

TurboRSR®TYPE934

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TURBOCHARGER

The increase in power of an internal combustion engine depends upon the quantity of airfuel mixture fed into the cylinders in a given time, for ignition and combustion. The fully transistorised ignition systems used in highperformance or racing engines, plus the use of two plugs per cylinder, ensure reliable ignition. Also, there are various means of feeding a larger quantity of air-fuel mixture into the cylinders. The intake manifold, through which the gases pass, is made as straight as possible and polished inside to ensure smooth flow. The exhaust manifold is similarly designed to extract exhaust gases quickly. The crankshaft, pistons, etc. are balanced and lightened to facilitate increased engine revs, which helps to increase the amount of air-fuel mixture fed into the cylinders in a given period of time. The Double Overhead Camshaft Engine was born as a result of many considerations to ensure efficient opening and closing of the intake and exhaust valves even at high revolutions. Various other improvements have been made in the development of the 4-valve system with two intake and two exhaust valves and also in the study of the combustion chamber shape.

Air-fuel mixture is fed into the engine cylinder usually by manifold depression which is the difference between atmospheric and cylinder pressure and because when the piston moves down on intake a near vacuum is created in the cylinder. When this system is used, however, the quantity of air-fuel mixture fed in a given period of time is limited. So the supercharger system was devised whereby the mixture was pressurized by some means and forced into the cylinders. The supercharger is not a recent innovation. Fighter planes in World War I used mechanical superchargers to prevent engine output from decreasing at high altitudes, i.e. lower atmospheric pressure. In the 1930's, the supercharger was used for high performance cars. A mechanical supercharger called "The Rootes" was typical of those days

The Rootes "blower" was mechanically driven from the engine crankshaft and applied pressure to the mixture. Because this type was engine driven it absorbed a lot of engine power. The higher the Revs, the greater the loss. It was also mechanically very complicated and unreliable.

In World War II, aircraft flew at higher altitudes and therefore mechanical superchargers were insufficient in performance. To cope with the situation, a turbocharger was developed. It utilized exhaust gases to rotate a turbine which drove a compressor, it involved smaller power losses than the mechanical type. The tur-

bocharger has been used in diesel engines for large lorries and boats for some considerable time.

It was about the middle of the 1960's that the turbocharger system was introduced into topclass racing cars, and the first engine to use it was the Offenhauser engine on a car for the Indianapolis 500. Although there was no big problem as far as the Indianapolis 500 was concerned, the turbocharger had one weak point in races held on road circuits. It was too slow in its reaction to the accelerator. Even after the driver released the accelerator, the turbine continued to rotate at a high speed by inertia, and compressed air-fuel mixture was fed into the cylinders for a while. In acceleration, the turbine was slow in achieving a high speed. The slow reaction offered a serious problem since it was not easy to control machine speed on circuits with many curves where the driver had to repeatedly accelerate and slow down.

Apart from this problem the turbocharger is a very attractive device for cars, particularly high-performance sports cars, which are required to comply with regulations such as excessive noise and air pollution. Since it uses exhaust energy to propel the vehicle, the turbocharger not only increases engine power output but it also reduces exhaust noises.

Porsche and the Turbocharger

It is a long time since Porsche first developed a mechanical supercharger. Dr. Ferdinand Porsche, the founder, developed high-performance sports cars equipped with mechanical superchargers one after another in the 1920's when he designed the Austro-Daimler. Later he devised a number of different superchargers.

The first turbocharged machine was the Type 917/10 for the 1972 Cam-Am races. It had a 4.5-litre flat 12-cylinder engine with a turbocharger, which produced more than 850 B.hp, and won the Can-Am races. Incidentally, the engine output of the normal 917 is about 500 B.hp. In 1973, the improved Type 917/30 was raced and achieved overwhelming victories. In 1974, the Carrera RSR Turbo with a turbocharged 2.14-litre engine was entered for the International Manufacturers' Championship races. Thanks to the experience in racing, Porsche solved various problems including the slow reaction to the accelerator. Porsche released the 930 Turbo, their first turbocharged sports car for sale, late in 1974 and put it on the market in the spring of 1975. The world was then in the midst of the oil crisis and car makers were forced to reduce production. Although the 930 Turbo was extremely expensive, nevertheless in Germany, nearly 600 units were sold. Well over

the planned production was sold in only one year. This was probably because the 930 Turbo was easier to drive and higher in performance than earlier Porsche Sports cars.

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Porsche Turbo RSR

One year after the release of the 930 Turbo, Porsche released new machines for 1976 inter-



national sports car racing: the Turbo RSR, a racing car for sale; the open 2-seater 936 for Group 6; and the 935 for Group 5 in which Porsche aimed at the Manufacturers' Championship. The Turbo RSR, developed on the basis of the 930 Turbo, is a machine for Group 4 GT car racing and is often called "934 Racing". Its engine is the same as the 930 Turbo engine in basic points including the K-Jetronic fuel injection. However, the fan of the forced-air cooling system is changed from the vertical position to the same horizontal position as in the series of Racing Porsches including the 917 and 908. The cooling fins are made parallel to the direction in which the machine runs to obtain higher cooling efficiency. The Turbo RSR engine differs from the 930 Turbo engine, having an oil cooler as well as an intercooler designed to lower the temperature of intake air, which rises to about 170° C when compressed, to about 70° C. The Turbo RSR engine has a total displacement of 2,993 cc, maximum output of 485 hp and maximum torque of 62 kgm, while the normal 930 Turbo engine has a maximum output of 260 hp and maximum torque of 35 kgm. The Turbo RSR uses all-wheel independent suspension with torsion bars, which is basically the same as that of the 930 Turbo. But it employs coil springs for reinforcement and its stabilizers are changed in shape, position, etc. These features have al-ready proved successful on the 3-litre Carrera RSR and Carrera RSR Turbo. The Turbo RSR brakes have inner-vented and pierced discs, which are also seen in the Type 917, and the calipers are made of aluminium. An oil cooler is also used in the gearbox. The overfender for each wheel is enlarged. The body front is unique and has a large spoiler containing an oil cooler in the centre and an intercooler on each

The Turbo RSR was priced at about 120,000 D.M. in Germany. 50 units were manufactured by around May 1976 and all of them are said to have been sold out in a short time. The Turbo RSR soon began to score sweeping victories in GT car races in many parts of the world. The 935 in Group 5 also came out victor. The 1976 Manufacturers' Championship fell to Porsche. The 936 in Group 6 is also winning a series of victories. In the field of sports car racing, Porsche turbocharged machines will surely continue to achieve-excellent results in the future.





