

# F.A.Q.

Frequently Asked Questions of the AFV painting techniques

*by Mig Jiménez*





## 2. INTRODUCTION

I wanted to start by adding this brief explanation for the English readers of this book. I am sure that many of you already know that I am Spanish and my primary language is castellano (commonly referred to as Spanish), not English. I wrote this book using my native language. Therefore, I hope that all of my thoughts, explanations and ideas have been properly translated with the same essence in which they were originally written. I apologise if the translated text is not perfect in regards to sentence structure or in the clarity of my expressions. If you find some difficulty in understand something in this book, please write me a brief email containing your question. Upon receiving your letter, I will try to quickly provide you with a reply containing a proper explanation.

I know that it can be difficult to translate one language to another while carrying all the same thoughts and emotions. This may be foremost when talking about the complexity of modelling and the use of different words labelling one type of technique. I think that the available text and numerous images contained in this book will be sufficient for you to use it to the fullest.

Thank you very much.  
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Many years ago, the person who taught me everything about modelling gave me the answer to one of the most important enigmas of this hobby: Why is modelling so complicated for us? Of course, anyone can find an explanation for such a common dilemma, but beyond individual subjective opinions, surrounded by different contexts and situations, there is an explanation that unites all of us. This answer is the synthesis of this book and it summarises all the chapters that the reader will later discover, while at the same time is difficult to understand and digest. Perhaps only at the end will the reader return to this point to finish reading this book. This is because all the questions posed in this book stem from this answer. But this almost philosophical reflection is neither banal nor superficial. It is the fundamental pillar of all existence and modelling exists, doesn't it? And not only does it exist, but it keeps us from sleeping and is responsible for our headaches on numerous occasions and if this is not true, why did you buy this book? ... Well, simply because modelling is important to you and you need to find the answers to all the enigmas that surround you. You need to know...to know why modelling is important for your own existence and welfare. For some, modelling is the only reason to live; for others it is a reason to stay indoors on a rainy day and for others it is a rain of intense emotions. But this does not answer my initial question. These are also questions, though they carry no question mark.

Try to look inside yourself to discover this answer that a friend once showed me. Look deep inside your pockets, even closer to you than your skin, bones and flesh. Look there, where reality is intertwined with dreams and dreams begin to come true. There is a place inside yourself where something happens when you see a picture in a book that awakens your imagination and then your mind sketches a vague image that gradually takes form. This image is usually a tank, a vehicle, a figure...with some colours, surroundings and is frequently transformed into an imaginary diorama, full of colours, action and attractive elements. This place is called the mind, but could also be called the soul. It is there that our own identity blends with our desires, fears and illusions and our life itself. All of this is mixed with that which we receive from the exterior, through our eyes and ears. That place is like a huge blender that presses everything that comes from the outside and condenses it

into an idea: An idea that will probably end up becoming a beautiful and flamboyant diorama or vignette. It is the path of creation, but a path that is born from within. It is the reflection of our soul, our personality, our being. Thus, we are often able to identify works by the same author, because they are a part of his very being.

