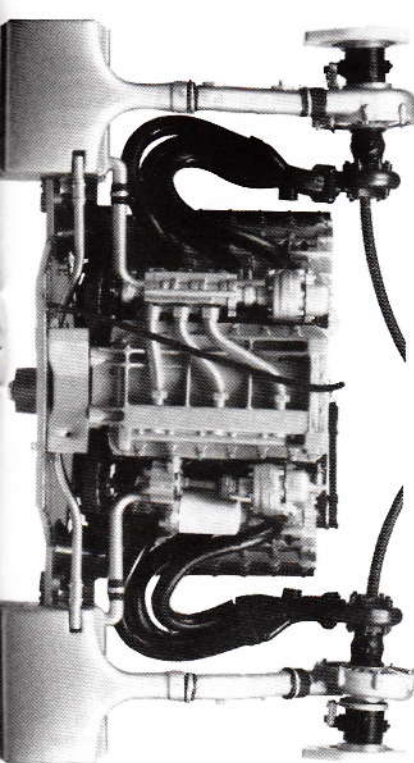
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23 <<Engine Installation>>
<<Motor Einbau>>

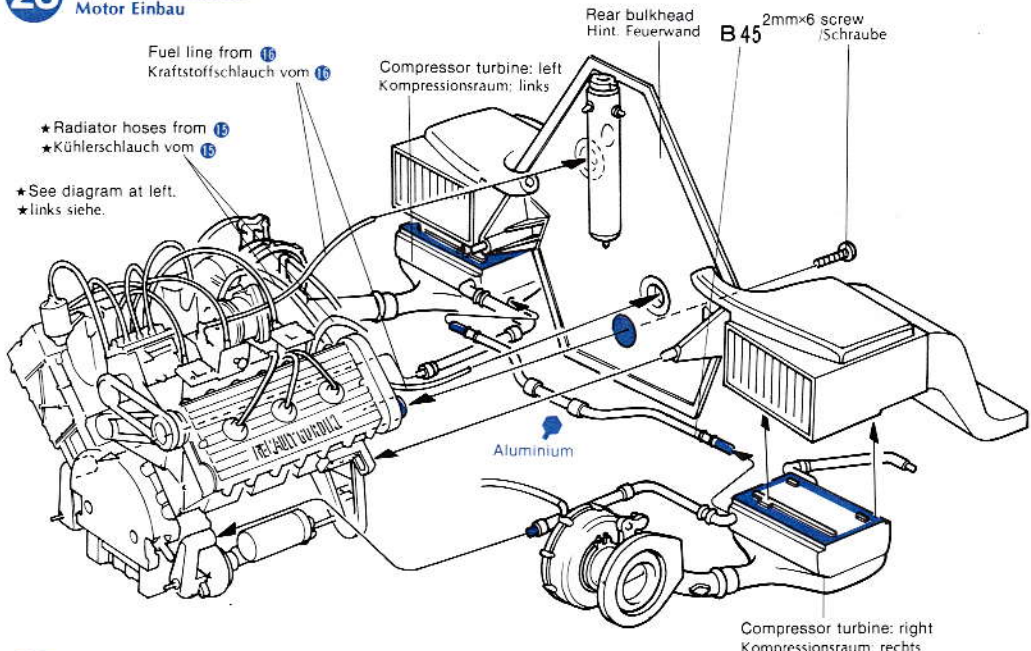
<<Installing Radiator Lines>>
<<Einbau der Kühlerschlauch>>



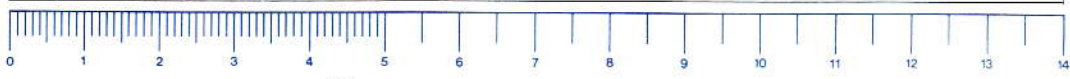
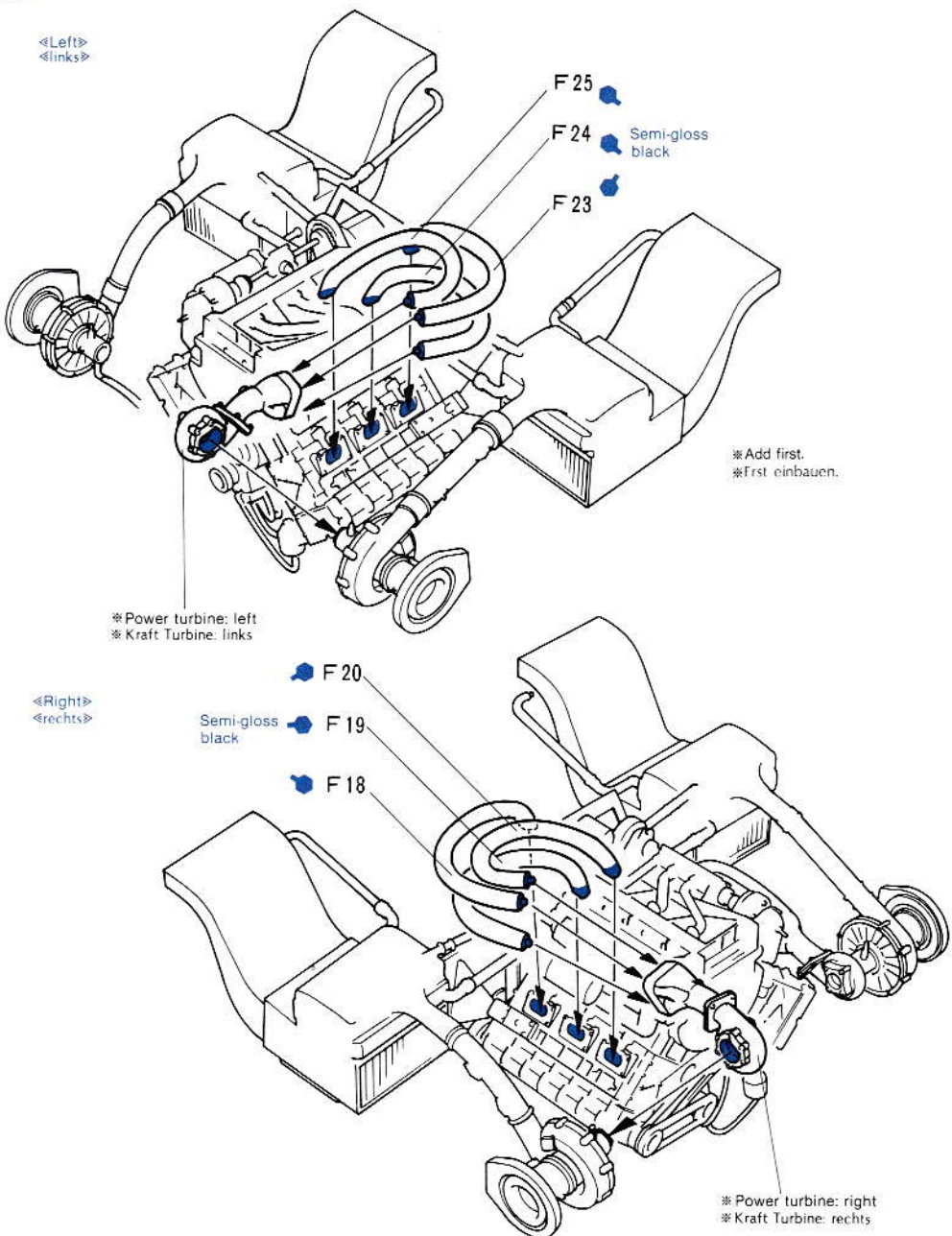
24 <<Exhaust Pipes>>
<<Auspuff>>



23 Engine Attachment
Motor Einbau



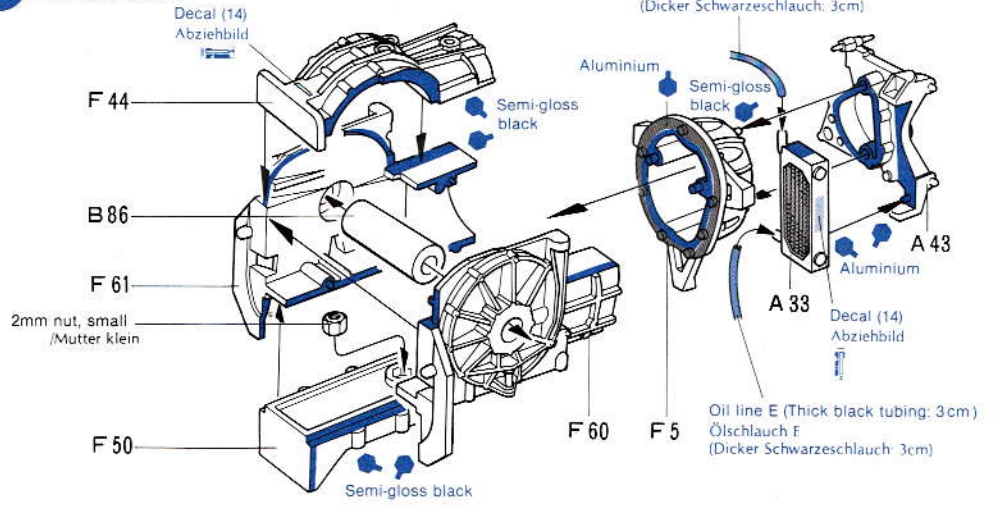
24 Assembly of Exhaust Pipes
Auspuff Einbau