- *Study the instructions and photographs before commencing assembly
- *You will need a sharp knife, a screwdriver, a file and a pair of pliers.
- Do not break parts away from sprue, but cut off carefully with a pair of pliers.
- * Use glue sparingly. Use only enough to make a good bond.
- *Apply cement to both parts to be joined.
- *BLUE printed portion of the drawings

 Cement here to fit together.
- ★ Vor Beginn die Bauanleitung studieren und den Nummern nach die Elemente zusammenbauen.
- * Bauteile nicht vom Spritzling abbrechen, vorsichtig abschneiden oder abzwicken, Teile 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.

≪Body Colour≫

Porsche Turbo RSR is a racing car on the market. Body colour, Orange, Silver, White etc. may differ according to races the car takes part in.

≪Färben≫

Der Porsche Turbo RSR ist ein Rennwagen Jedes Rennteam hat verschiedene Farben, z.B. Orange, Silber, Weiss oder andere.

«Colour to be used≫

≪Färben≫

(Spray)

Aluminium Silver

Gloss Red

Gloss White

Gloss Green

(Brush)

Gloss Black

Gloss Blue

Gloss Orange

Gun Metal

Gold

Aluminium Colour

Gloss White

Gloss Green

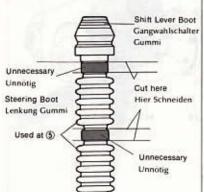
Gloss Red Chrome Silver

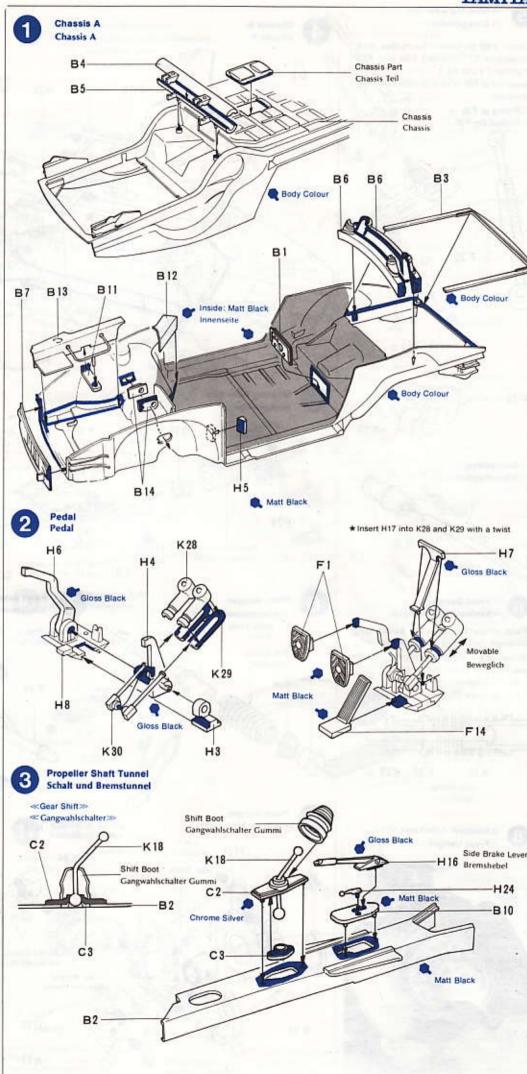
Matt Black Metallic Grey

≪Propeller Shaft Tunnel≫
Q Parts, R Parts, and Rubber Boot
do not cement. Just insert.

«Schalt und Bremstunnel»

Q Teil und R Teil nicht kleben, nur einstecken.





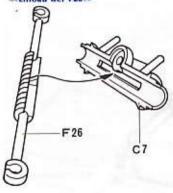


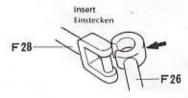
Attach F26 so that it coincides with projection C7 Connect F26 and F28 together ("Push Fit")

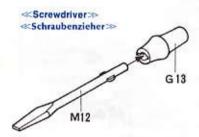
Steuerachse F26 in Verkleidung C7 richtig einsetzen