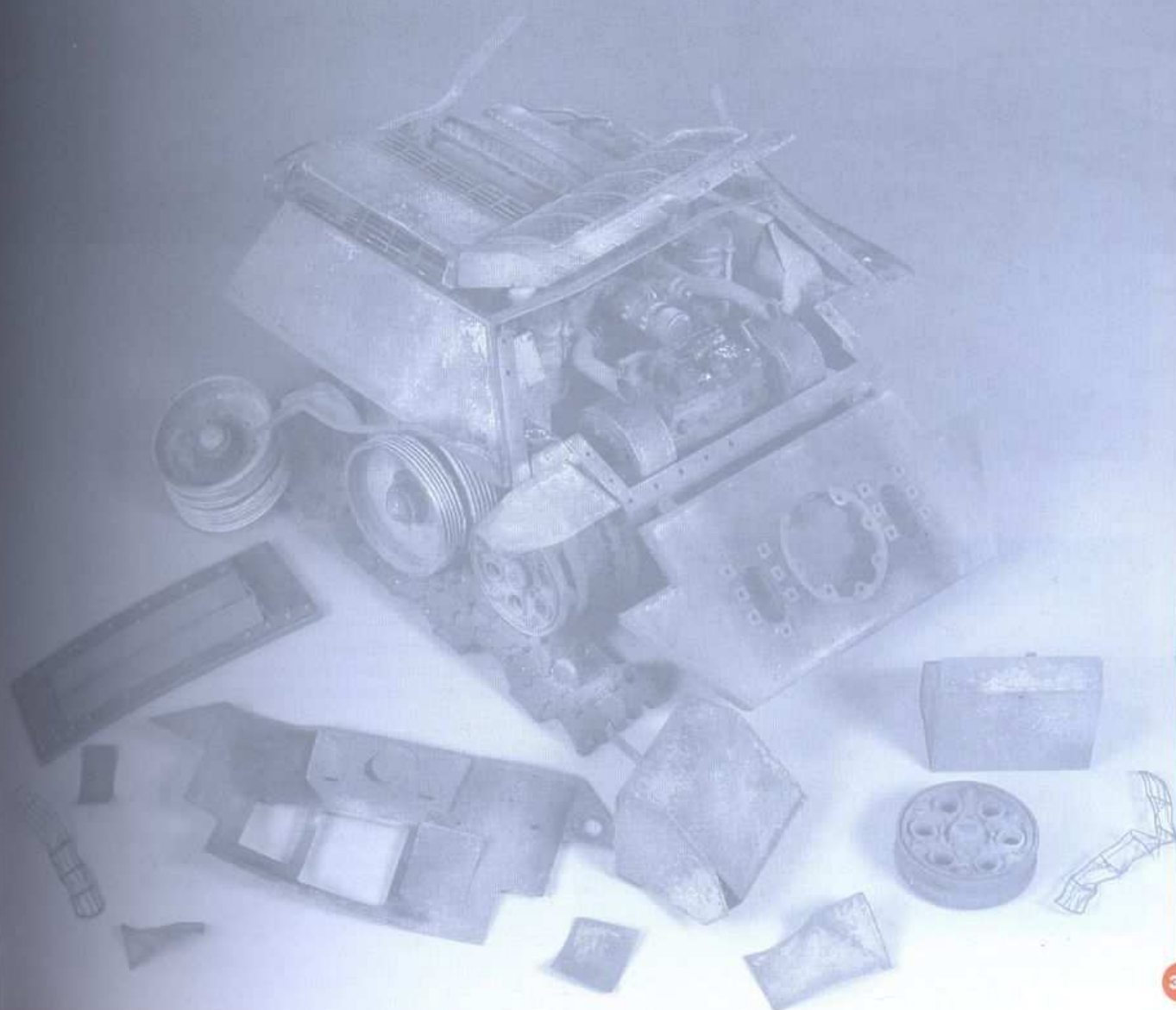
For many, modelling is their only means of communication with others. They use modelling as a vehicle of communication because they don't achieve these objectives in their daily life. Precisely because modelling is the mirror of our soul, we can use it to communicate with others, showing them what we are like inside, such that further explanations of our work becomes unnecessary.

This is the greatness of modelling. Now you know why modelling is so important to us. Modelling can change our lives, it can make us better, make us happy and can transform us into living legends. But modelling can also destroy, defeat and sadden us. Modelling also generates envy, jealousy and resentment. It can become a double-edged sword...both dangerous and beneficial.

What makes modelling dangerous or beneficial depends upon how we use it, how we interpret it and how others understand it. This is why it is so important to have answers to all the questions that arise, because only then can we achieve our objectives with total efficiency. If modelling is such an important thing, we cannot only walk the path full of difficulties and problems. The techniques used are not important, it is not necessary for everyone to spend 20 years of his life discovering them in order to be completely satisfied. The ends are more important than the means. We should make our dreams reality as soon as possible, because the rest of the world simply cannot wait. I am certain that magnificent ideas are brewing inside our heads. I am also sure that you have ideas that can change the modelling world, that you possess the key to the happiness of many modellers, but you cannot achieve this because you are still struggling to distinguish a filter from a wash or the difference between aluminium and steel corrosion. Don't let this treasure escape you. Transform these ideas into reality and show it where there is someone willing to enjoy your creation.