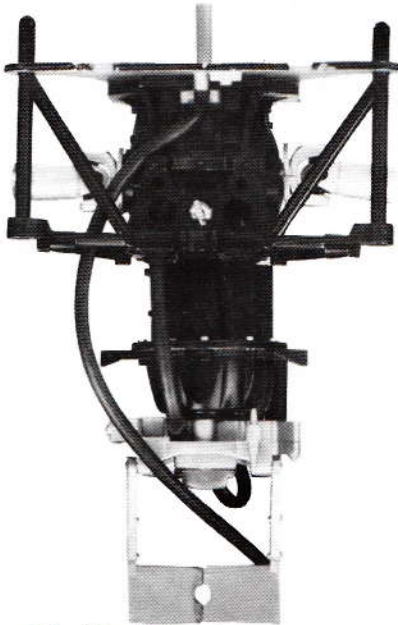
25 <<Gear Box>>
<<Getriebe Gehäuse>>



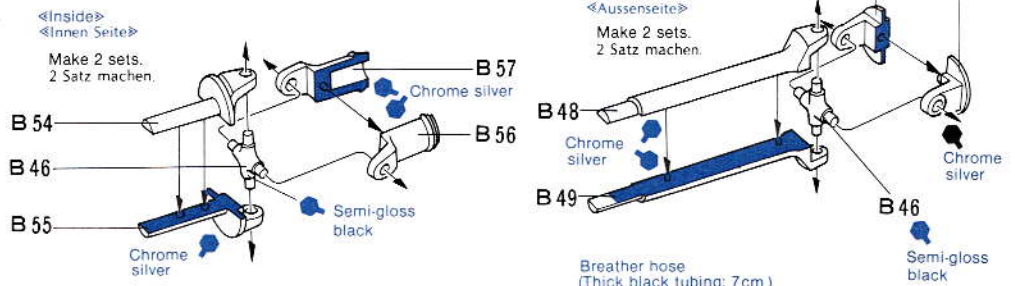
25 Gear Box
Getriebe-Gehäuse



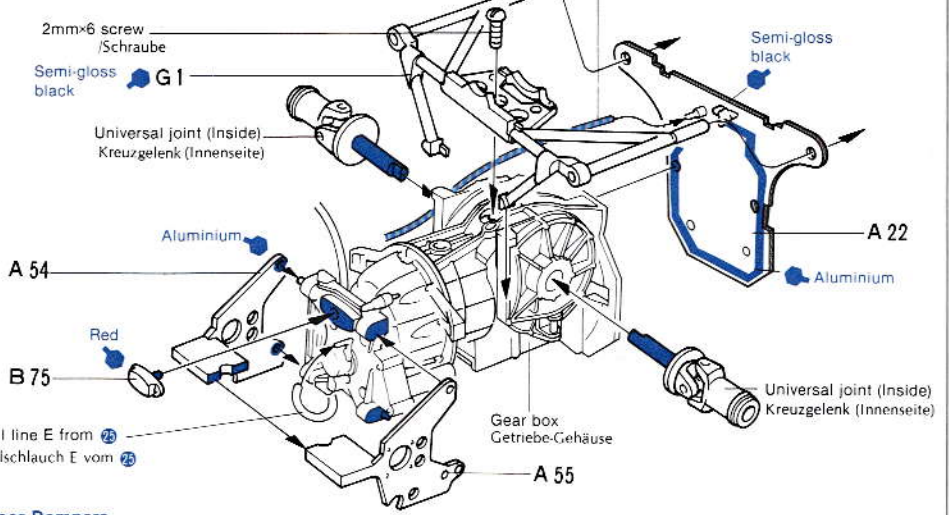
26 <<Universal Joints>>
<<Kreuzgelenk>>



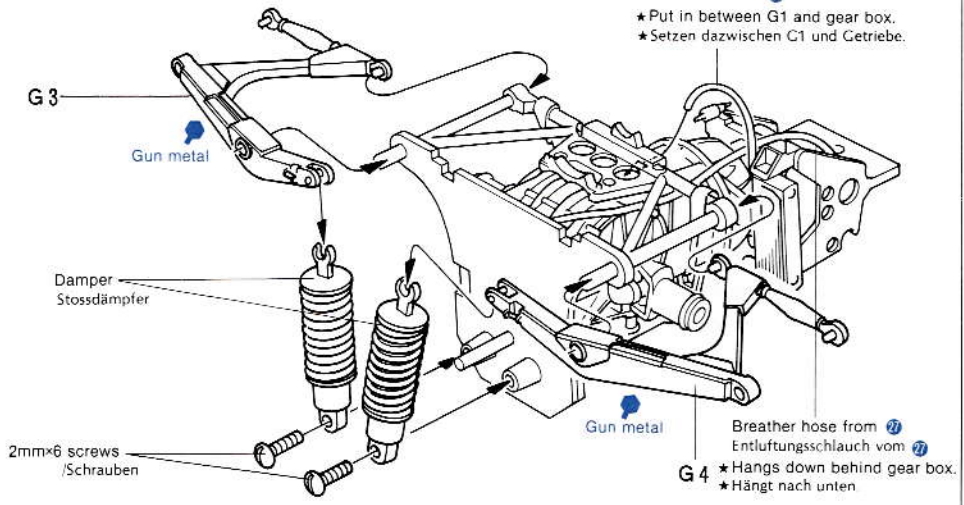
26 Universal Joints
Kreuzgelenk



27 Attaching Suspension Frame
Achsaufhängungsrahmen Einbau

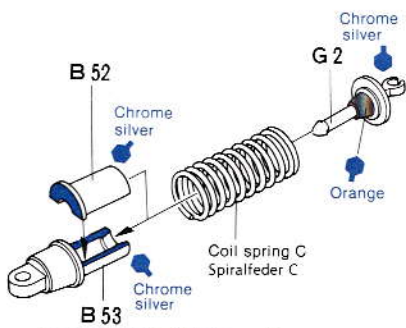


28 Rear Dampers
Hint. Stossdämpfer

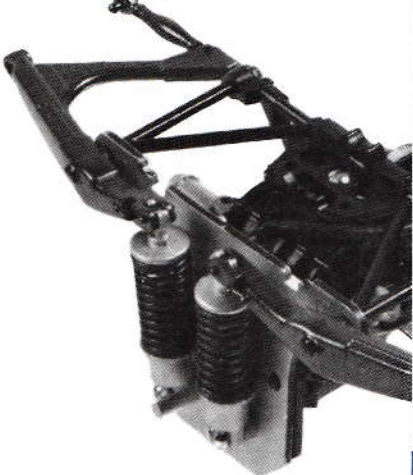


28 <<Rear Dampers>>
<<Hint. Stossdämpfer>>

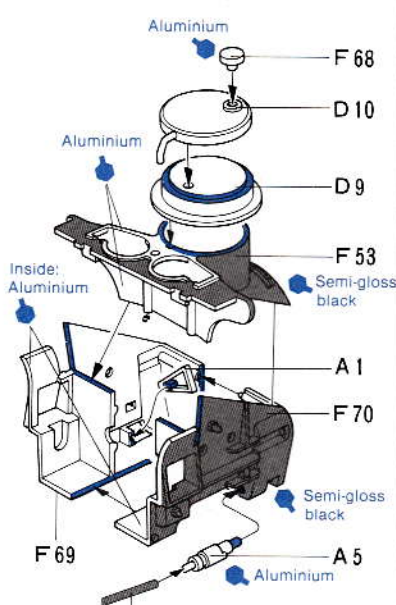
Make 2 sets.
2 Satz machen.



<<Rear Damper Attachment>>
<<Hint. Stossdämpfer Einbau>>

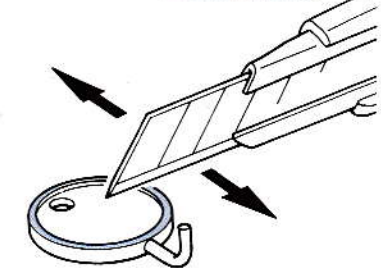


29 <<Oil Tank Support Frame Assembly>>
<<Ölgehäusestützen>>

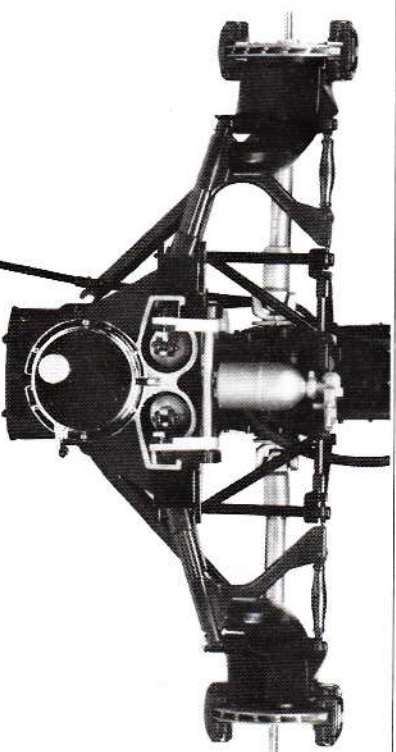


Starter air line
(Medium black tubing: 7cm)
Anlasser Luftschlauch
(Mittel Schwarzeschlauch: 7cm)

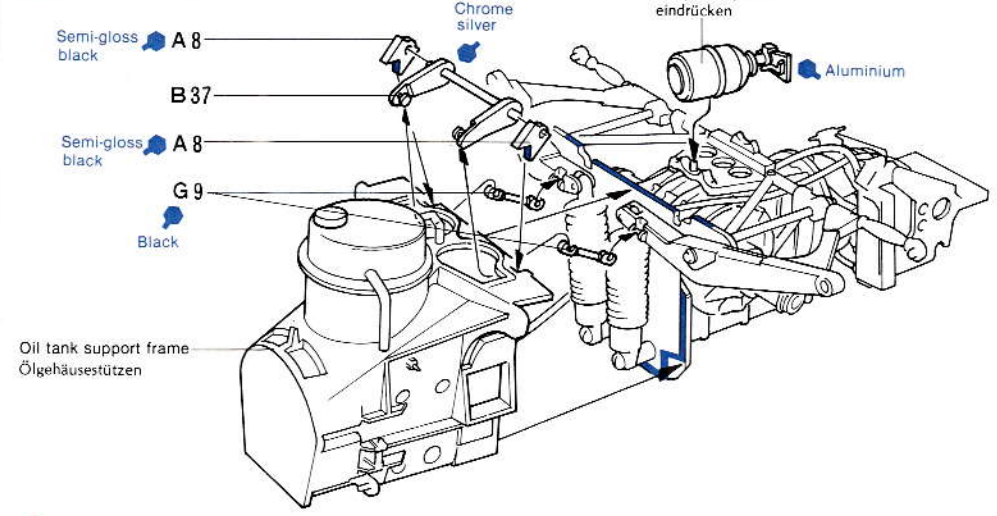
Before cementing plated parts, remove plating from surface to be cemented with a knife.
Chromschicht an Klebestellen entfernen.



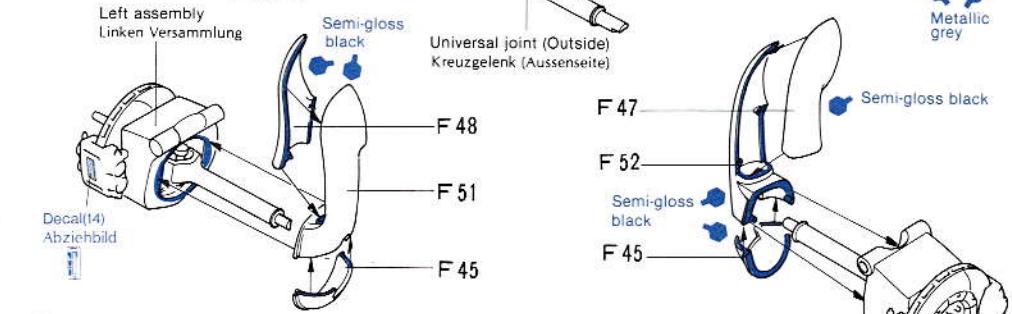
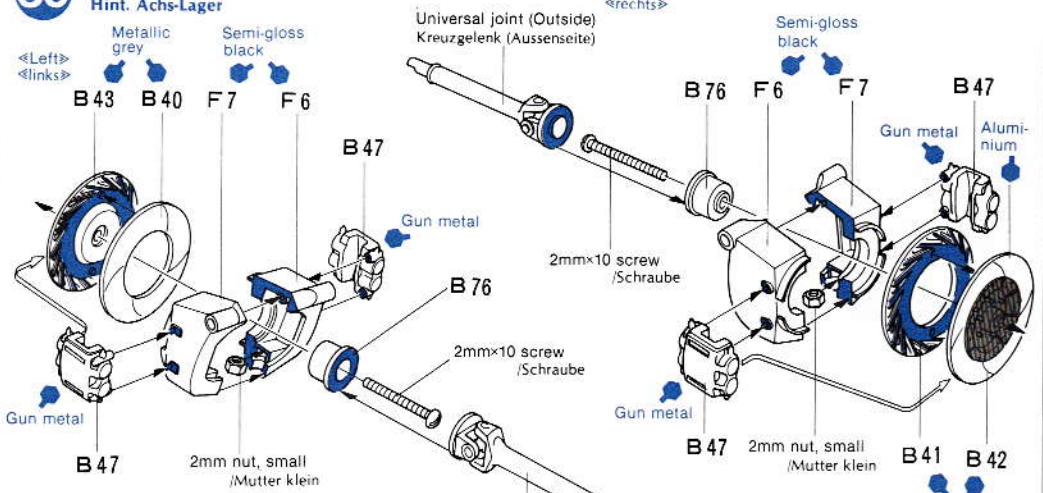
31 <<Attaching Rear Uprights>>
<<Einbau der Vord. Achs-Lager>>