≪Fixing of F26≫

≪Einbau der F26≫

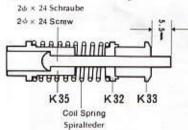






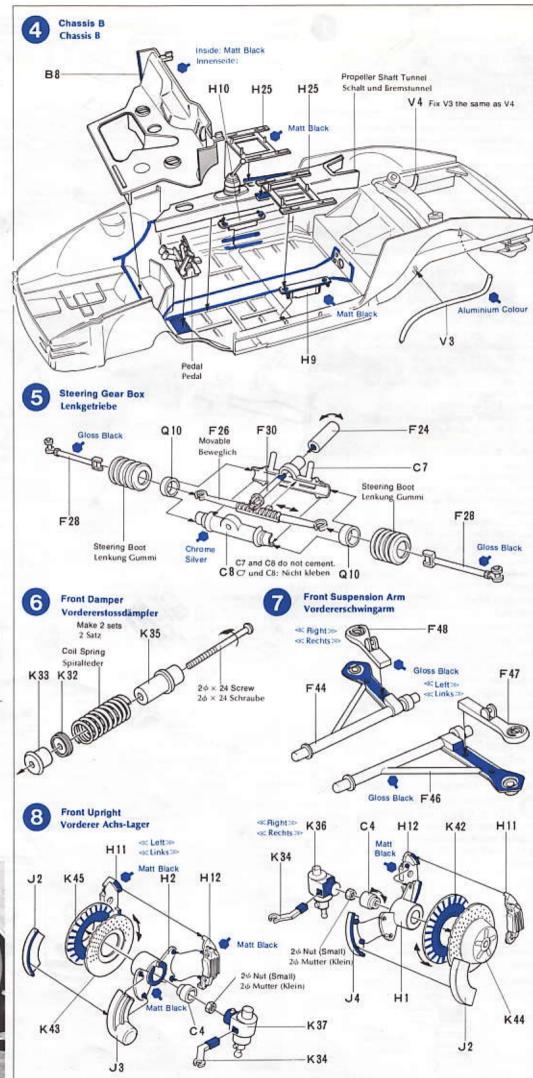


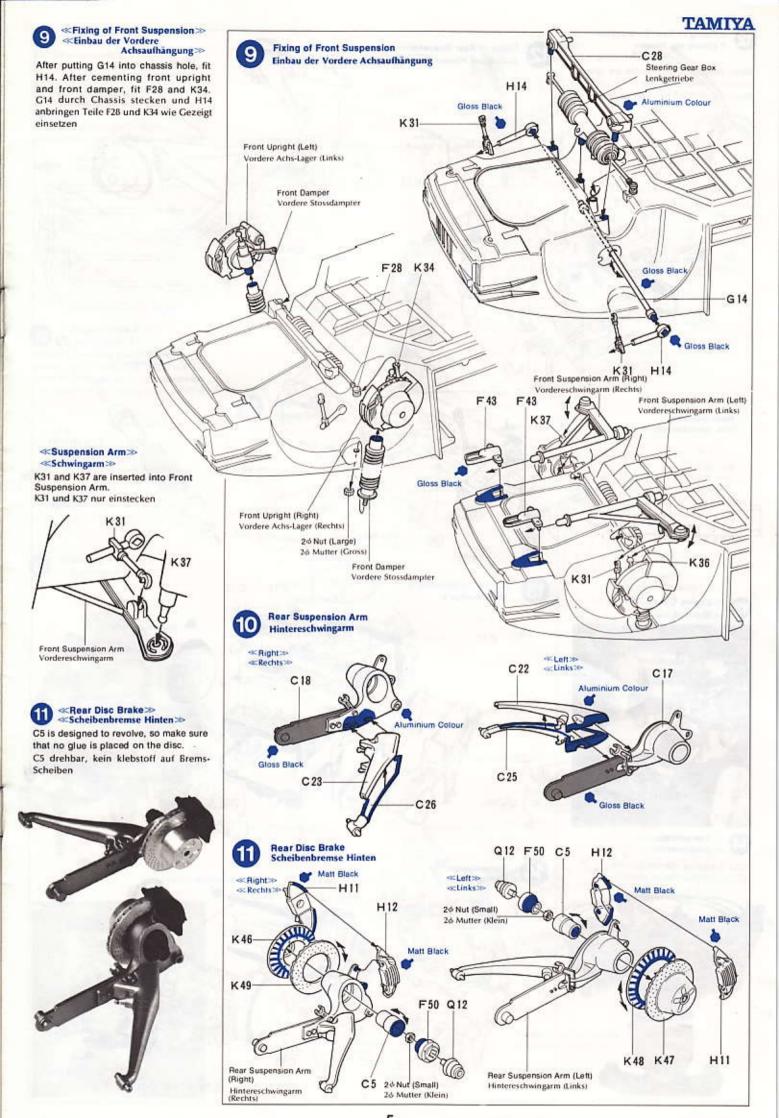
Pass screw 2mm dia. X 24mm long through parts and locate it into K33. Schraube 2 × 24mm durch gezeigte Teile stecken und in K33 befestigen