# **5. CONTENTS**

## **(GUIDE TO TECHNIQUES)**







## **5.1. WORKPLACE, TOOLS AND MATERIALS**

**Work place:  
positioning the tools, paints, etc.**

### **1. What should the work area be like? Ventilation, organization, etc.**

First of all it should be comfortable, although not necessarily large. I've seen modellers whom have a very large workspace but only actually use a small part of it with an almost microscopic table. It is important to be close to a window, to help with the ventilation, but you should try to avoid allowing direct sunlight to fall on the workbench. If you have a little extra space available to take photos, this will help you to make short articles about your models.

## 2. What lighting should I use?

A blue tungsten light bulb is the most appropriate for painting. You should avoid light from a normal tungsten light bulb. Natural light overexposes our sight and will give our models an unusual appearance. Neon light is a good alternative, though it produces visual fatigue. The perfect combination is a neon light on the ceiling and a blue glass tungsten lamp on the workbench.



## 3. How should the light be positioned?

Always to your left if you are right-handed. This will avoid shadows while painting.



## 4. Where should the painting materials be?

If we want to be quick when painting our models, we should build a small paint rack in front of the workbench. Then we will have all the paints visible and at hand saving us time then if we were looking for pots of paint in dark boxes full of material.





## 5. What should I do if I'm building several models at the same time?

It is highly advisable to work on two or three projects at the same time. In this way, if you get tired with assembly, you can always paint and vice versa. But this means having these models at hand, close to us. In this case, remember to always keep the model you are painting in a sealed box to protect it from the dust caused by planes and files. If dust falls on a half-painted model... it will have a nasty finish.



## 6. How should I work at my workbench?

It is needless to say that our workbench should be orderly and clean. An organised table will help us to progress more quickly. Place the reference books in front of you and the tools to one side. When painting, it is highly appropriate to leave the paints on one side and the brushes and tools on the other. When painting, we must be very careful with open bottles of solvents and paints. If we leave them close to us or near the edge of the table, it is quite likely that they will end up spilt on the ground or over our model. Conversely, it is better to place paint bottles between the model and ourselves, but never behind the model, because while loading the brush with paint you can drip on the model.





## Tools: airbrush, paintbrushes, compressor...

### 1. What basic materials should I have?

Actually, you only need a cutter and a few files to build a model. Plastic brands such as Dragon and Trumpeter now include several materials, such as photo-etched parts, for which we will need some other more technical tools such as small pliers or clamps. In many cases, you will probably need a hand drill to get several pieces and metal parts to fit together. A saw for cutting resin and a compass for cutting plastic will be very useful if we want to perform some simple conversions. In any case, remember that investing in tools will considerably improve the quality of our assembly work.



### 2. Is the use of an airbrush essential?

NO, because with much patience, the base colour can be applied to a model (applying highly diluted coats of Vallejo acrylics with a paintbrush) and most weathering and environmental effects can be applied with a paintbrush, including dustiness and paint fading. Only if we wish to create a camouflage with soft borders will we need to use a suitable airbrush.



### 3. *What type of airbrush should I have?*

Of course, it should be a double-action paintbrush, if possible with stainless steel body and parts, never plastic. I personally recommend the Japanese IWATA CM-B or the Taiwanese SPARMAX DH-102, although the German EVOLUTION or Tamiya HG-SF are suitable enough.



### 4. *What is the difference between a simple and double action airbrush?*

With a simple action airbrush, it is only possible to control the quantity of air that is projected, while with a double action airbrush, both the quantity of air and paint can be controlled, allowing finer lines to be drawn. Hence you should always choose a double action airbrush.