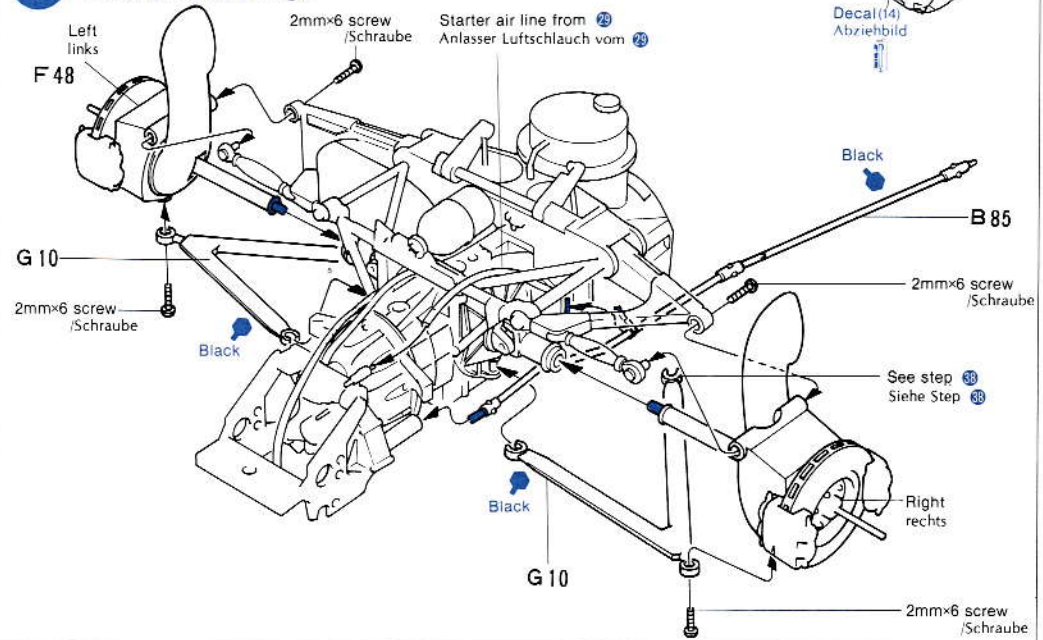
29 Attaching Support Frame
Einbau der Ölgehäusestützen



30 Rear Uprights
Hint. Achs-Lager

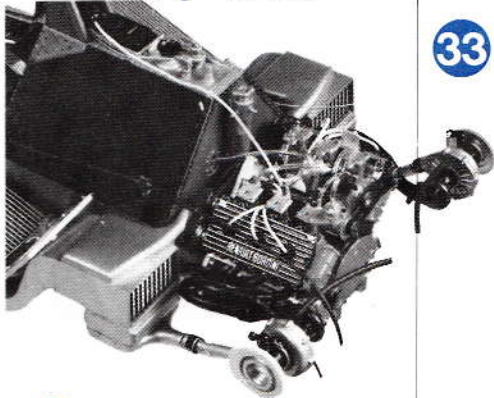
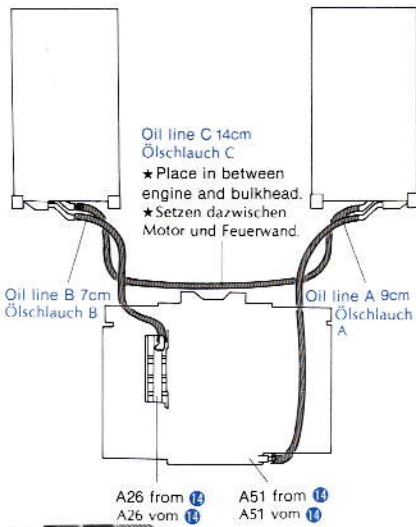


31 Attaching Rear Uprights
Einbau der Vord. Achs-Lager



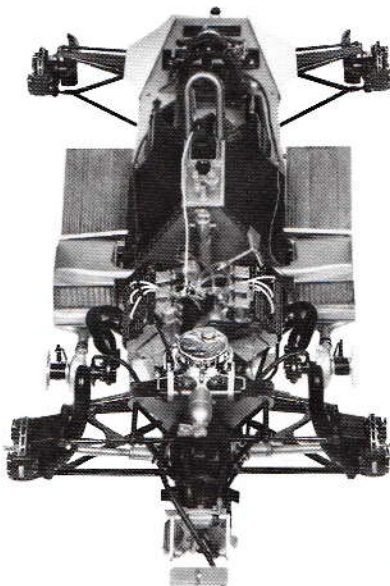
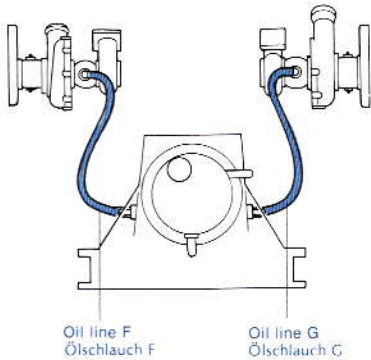
32 «Rear Bulkhead»
«Hint. Feuerwand»

«Installation of Oil Lines A, B and C»
«Einbau der Ölschläuche A, B und C»

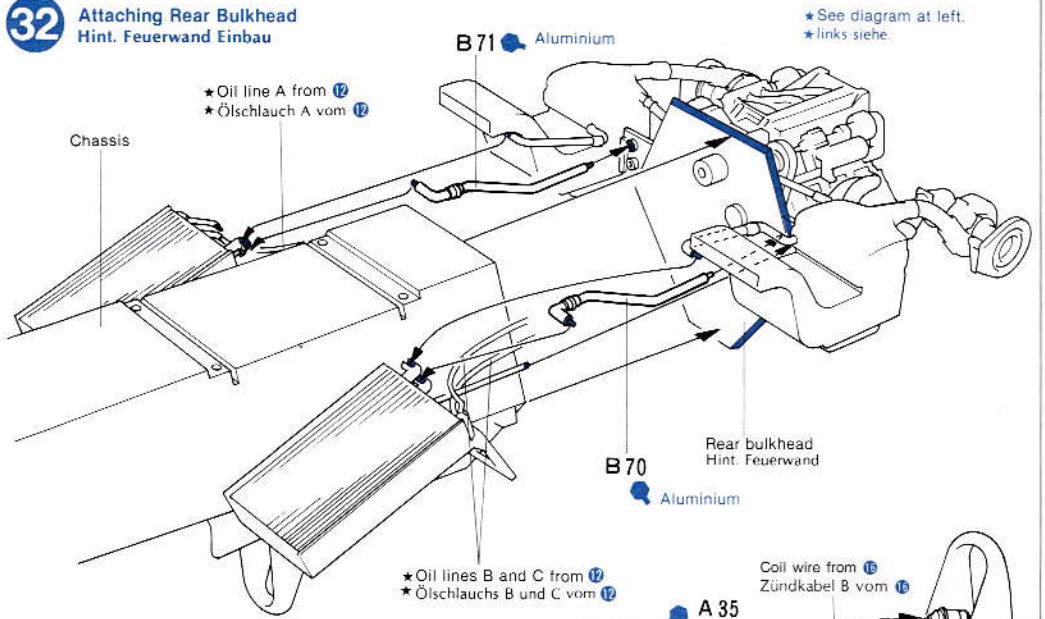


33 «Gear Box Attachment»
«Getriebe-Gehäuse Einbau»

«Top View of Gear Box»
«Ansicht von oben»

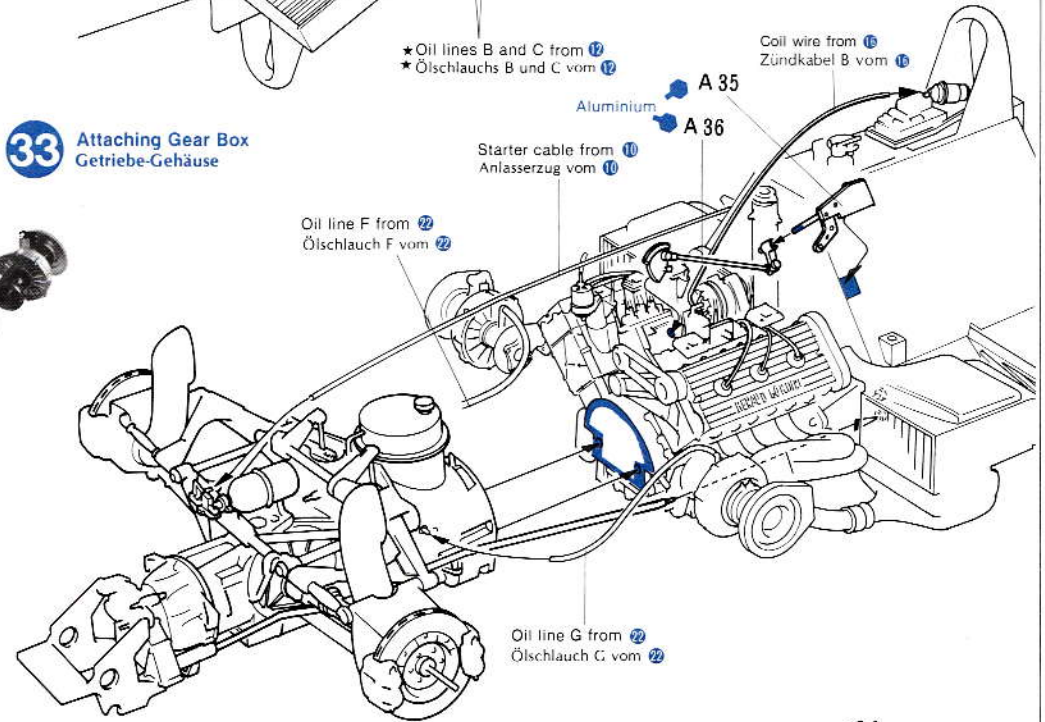


32 Attaching Rear Bulkhead
Hint. Feuerwand Einbau



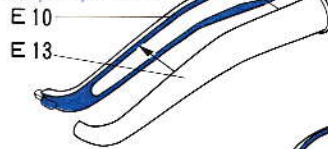
★ See diagram at left.
★ links siehe.

33 Attaching Gear Box
Getriebe-Gehäuse



34 Exhaust Pipes
Auspuff

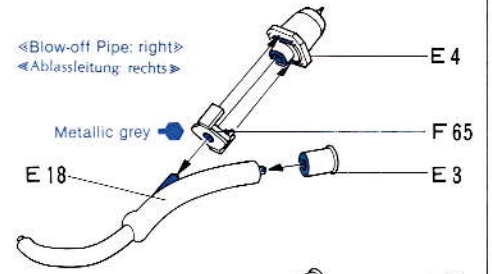
«Tail Pipe: right»
«Auspufftopf. rechts»



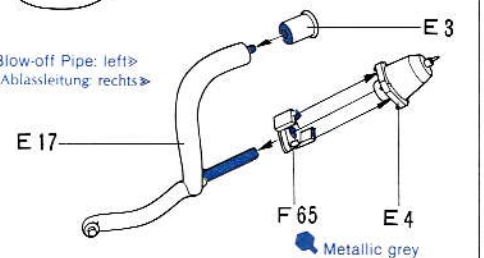
«Tail Pipe: left»
«Auspufftopf. links»



«Blow-off Pipe: right»
«Ablasleitung: rechts»

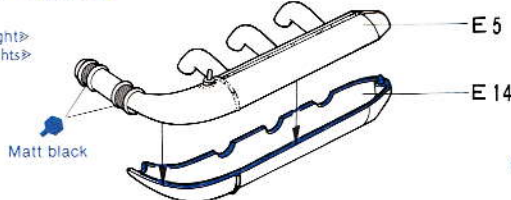


«Blow-off Pipe: left»
«Ablasleitung: links»