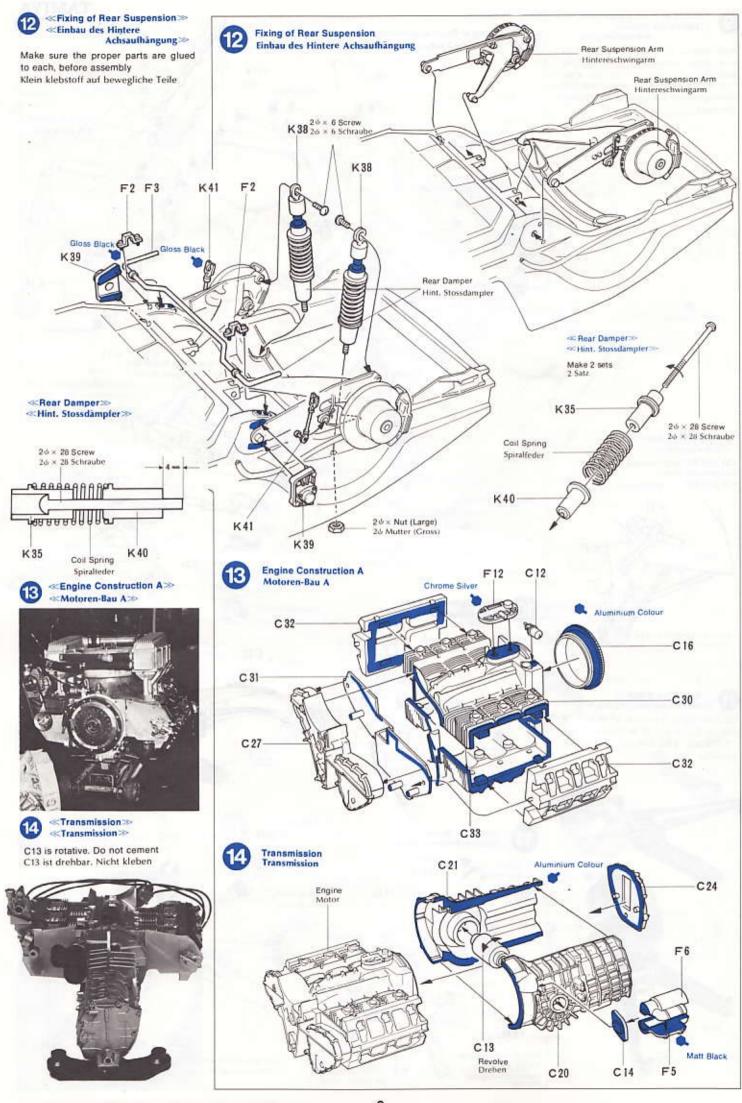








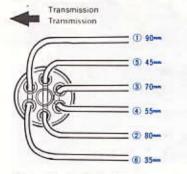






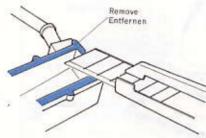
Cut off vinyl cords to a length of 125mm and attach them to F51 as shown in the figure. Divide them according to the numbers into two groups, right and left, each consisting of three pieces.

Vinylkabel in 125mm schneiden und durch Verteilerkopf F51 ziehen, in 2 Gruppen teilen, rechts und links je 3 Kablel.

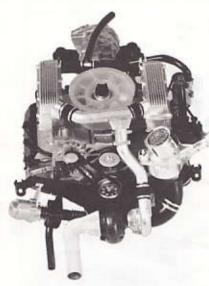


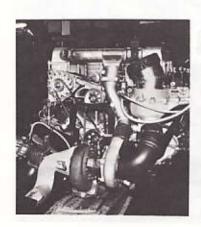


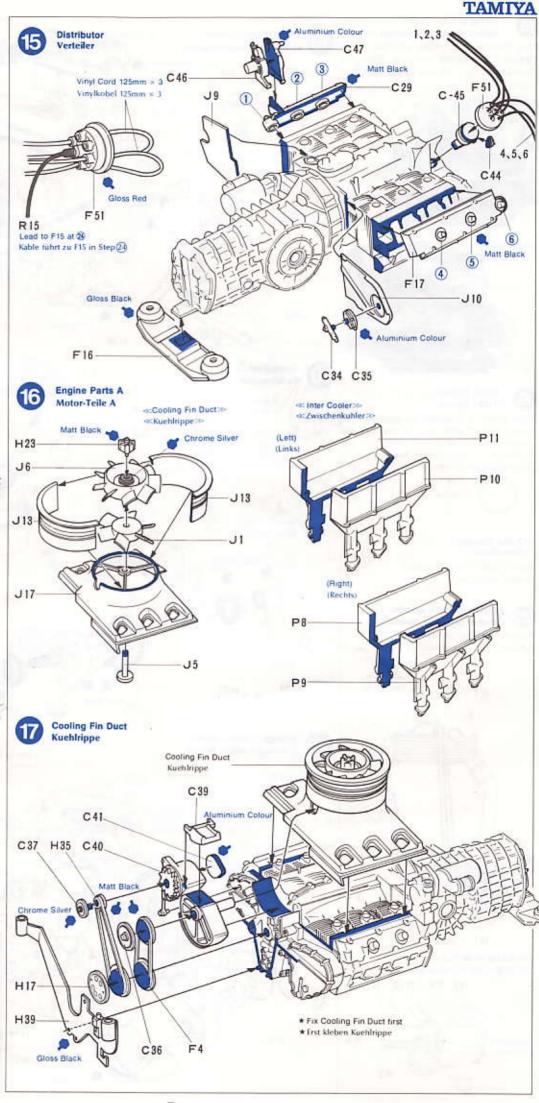
Before cementing plated parts, remove plating with a knife, etc. from the surfaces to which adhesive is applied Chromeschicht an Klebestellen entfernen













Plug Cords from distributor attached in § should be inserted into plug holes. Zündkabel (Step 15) wie gezeigt einkleben.







Wire mesh is attached to injection pump. Cut off wire mesh to the size shown below and fit it.

Drahtsieb in angegebener Grösse auf Einspritzpumpe kleben.

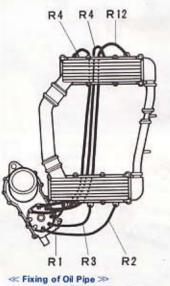


≪Turbo Charger≫ ≪Turbolader≫

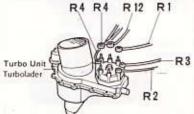
Fix H18 and H15 as illustrated Einbau wie Gezeigt

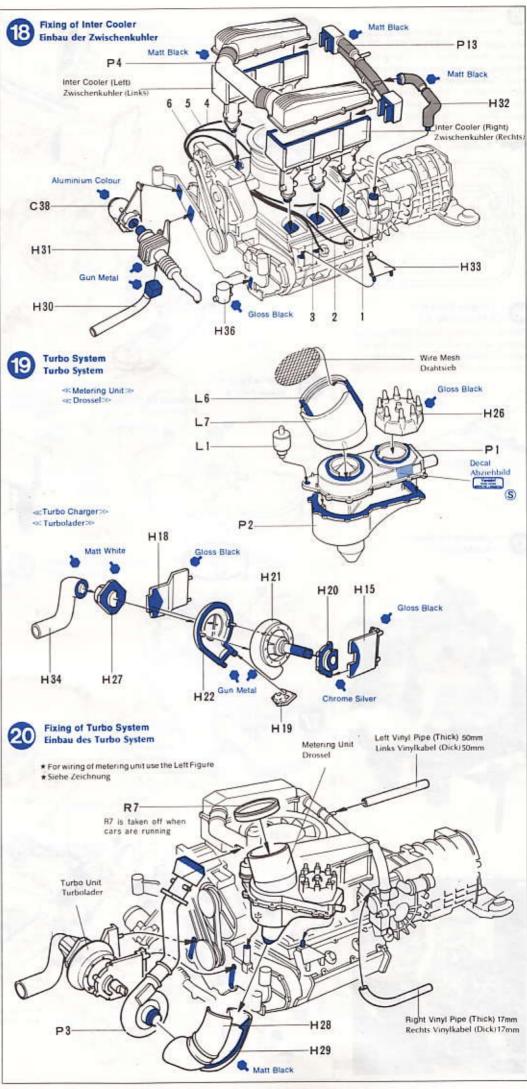
≪Fixing of Turbo system≫ ≪Einbau der Turbo System≫