### 5. *How should I select my airbrush?*

In question number 3 of this section, you can see the recommended brands, but if you are unable to obtain these, make sure that the airbrush you buy has no plastic pieces, that the brand offers spare parts and needles and overall, that it has a cover on the paint holder. Furthermore, it should be light and the trigger must be smooth acting with short movements (up and down, back and forth) to control both the air flow and paint.

### 6. *How should I use my airbrush?*

Grasp the airbrush as shown in the photo allowing it to rest in your hand by its own weight, otherwise your hand will ache after painting. When you paint fine lines or small scale models, hold the airbrush with both hands to keep it steady.



### 7. *How should I clean my airbrush?*

First empty the airbrush's paint reserve then pour in the appropriate solvent needed for the paint you used, allowing it to soften the dry paint deposits. While squeezing the trigger to expel the paint and air, cover the exit with a finger or cloth to observe how the airbrush regurgitates the paint from inside the reserve. This will clean the inner part of the brush. Empty the contents and add solvent once again. This time, using a soft paintbrush, clean the paint residues from the reserve and nozzle. Finally, remove the needle and clean it with more solvent and an absorbent paper or cloth. When you put the airbrush away leave a few drops of airbrush cleaner or window cleaner inside the paint reserve.







#### 8. What should the compressor be like?

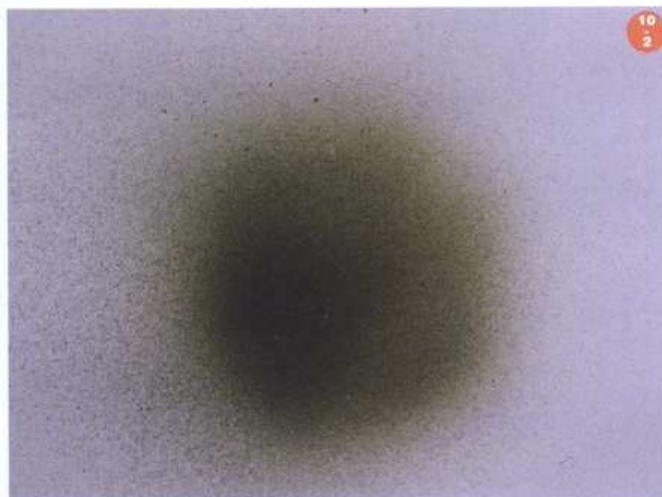
Although many compressor models exist, it is advisable to have one with a quiet motor, in order to work throughout the night without bothering anyone. It should be powerful enough to give at least 2 kilos of pressure. If it also has a large reserve, it will allow us to save energy.

#### 9. Can I airbrush with propellant from air bottles?

NO, because the pressure offered by these bottles is very irregular and can create an excess of 'grain' when airbrushing. The bottles are very good for painting something specific in a basic way, but they are not advisable for advanced modelling.

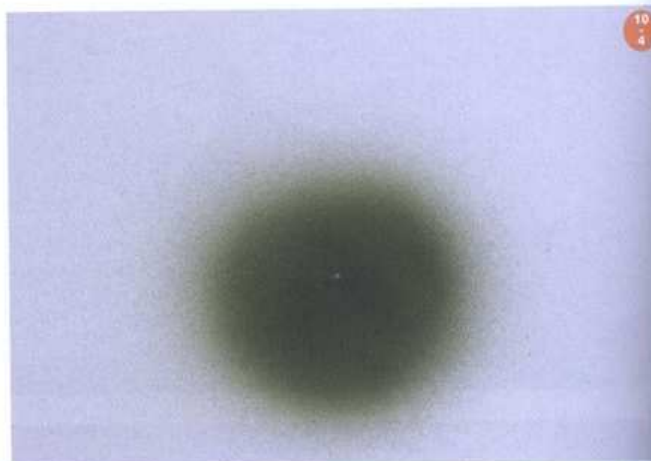
#### 10. What pressure should I use?