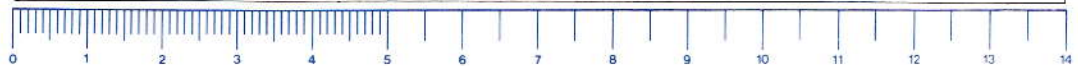
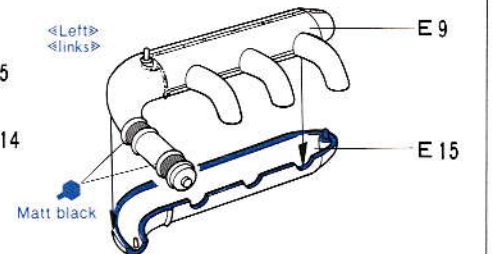


35 Intake Manifolds
Saugleitung

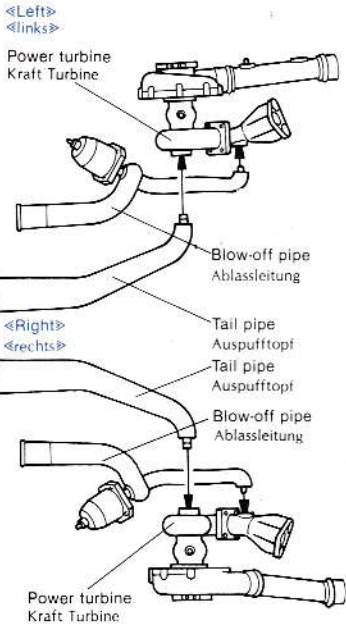
«Right»
«rechts»



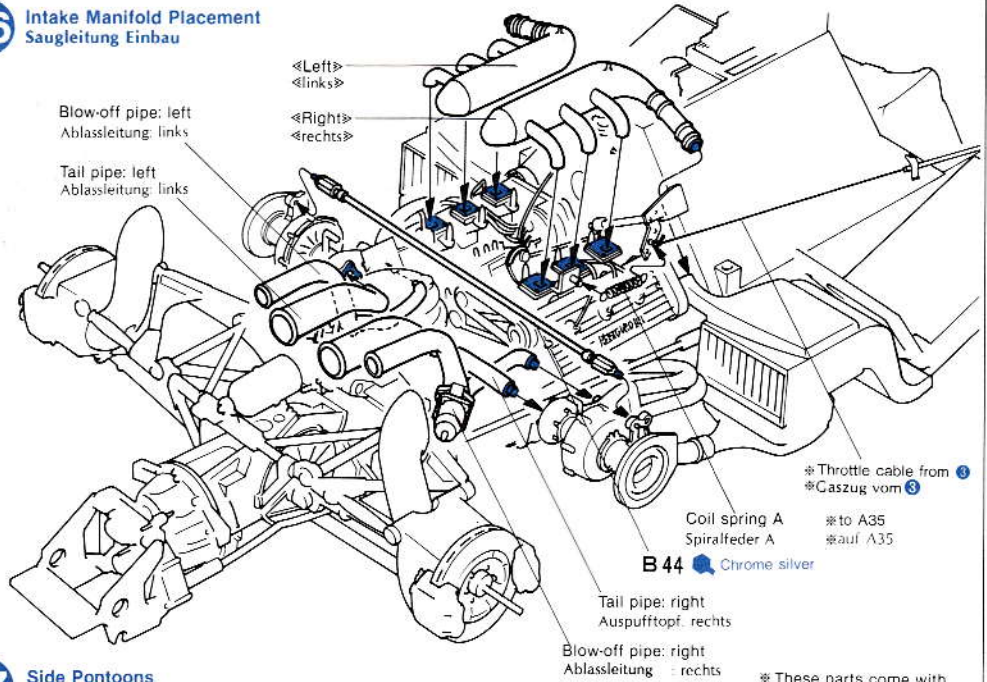
«Left»
«links»



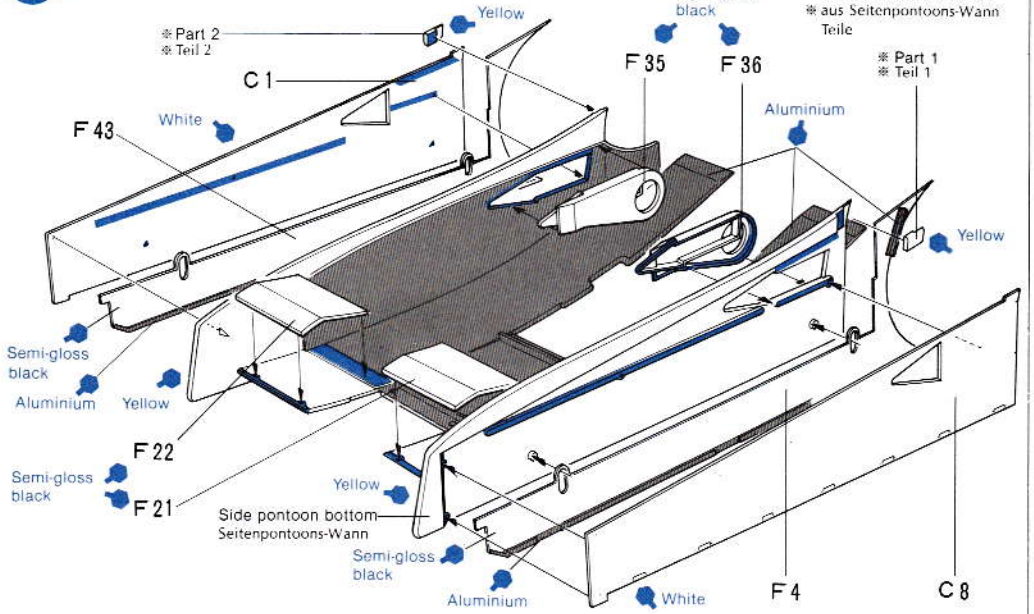
36 <<Installation of Exhaust Pipes>>
<<Auspuff Einbau>>



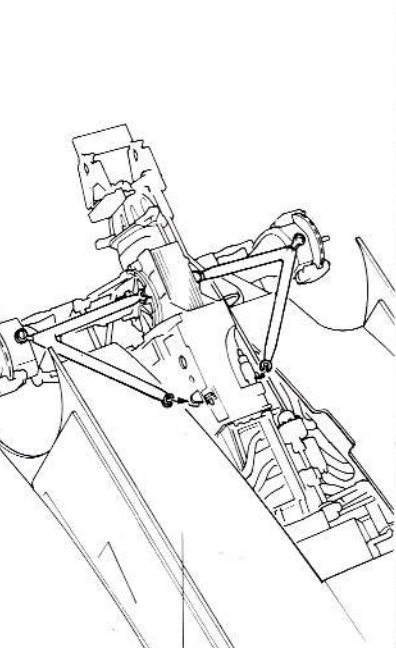
36 Intake Manifold Placement
Saugleitung Einbau



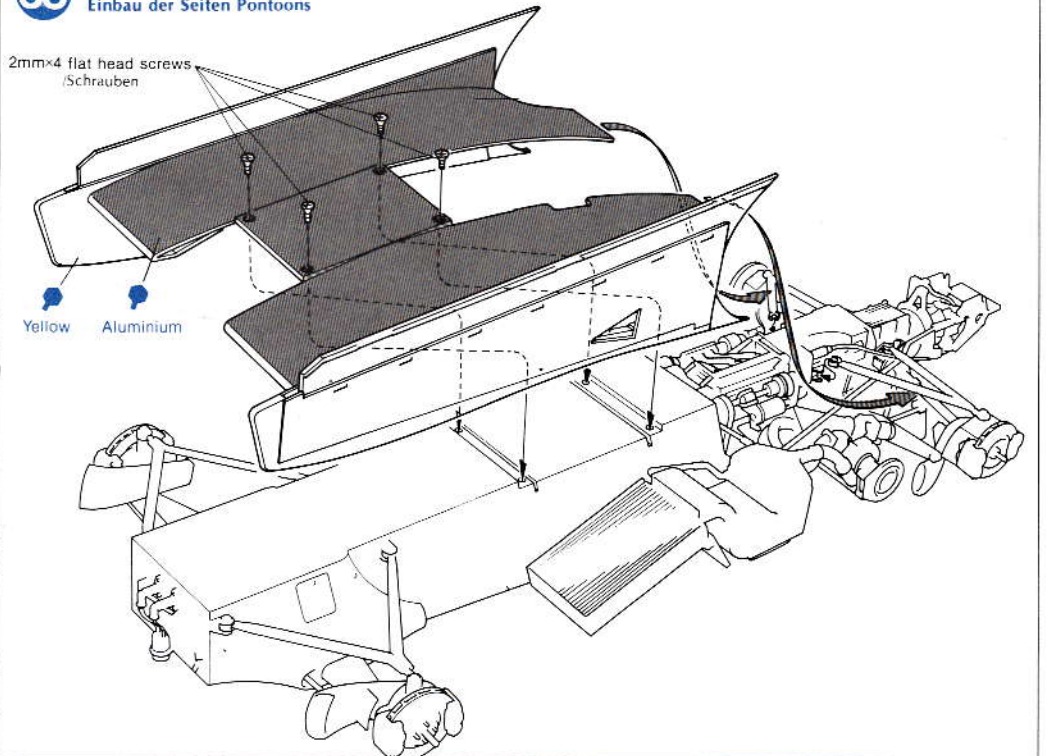
37 Side Pontoons
Seiten Pontoons



38 <<G10's snap into place>>
<<G10's eindrücken>>



38 Attaching Side Pontoon
Einbau der Seiten Pontoons

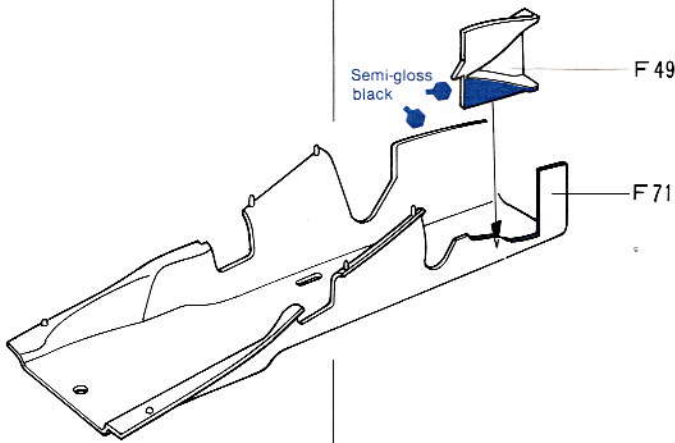


Side pontoons
Seiten Pontoons

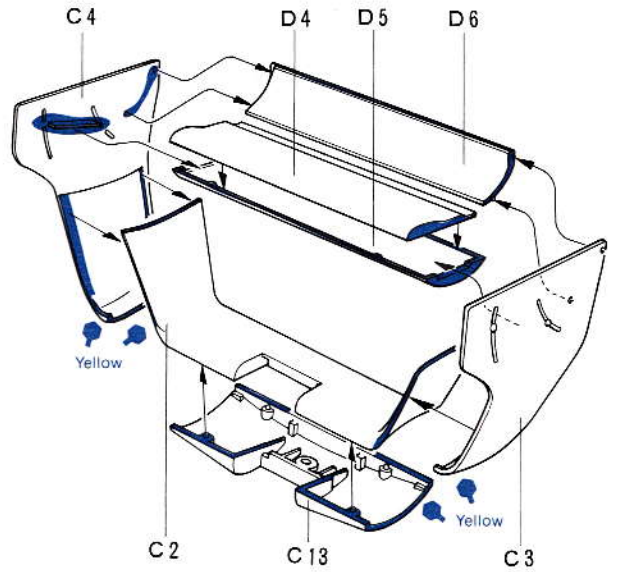
* These slip between G10 and drive shaft
* Setzen dazwischen G10 und Antriebswelle

39 «Engine Cover»
«Chassisabdeckung»

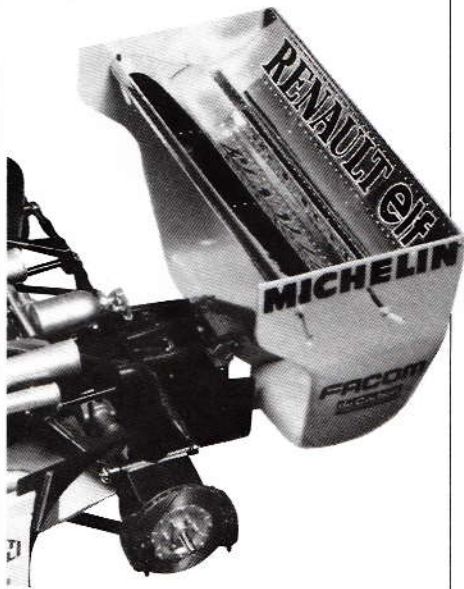
- ★ Remove plating from surfaces to be cemented.
- ★ Chromschicht an Klebestellen entfernen.