Pipe is attached to injection pump Schläuche an Einspritzpumpe ankleben.



≪ Fixing of Oil Pipe ≫ ≪ Einbau der Ölschlauches ≫

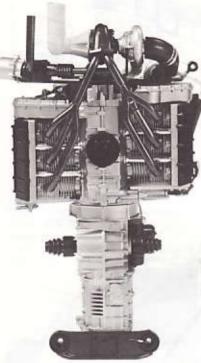






«Engine Construction B» «Motoren-Bau B»

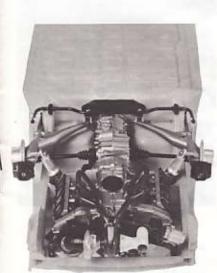
Each parts has proper position. Refer to the figure on the right for this. Siehe Zeichung



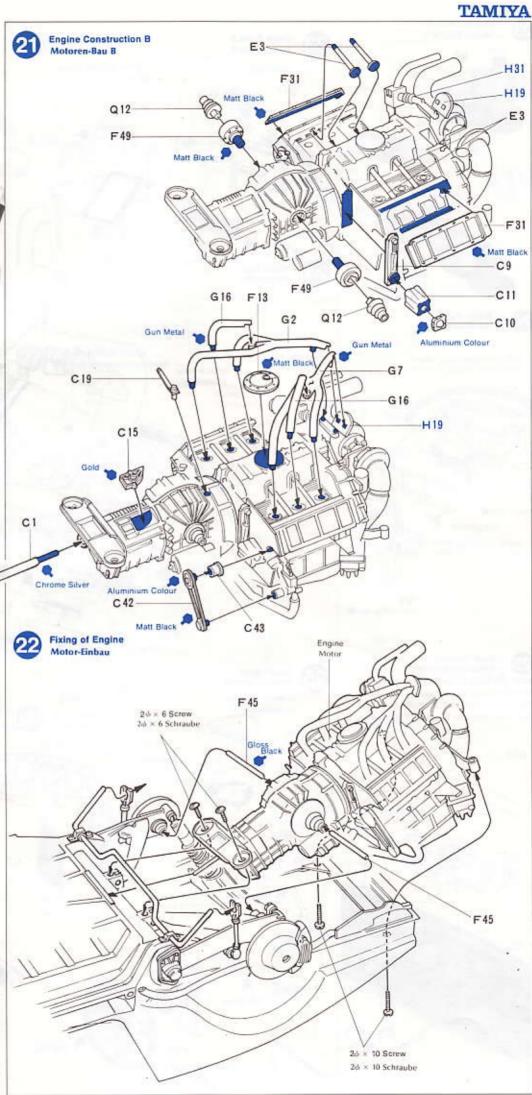


Fix Engine to Body. It is designed to be held by four screws. Insert F45 Drive Shaft after fixing Engine.

Motor-Getriebeblock wird mit 4 Sch-rauebn eingebaut. Achsen F45 nach Einbau einstecken.