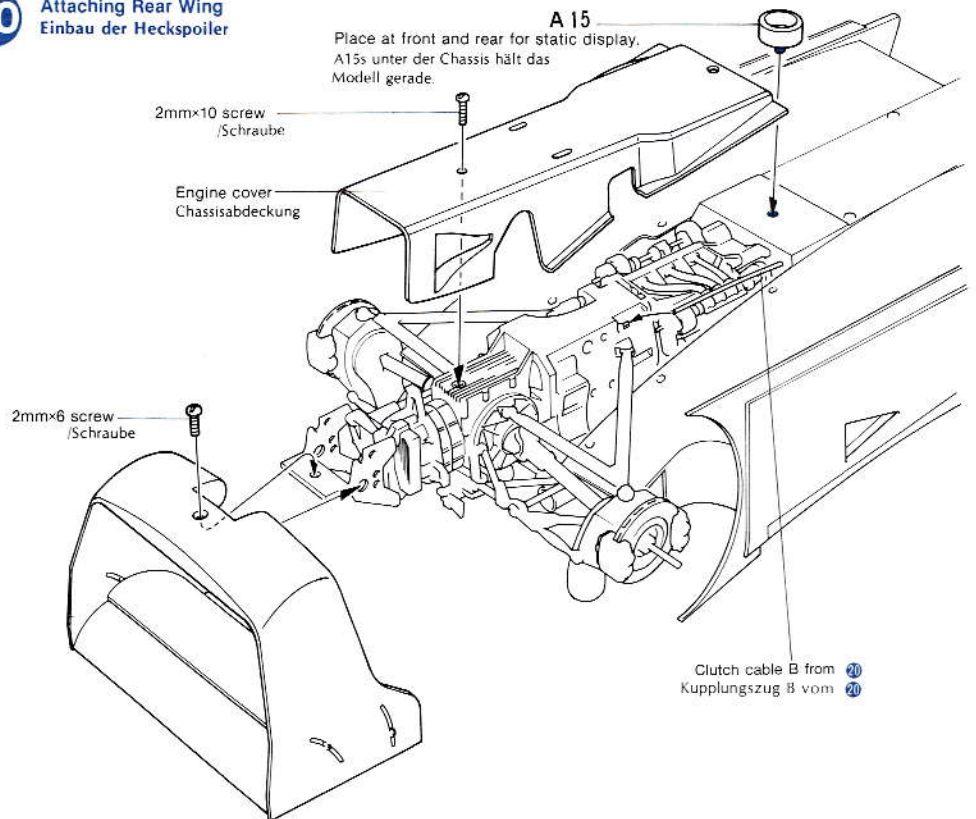
39 Rear Wing
Heckspoiler



40 «Rear Wing»
«Heckspoiler»



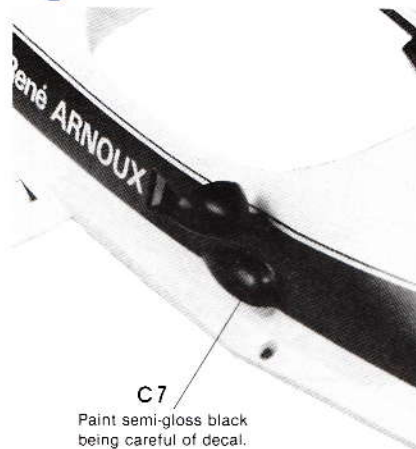
40 Attaching Rear Wing
Einbau der Heckspoiler



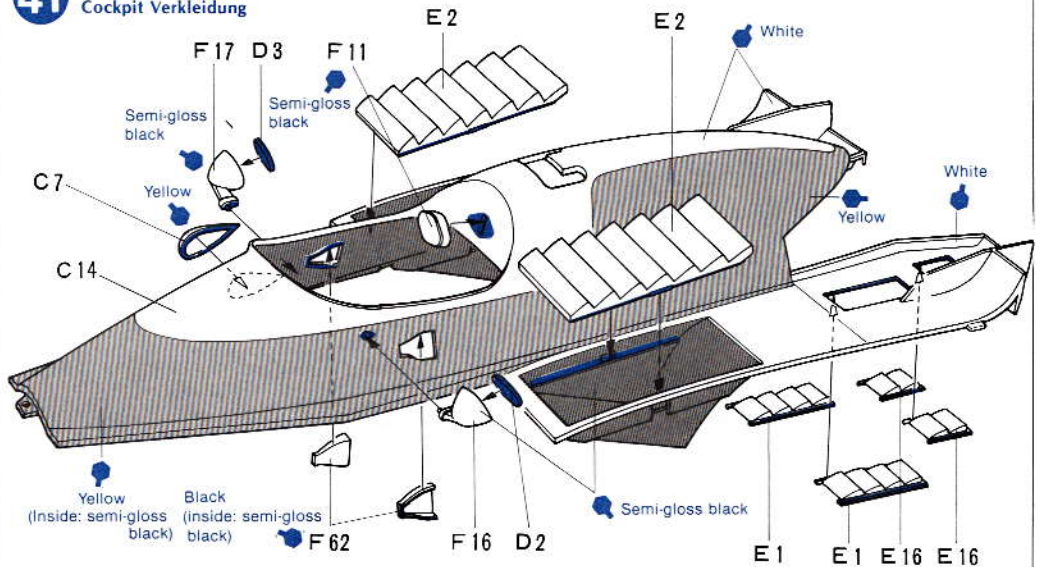
A 15

- ★ Use A15 under the completed model for static display.
- ★ A15 unter den Chassis hält das Modell gerade.

41 «Cockpit Cowling»
«Cockpit Verkleidung»

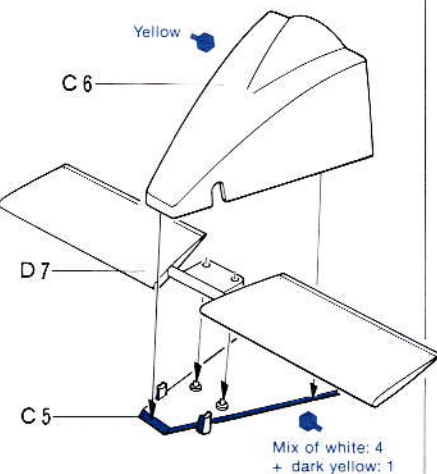


41 Cockpit Cowling
Cockpit Verkleidung



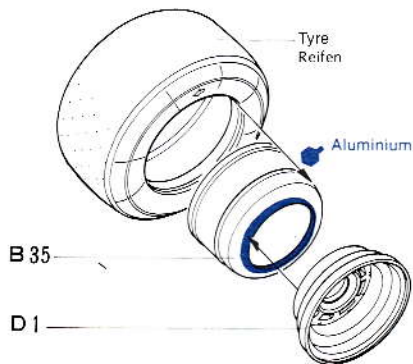
42 <<Wheels>>
<<Räder>>

<<Nose Cowling>>
<<Vord. Verkleidung Spoiler>>

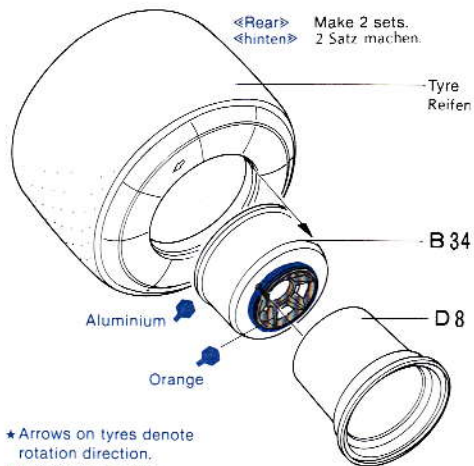


42 Wheels
Räder

<<Front>> Make 2 sets.
<<vorne>> 2 Satz machen.

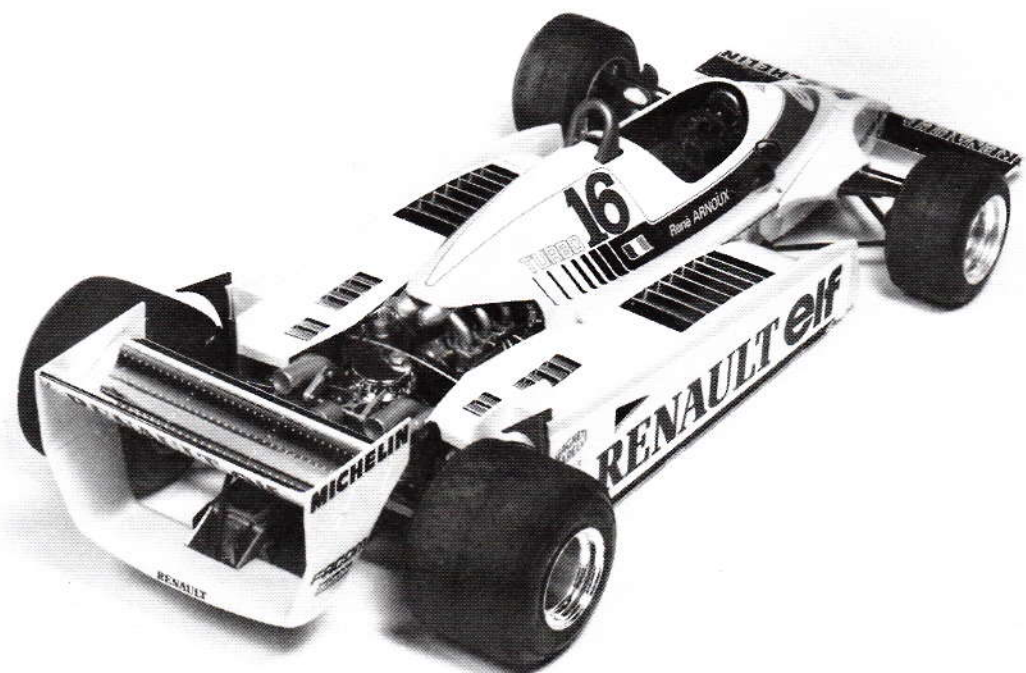
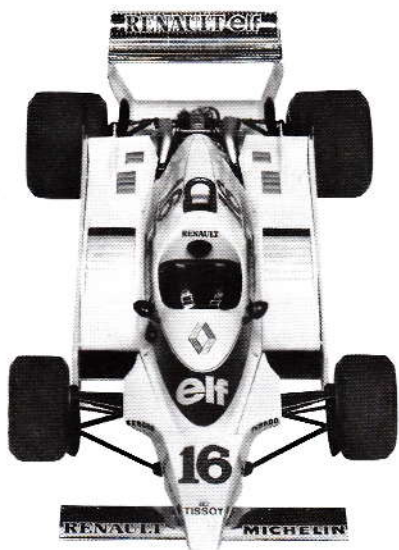
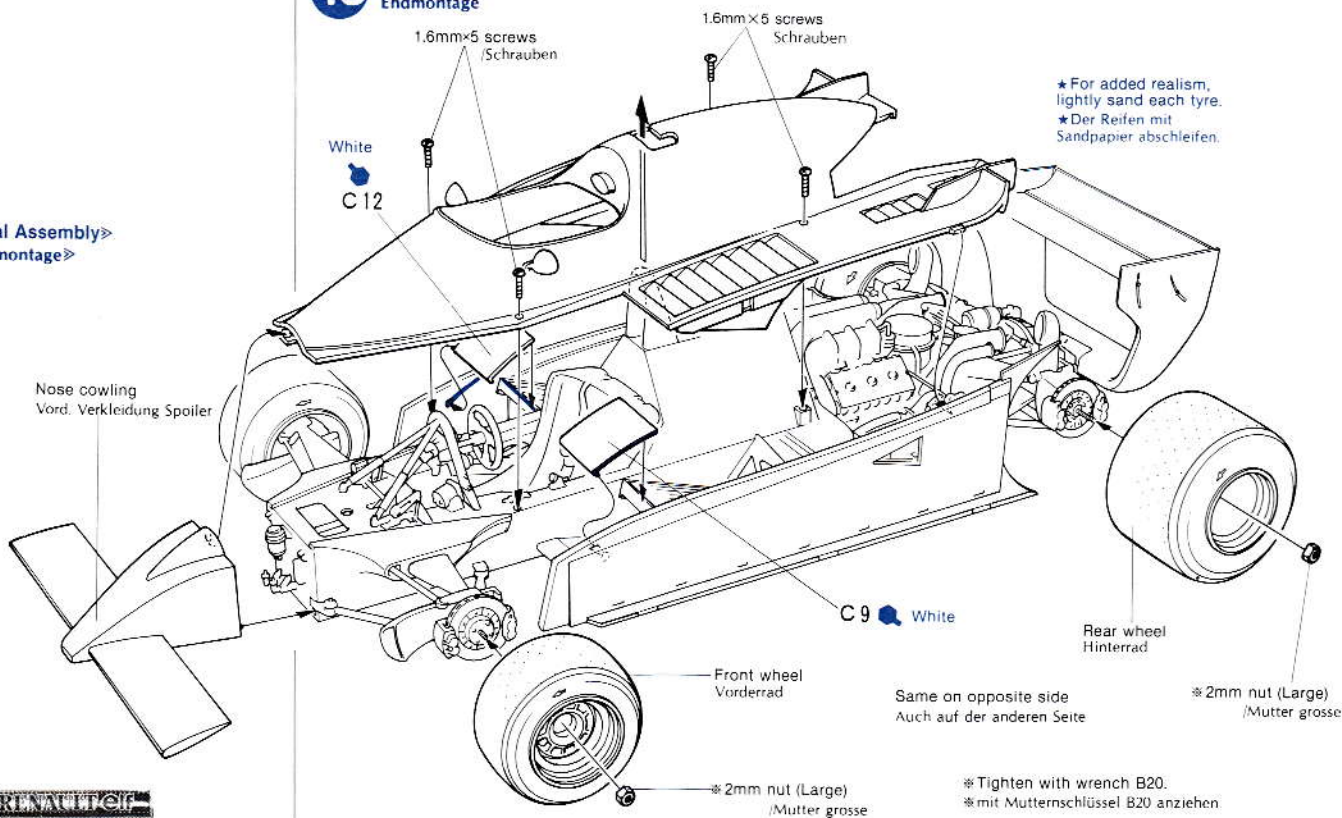


<<Rear>> Make 2 sets.
<<hinten>> 2 Satz machen.



43 Final Assembly
Endmontage

43 <<Final Assembly>>
<<Endmontage>>



PAINTING & APPLYING DECALS

«Painting of Renault RE20»

Diagrams at right depict the Renault-Elf in the markings and colour scheme as seen at the United States Western Grand Prix in early 1980. Overall colour was a bright lemon yellow, with a gloss black band around the cockpit. The race number 16 was in royal blue when driven by Rene Arnoux. Tail and blow-off pipes were tinged with a bright blue from the heat of the exhaust. This was most noticeable where the pipes curved. Top of the cockpit cowling is white, and there is a very thin lemon yellow band separating the white top from the black band. Camshaft covers on both engine heads were royal blue, with the Renault lettering and shallow fins in aluminium. The steering wheel is in brown leather on Arnoux's number 16 and black leather on Jabouille's number 15 car. The louvers on top of the pontoons were polished aluminium, but not as bright as the rear wing. There were no oil stains or smudge marks on the surface of the racers, and were always kept in pristine condition.

«Bemalung der Renault RE-20»

Die Zeichnung rechten zeigen den Renault-Elf wie er im US Western Grand Prix Anfang 1980 gefahren wurde: Ganz in zitronengelb mit einem schwarzen Streifen um das Cockpit. Der Wagen gefahren von Rene Arnoux hatte die Nummer 16 in royalblau. Das Cockpit-Oberteil ist weiss und mit einem dünnen Band in zitronengelb vom breiten, schwarzen Streifen getrennt. Beide Zylinderkopfdeckel sind in royalblau, der Renault Schriftzug und die Rillen sind in aluminium bemalt. Arnoux's Wagen mit der Nummer 16 hatte ein Steuerrad aus braunen Leder. Jabouille's Wagen No. 15 ein schwarzes. Die Flächen über den setlichen Verkleidungen waren in polierten aluminium, wie auch der Öltank. Die Rennwagen zeigten keine Ölflecken oder verschmutzte Flächen und gingen ausgezeichnet gepflegt an den Start.

«Painting»

When painting your model, remember to try and be as authentic as possible. 15 basic colours are recommended for your use. If you stick by these colours, you will have the real aura of the actual machine.

«Bemalung»

Beim Bemalen des Modelles soll man versuchen, so genau wie möglich zu sein. 15 Grundfarben werden benötigt, für eine "echte" Renault RE-20

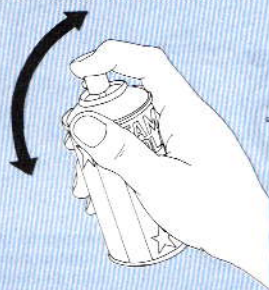
«15 Basic Colours»

«15 Grundfarben»

- Black
- White
- Royal blue
- Orange
- Red
- Lemon yellow
- Yellow
- Brown
- Gun metal
- Chrome silver
- Matt black
- Matt brown
- Aluminium
- Metallic grey
- Dark yellow

«Before painting»

Remove all dust, dirt and adhesive smears before attempting any painting. Remember painting does not generally hide bad workmanship. As previously mentioned, remove excessive glue or joins with a file, sharp knife or very fine emery cloth. Most parts are best painted after assembly, but some inaccessible parts may be painted before removing from the sprue.



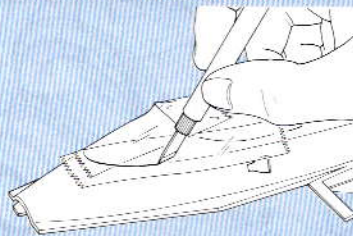
«Vor dem Malen»

Soll man Staub und Leimreste entfernen. Auch eine gute Bemalung verdeckt nicht schlechte Bauarbeit. Unebenheiten mit Feile oder Klinge entfernen. Viele Teile lassen sich erst nach dem Zusammenbau bemalen, jedoch die kleinen Teile bemalt man am besten am Spritzling.

«Painting with masking tape»

When the paint is completely dry, apply masking tape or sticky paper (not cellophane tape) over the whole area of the body. Draw out the re-

quired 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 onto the plastic to ensure it seals it from the paint. Then paint as instructed in previous paragraphs.



«Bemalung mit Klebeband»

Farbe muss vollkommen trocken sein. Nur Klebeband oder Abdeckband verwenden—niemals Tesafilm—und gut anliegend aufkleben. Die zu bemalenden Flächen ausschneiden, Abdeckmaterial erst nach gutem Trocknen der Farbe entfernen.

«Decal Application»

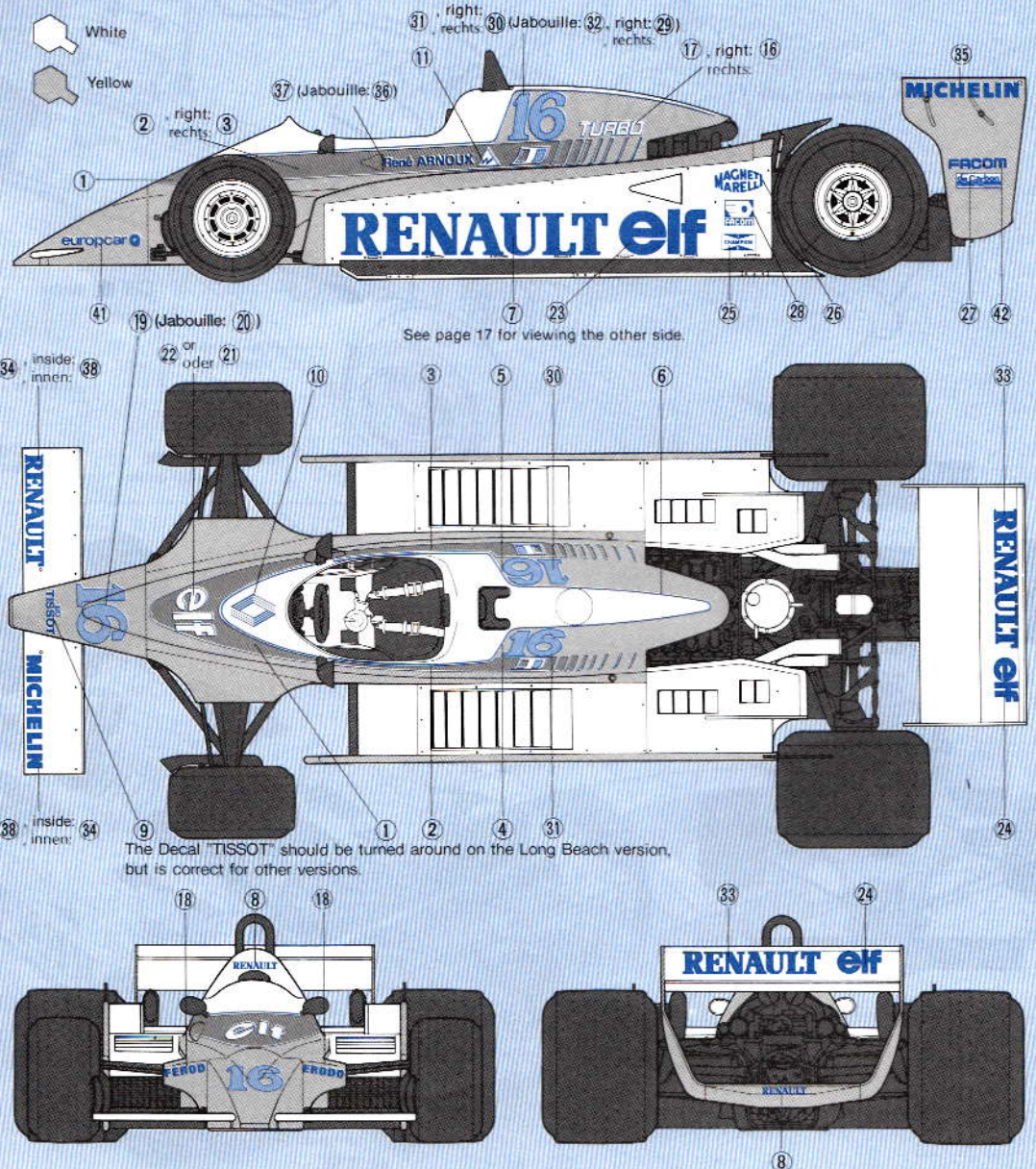
- ① Remove all dust, dirt and adhesive smears with a wet cloth before applying any decals.
- ② The decal to be applied should be removed beforehand from the decal sheet. Cut off translucent film along coloured parts.
- ③ Dip the decal in tepid water for about 10 seconds and then remove it onto a clean cloth. Be careful of

over immersion to avoid loss of decal's adhesive.