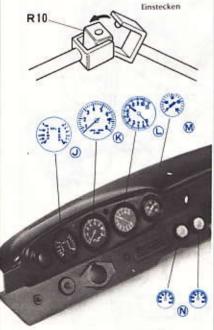


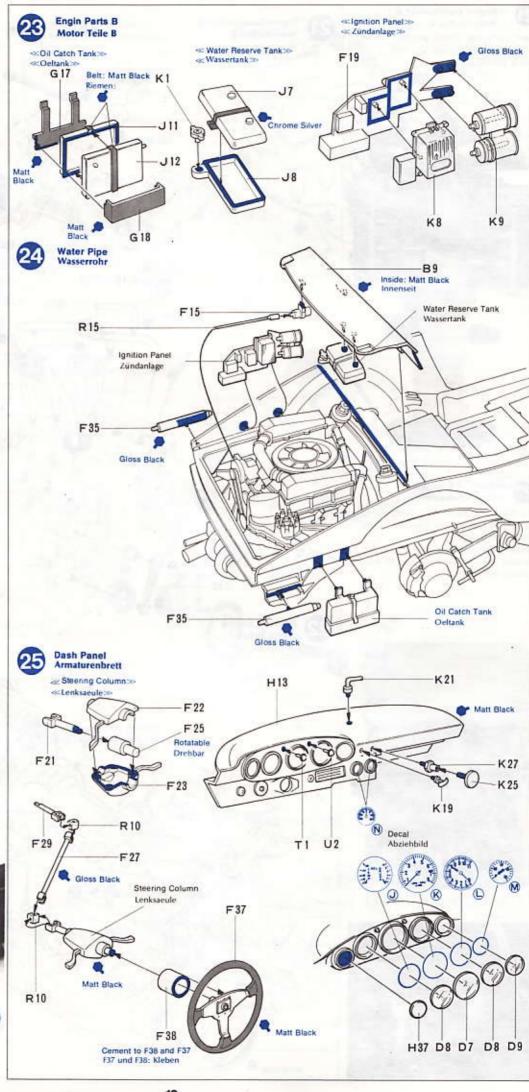




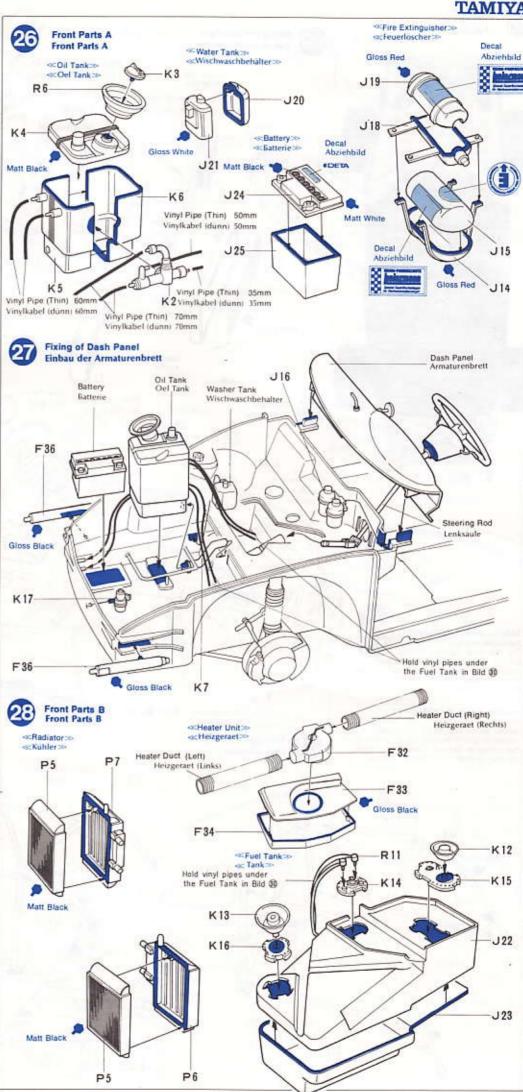


After you have placed the various decals on the various meters and have checked their position fit transparent parts. Beachten Sie beim bauen das Bild unten.

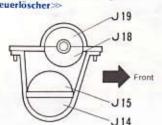












≪Fixing of Dash Panel≫ 27 «Einbau der Armaturenbrett»

After attaching dash panel, pass steering rod through body. Nach Einsetzen des Armaturenbrettes,