- ④ Hold the backing sheet edge and slide the decal onto the model.
- ⑤ Wet the decal with a little water on your finger so that it can be moved more easily into position.
- ⑥ Press the decal down gently with a clean soft cloth to remove air bubbles and until all excess water has been fully absorbed. When a decal has to be applied to a surface which is uneven or curved, press the decal down with a hot towel so that the decal will fit the contours perfectly. Cut off the excess transparent portion around each decal. The decal must then not be touched until dry.

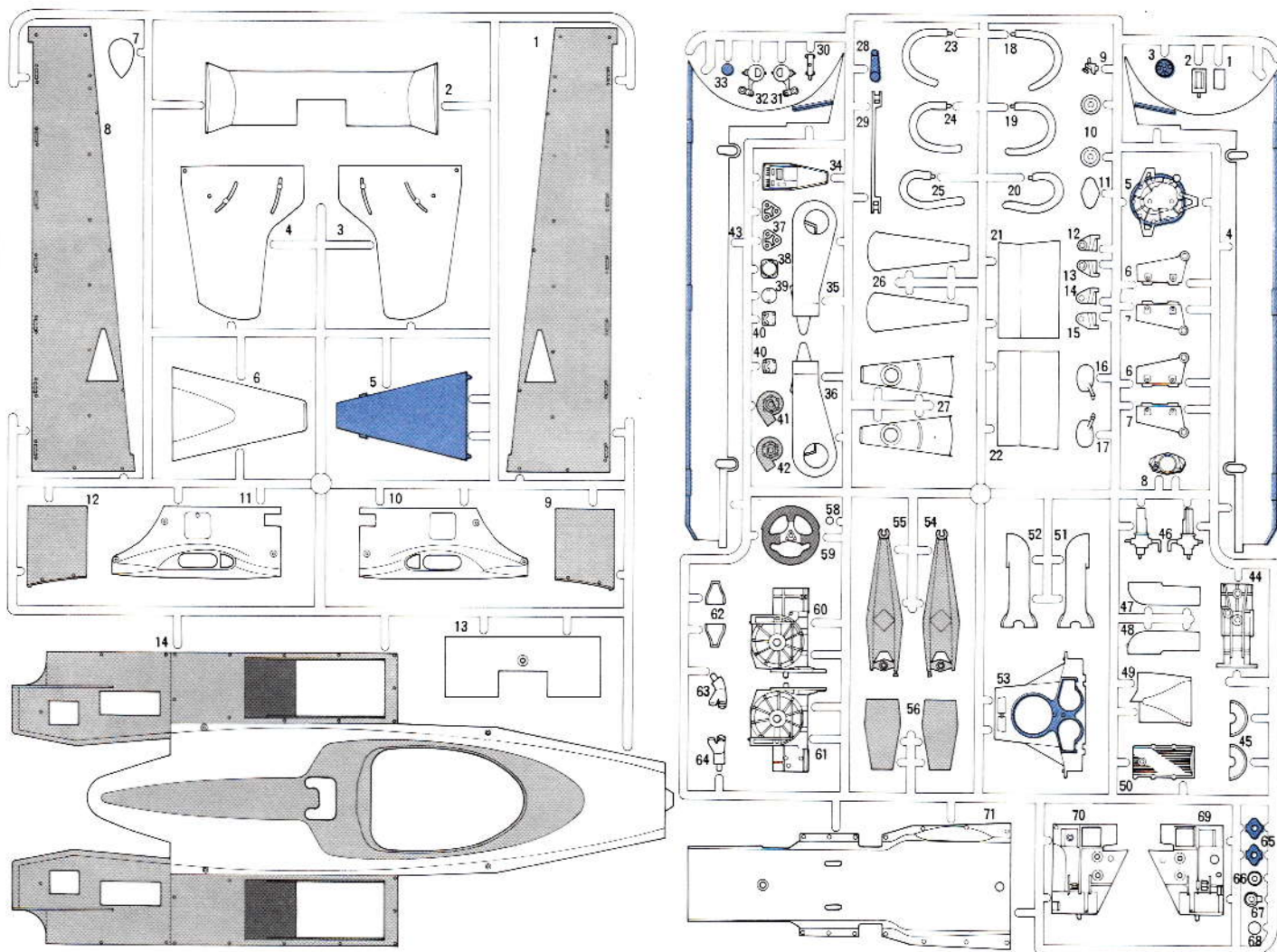
«Abziehbilder-Decals»

- ① Staub, Schmutz und Klebstoffreste mit nassem Tuch entfernen.
- ② Decals erst ausschneiden entlang den Linien.
- ③ Decals in Wasser legen, dann nach 10 Sekunden auf z.B. Handtuch legen und etwas abtrocknen lassen.
- ④ Decal an der Unterlage halten und Bild auf das Modell schieben.
- ⑤ Mit etwas Wasser auf dem Finger lässt sich das Decal noch etwas verschieben.
- ⑥ Decal mit etwas Stoffgut andrücken um die Luftblasen zu entfernen und das Wasser abzutrocknen. An unebenen Stellen kann man mit heissen Tuch das Decal besser andrücken. Transparente Überreste am Decal abschneiden. Decal nicht mehr berühren, bis getrocknet ist.



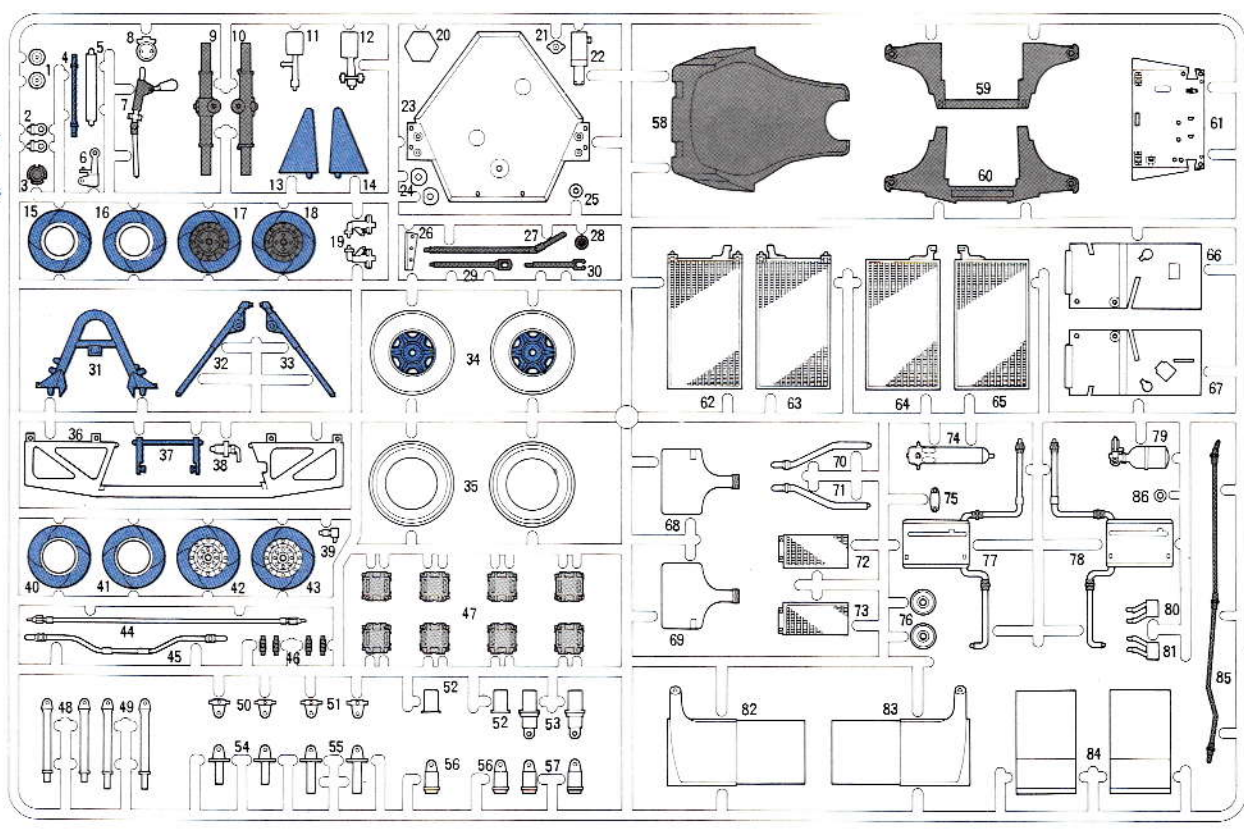
PARTS

- C** Parts
- Yellow
 - White
 - Semi-gloss black
 - White + Dark yellow
 - Aluminium
 - Black
 - Matt black
 - Gun metal
- F** Parts
- Semi-gloss black
 - Metallic grey
 - Matt brown



B Parts

- Aluminium
- Semi-gloss black
- Gun metal
- Chrome silver
- Black
- Metallic grey
- Orange

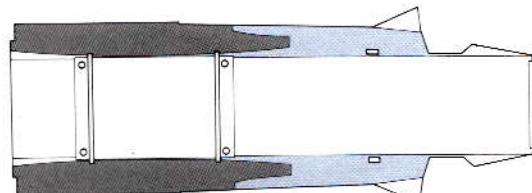
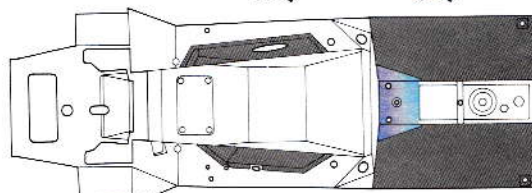
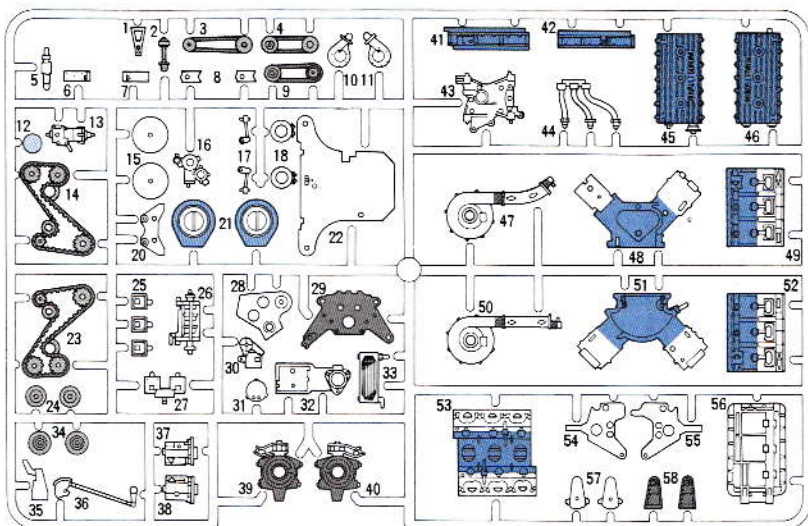


A Parts

- Aluminium
- Semi-gloss black
- White
- Yellow
- Matt black
- Metallic grey
- Royal blue