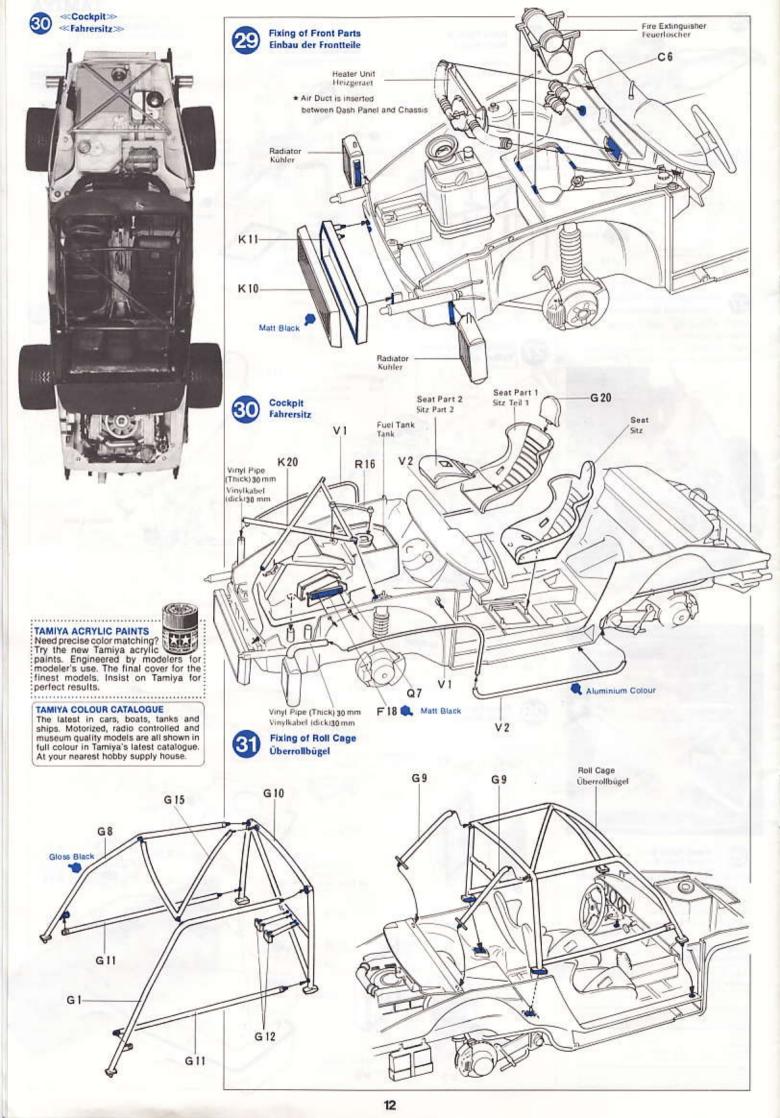
≪Front Parts B≫ ≪Front Parts B≫

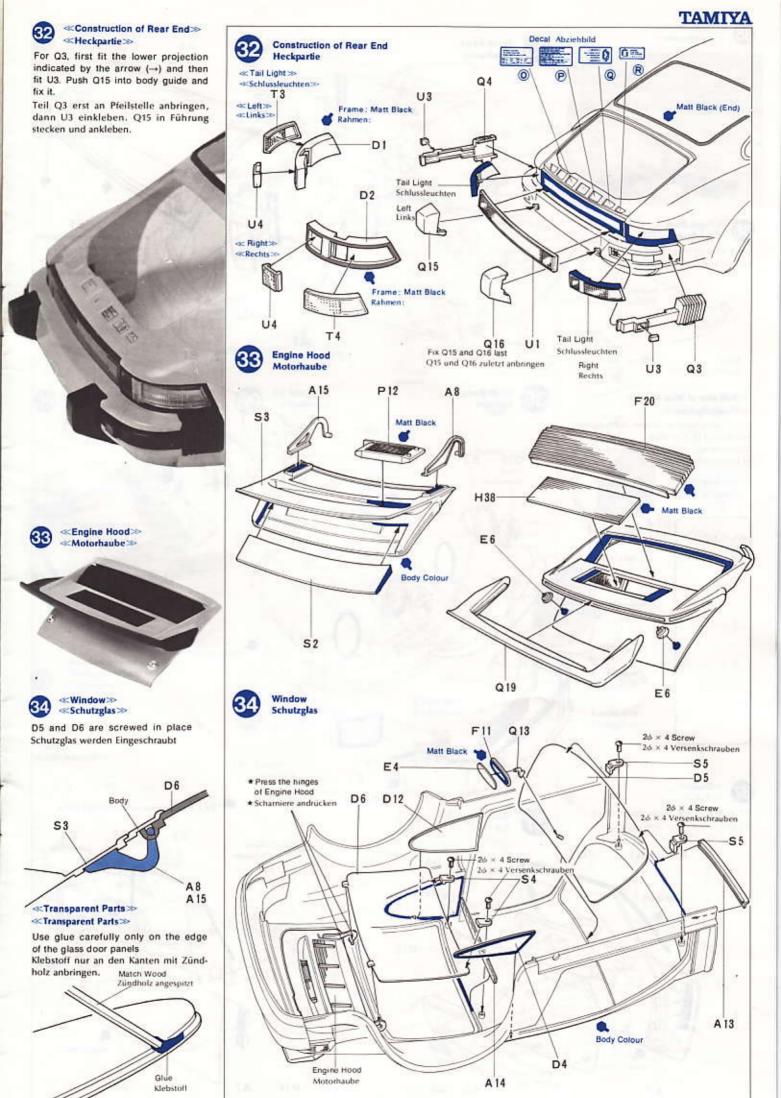
Use air ducts of parts M as Heater Ducts in heater unit. Cut them off to lengths of 45mm for the right and 45mm for the left and attach them

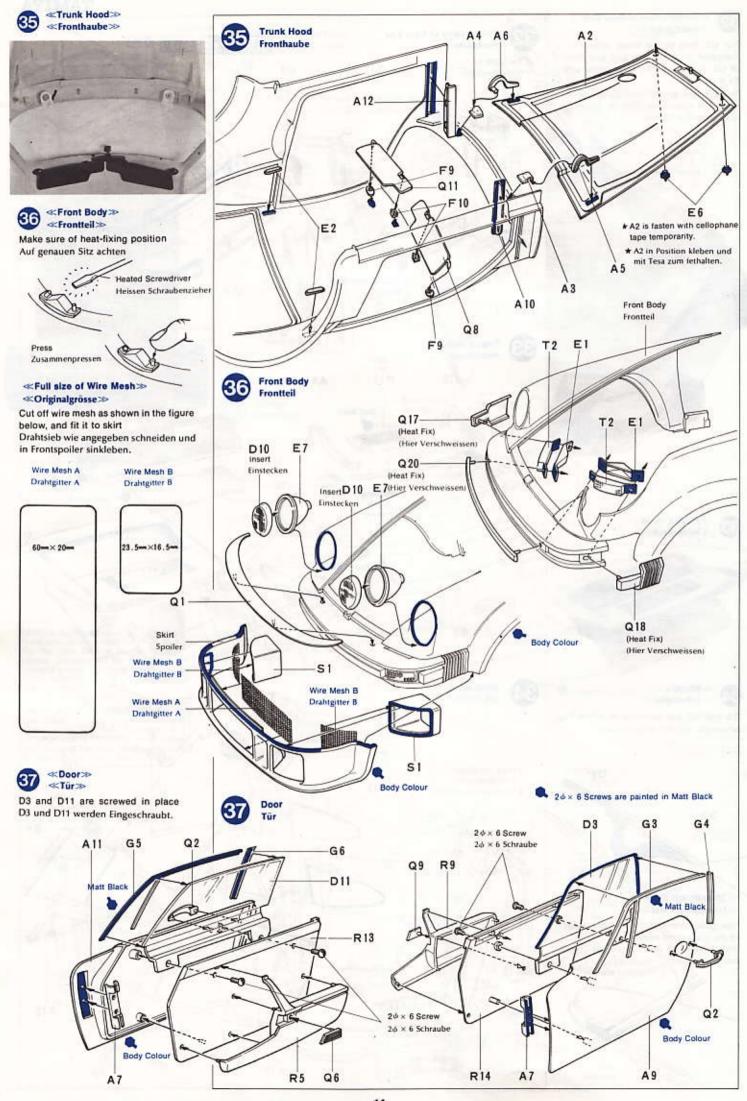
Luftschlauch (M Parts) als Heizschlauch verwenden, rechts 45mm, links 45 mm.