Chassis Parts

- Aluminium
- Metallic grey
- Semi-gloss black
- Yellow

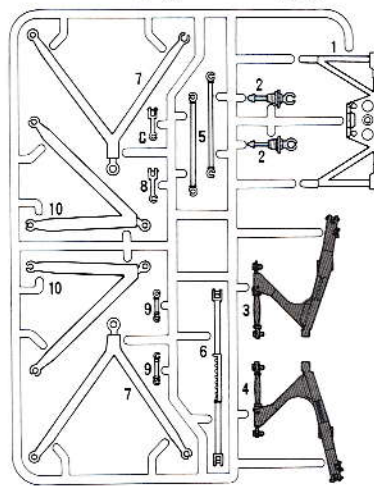
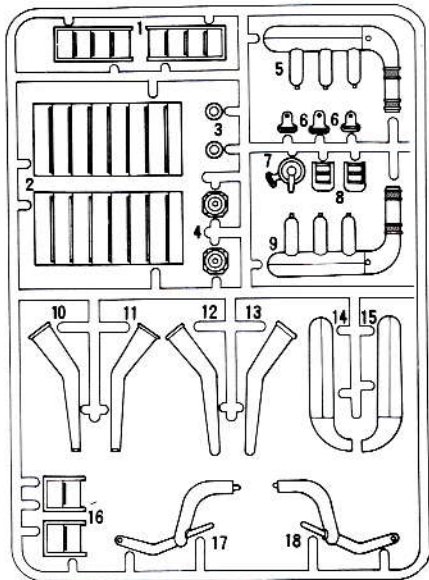
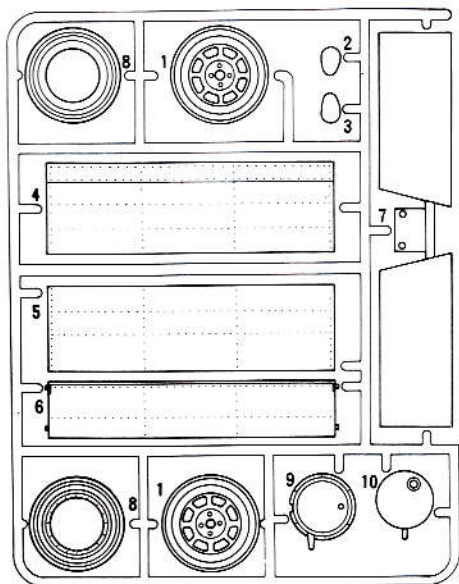


G Parts

- Black
- Chrome silver
- Gun metal
- Orange

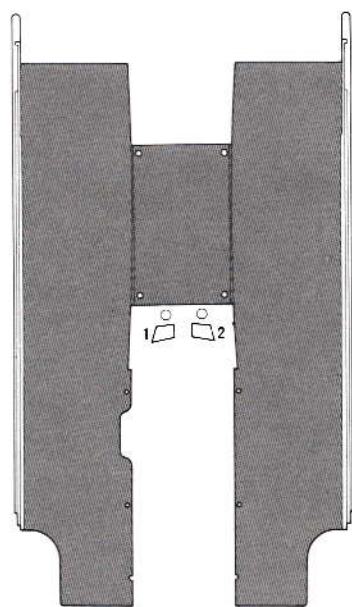
D Parts Plated

E Parts Matt plated



Side Pontoon Bottom (including its 2 parts)

- Yellow
- Aluminium



M Parts

- 2mm×17 screw
- 2mm×10 screw
- 2mm×6 screw
- 2mm×4 screw
- 2mm×4 flat head screw
- 1.6mm×5 screw
- Coil spring A
- 2mm nut, small
- 2mm nut, large
- Coil spring B
- Coil spring C

- Front tyres
- Rear tyres
- Yellow vinyl coated wire
- Black vinyl coated wire
- Thick black tubing
- Medium black tubing
- Thin black tubing
- Transparent tubing

BUILD A COLLECTION OF TAMIYA CAR MODELS

1/12 RENAULT RE-20 TURBO F-1



1/12 FERRARI 641/2 (F-190)



1/12 McLaren MP4/6 HONDA



RENAULT RE 20 TURBO

Vor 82 Jahren stieg Renault bereits in den Autorensport ein und jetzt ist diese französische Staatsfirma nahe daran, auch den Formel 1 Sieg ihrer langen, erfolgreichen Siegesreihe hinzuzufügen.

In den letzten Jahren zeigte Renault, dass man mit Renault im internationalen Rennen rechnen muss.

Obwohl Renault schon 1906 den ersten Sieg im Grand-Prix gewinnen konnte, wurde diese Firma bis Anfangs der 70er Jahre nicht automatisch mit dem Rennsport in Verbindung gebracht.

In Rally's oder in kleinen Rennen sah man Renault immer wieder in den 60er Jahren fahren, aber im Formel 1 Rennen, dem internationalen Konkurrenzkampf, war es erst das Erfolgsergebnis des neuen und weit vorausschauenden Top-Managements und der guten Zusammenarbeit von Renault, Alpine, Gordini und der ELF-Oil-Company.

1971 und 1973 gewannen die Renault-Alpine A110 die Rallye-Weltmeisterschaft.

1974 konnten die A114 Gruppe 6 Wagen die Europa-Sportwagen Meisterschaft für 2 Liter Sport-Prototypen erringen.

1976 und 1977 kam die Europa Formel 2 Meisterschaft und 1978 der grosse Sportwagen Sieg in den 24 Stunden Le Mans mit Pierre Jaussaud und Didier Pironi am Steuer dazu.

Dieser Sieg brachte auch den Entschluss herbei, in das Formel 1 Rennen einzusteigen. Die wachsende Konkurrenz des Renault Turbo ist nicht überraschend: nur 1-1/2 Liter hat der EF1 Turbo Motor und seine 6 Zylinder bringen 500 BHP.

Nun begannen auch Ferrari und Alfa Romeo Turbogeladene Formel 1 Wagen zu entwickeln als Ergebnis des Renault Sieges.

Das Herz dieser überraschenden Formel 1 Wagen ist ein Motor von François Castaing und seinem Team mit 1492 cc und Doppelturbine. Dieser Motor wurde erstmals 1979 im Renault Elf RS10 Formel 1 Wagen eingebaut. Der frühere RS01 Renault, welcher 1977 und 1978 als einfacher Turbo eingesetzt wurde, hatte viele Probleme.

Nach Entwicklung des Doppelturbo EF-1 und langer Erprobung, wurde er auf das RS10 Chassis gesetzt und brachte nun den Sieg zu Renault. Jean Pierre Jabouille wurde Erster und Rene Arnoux Dritter im Grand Prix von Frankreich 1979.

1980 konnten diese beiden Fahrer den Grand

Prix von Brasilien, South Afrika und Österreich in ausgezeichneten Stiel mit dem RE-20 Wagen für Renault gewinnen.

Durch immer mehr Erfahrung im Fahren mit Turbolader und der weiteren Entwicklungen ist das Regie's Formel 1 Projekt von grösster Wichtigkeit für die Welt des Automobilsportes.

Aus 1-1/2 Liter Motoren, 500 BHP herauszuholen prachte natürlich auch die Konkurrenz dazu, solche Motor zu entwickeln und herzustellen. Der Turbo bringt bis zu 100.000 Umdrehungen und der Auspuff kann die Turbine bis zu 1000 Grad erhitzen.

Diese erhöhte Aufladung um 500 BHP aus dem kleinen Motor zu bringen, stellt natürlich ganz enorme Probleme bezüglich der Hitze, die Gordini Leute zu einer Zeit zu lösen hatten, in welcher sie voll und ganz im Konkurrenzkampf standen.

Neue Leichtmetalle wurden erfunden und die Qualität des Stahles wurde verbessert, enormes Wissen über Kühlung, Schmierung, Metallkunde und Mechanik, sowie Zusammenbau wurde erbracht bzw. musste entwickelt werden.

Der Turbogeladene Motor erhält seine Kraft von den Auspuffgasen, die von normalen Fahrzeugen einfach in die Luft geblasen werden. Turbolader entsprechen auch dem Energiesparen, kann aber auch dem Hersteller Investitionen sparen bei der Herstellung von verschiedenen Motoren unter Verwendung des gleichen Motorblockes.

Alle Erfahrungen im Rennsport, werden von den Auto-Herstellern immer an die Massenproduktion normaler Fahrzeuge weitergegeben. Der einmalige Turbogeladene Motor zusammen mit der geschwungenen Bodeneffekt Karosse, macht aus dem Renault Elf RE-20 Formel 1 Wagen schon ein wunderschönes Fahrzeug für den Rennsport.

Diese Rennwagen mit Bodeneffekt kamen in der Mitte der 70er Jahre auf die Strecke. Es war der Versuch, eine bessere Bodenhaftung zu erreichen unter Verwendung aerodynamischer Prinzipien, umgesetzt auf Rennwagen. Die Höchstleistung eines Formel 1 Wagen liegt bei 500 BHP. Diese Leistung aber ist nur gut, wenn sie auf die Reifen/Räder und dann auf die Strecke übertragen wird. Haftung wirkt sich auf die Beschleunigung, Verzögerung und auch auf die Kurvengeschwindigkeit aus. Sicherlich, bei den Reifen gab es erstaunliche Fortschritte und wird es auch weiterhin

geben—aber dies ist nicht genug. Gewichtserhöhung bringt keinen Vorteil, obwohl es die Haftung erhöht. Die Trägheit beim Gasgeben und die Kurvenfliehkraft steigen jedoch auch im Verhältnis.

Es gibt jedoch noch eine andere Methode. — Staubsaugerwirkung—Dieses Prinzip wurde schon vor Jahren im amerikanischen Chaparral verwendet, durch die Regeln aber dann verboten.

1978 versuchte das Brabham Team eine ähnliche Methode, natürlich getarnt, aber nach dem ersten Sieg, wurde dies auch verboten. Die meisten Karosserien entwickelten Auftrieb bei Geschwindigkeit durch die flachen Bodenabdeckungen, die gewölbten Oberflächen und das schräg abfallende Heck. Dies konnte durch aufgebaute Heckspoiler oder sogenannte Flügel neutralisiert werden. Zu einem bestimmten Grad wirkte dies gut, drückte aber durch die Sog- und Luftströmung den Wagen herunter.

So erfanden dann die Lotus Ingenieure etwas gegen die seitlichen Luftströme: der Auftrieb, erzeugt durch die Seitenschalen der Rennwagen, konnte durch Karosserieschürzen umgekehrt werden.

Diese Schürzen konnten den Druck nach unten verdoppeln und dieses neue System wurde "Bodenhaftung" bzw. "Bodeneffekt" genannt. Dies war alles so gut, dass alle Konkurrenten im Formel 1 Rennen dieses System in ihre Wagen einbaute.

Trotzdem gibt es aber immer noch die Diskussionen im Formel 1 Zirkus, ob diese Bodenhaftung nun legal ist oder nicht. Nur eine feine Auslegung der Regeln erlaubt im Moment die Verwendung dieser Systeme. Turbomotore und Bodeneffekt-Karosserien halten die ganze Formel 1 Gruppe in der Luft und während wir dies hier schreiben, wissen wir nicht, ob dies verboten wird oder nicht.

Autorennen ist ein teurer Sport. Millionen werden jährlich dafür ausgegeben von vielen Herstellern und die Erkenntnisse werden auf die normale Herstellung von Automobilen übertragen, uns Allen kommt es in Form von besseren Autos zugute.

Der Firma Regie Renault ist zu danken für ihr Vorausdenken und fortschrittliche Entwürfe. Diese französische Firma ist im Grand Prix für die technische Entwicklung und das internationale Prestige. Und dies Alles zeigt der ausgezeichnete RE-20 Turbo Formel 1 Wagen mit Bodeneffekt im Masstab 1:12 von TAMIYA.

1/12 ルノー RE 20ターボはきみ込み(独)