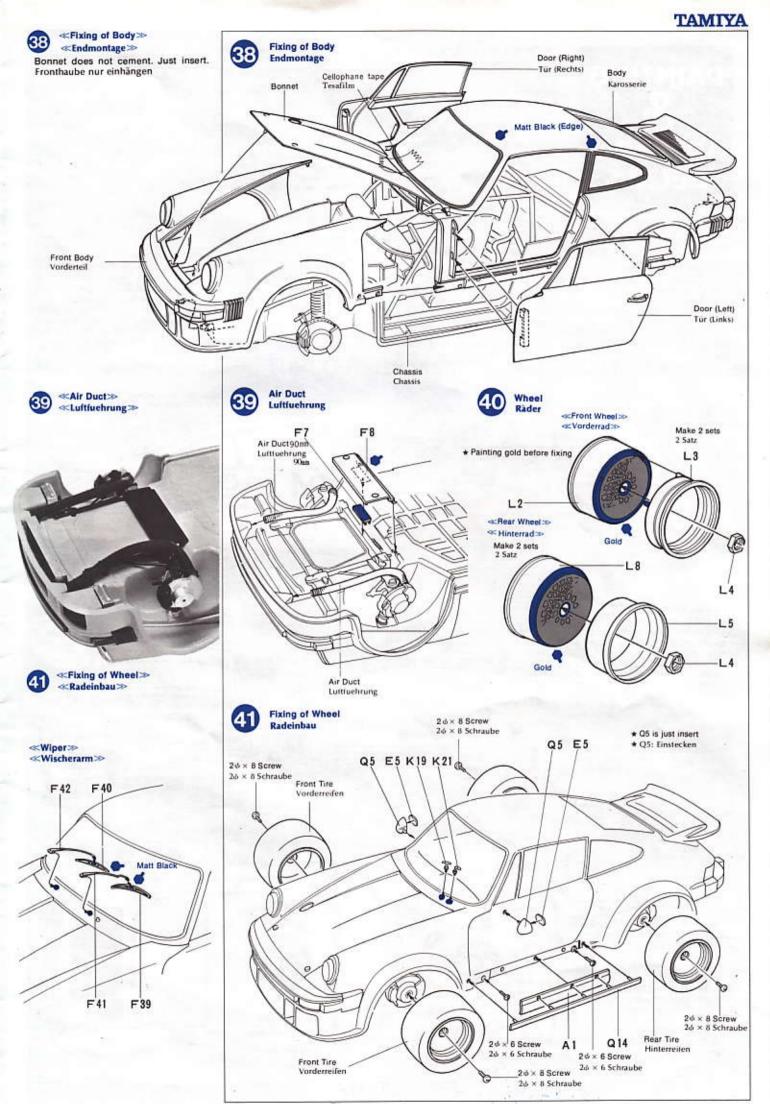
≪Heater Duct≫ «Heizleitung»

Right Rechts	45mm	
Left Links	45==	1









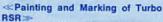
PAINTING **APPLYING DECALS**

< Painting >

When painting your model re-member to try and be as authentic as possible. 17 basic colours are recommended for your use. If you stick by these colours you will convey the real aura of the actual machine.

≪Bemalung

Beim Bemalen des Modelles soll man versuchen, so genau wie möglich zu sein. 17 Grundfarben werden benötigt für eine "echte". Porsche Turbo RSR



The Turbo RSR of Maxmoritz Racing Team is painted in Orange and bears decals for its sponsor Jägermeister, brewage company. Turbo RSR is a racing car also available to this pri-vate motorist, and it is used by many private racing teams and bears avariety of colourful decals. It may be interesting to suit your model to each team on the basis of your material.

≪Bemalung und Markierung des Porsche Turbo≫

Der Turbo des Max Moritz Teams ist orange und hat die Symbole des Sponsors Jägermeister. Viele private Rennteams fahren den Porsche mit einer Vielzahl an farbenprächtigen Bemalungen und Sponsoremblemen.

≪Applying Decals≫ ⊕A decal to be applied should be cut off beforehand.

2 Dip it in water. When the ground paper is on arches, take out of water to place on a cloth such as a towel

(3) A minute or two later, hold edge of the ground paper to slide the decal onto the model from the ground paper.

(4)Then, put a little of water on your finger to wet the decal so that the latter will be moved more easily onto the right spot.

Press the decal down with a soft cloth such as a towel to force air bubbles out of underside of the decal. Continue the work until the excess water, too, will be fully ab-

When the surface to be applied with a decal is uneven or curved, press the decal down with a steamed towel so that the warmed, wet decal will fit the surface well. Cut off the excess transparent portion around a decal before applying. When so done, you can expect a sharp finish with the





Abziehbilder>>>

Bild erst genau ausschneiden. ②In Wasser legen, wen Bild abhebt, auf trockenen Stoff Iggen. ③1-2 Minuten später, Papier an Ecken

halten und Bild abschieben auf Modell.

Etwas Wasser auf Finger und Bild auf genauen Platz schieben.

Mit Stoff Luftblasen herausdrücken, überflüssiges Wasser aufsaugen Wenn Fläche uneben oder gebogen ist, Bild mit nassem heissem Tuch aufdrücken.

Matt White



≪Before Painting≫

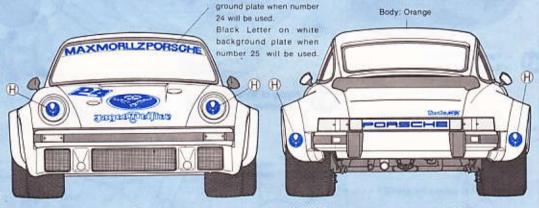
Remove all dust dirt and adhesive smears before attempting any painting. Remember painting does not generally hide bad workmanship. As previously mentioned remove excessive glue or joins with a file, sharp knife or very fine emery cloth. Most parts are best painted after assembly, but some inaccessible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

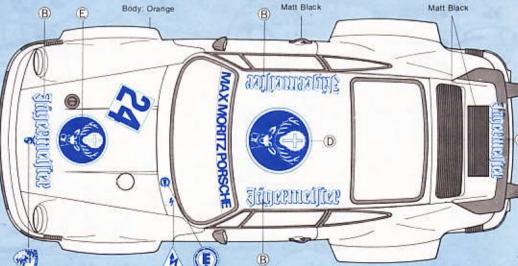
Vor dem Malen≫

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 Sprilzling.







≪Caution≫

Take enough precautions against fire in handling the paints. Paints and solvents catch fire easily.

Farben und Verdünner sind brennbar, nicht in Nähe offenes Feuers Bemalung vornehmen.