If you work with at least 1 kilo of pressure, the resulting effect will be very grainy and rough. But if you dilute the paint well (8 parts of solvent to 1 part paint in the case of Tamiya) very fine and precise strokes can be obtained. With Vallejo Model Air paints, you must be careful with this low pressure, because the paint will easily dry in the nozzle. Add 1 part of varnish or glossy Model Air and 1 part of dilutant of the same brand for each part of paint. In the case of Humbrol, add 50% of dilutant to 50% of paint.





With pressures greater than 1 kilo, the result will be a much finer and pulverised grain, finer and more precise, but you run the risk of creating 'spider's trails' due to the excess pressure. This pressure is good for painting large surfaces, such as the base colour.



### 11. Can paintbrushes replace the airbrush?

We could say so. Without going any further, we can appreciate the incredible works made by some figure painters using paintbrushes alone. Any effect can be reproduced with a paintbrush if you know how. Having the patience and knowledge required is another matter. Only if you don't have access to an airbrush for health or financial reasons should we use the paintbrush for everything.

### 12. Which paintbrushes should I use?

1. A flat paintbrush is very practical for applying a base colour. The special cut of this paintbrush will help us to apply the paint to all the corners of our model.
2. The flat paintbrush is essential for blending decolouration oils.
3. A short-haired rounded paintbrush is used to paint shadow marks and rusted zones.
4. Use an old thick paintbrush for dry-brushing. Never use a flat paintbrush for dry-brushing.
5. A very hard bristled short-haired rounded paintbrush will serve to apply small quantities of mud onto the wheels and in most hidden parts of the model.
6. A 'cat's tongue' paintbrush is very appropriate for dispersing and blending rusting effects and dirty stains.
7. A fine paintbrush for painting details and profiling.



### 13. How many paintbrushes should I have?

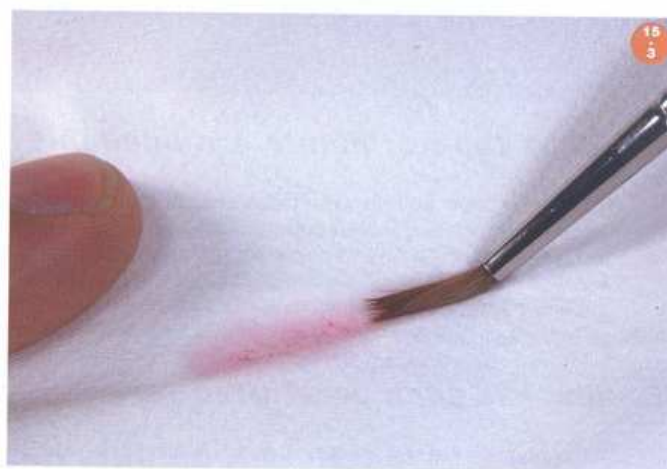
At least 3, a round number 00, another round number 2 and another number 4 or 6. The hair should be either sable or synthetic.

### 14. What are the differences between the paintbrushes?

The main differences revolve around the quality, both of the hair and metal tube around it. The hair should be fine, uniform and aligned, always converging at the point. Avoid paintbrushes with open or irregular hair. The metal tube should be made of a single piece, with neither seams nor joint marks. This is because the paint and humidity can penetrate at these seams and joints rusting the inside, opening the bristles and freeing the hairs of the paintbrush. Generally, only school or hobby paintbrushes tend to be of this type. Always try to buy artist's paintbrushes.

### 15. How should I clean my paintbrush?

First clean the paintbrush with water and then use a specific paintbrush cleaner finishing with soap and water. To make sure that the paintbrush is perfectly clean, press it onto a piece of absorbent paper while it is still wet.



### 16. How long should a paintbrush last?

We can only know this from the paintbrush's appearance, as can be seen in the example photos. Also, the fact that one of the hairs leans towards the outside of the paintbrush is a sign of wear.







## Materials: paints, thinners and other products...

### 1. What type of paints are available?

The market offers an ever wider range of products, although we can basically distinguish between water and oil-based paints. Among the water-based paints are water colours, acrylics, alcohol-based acrylics, gouaches, temperas, etc. For example, Tamiya acrylics are alcohol-based, while Andrea paints are really water-based. Among the oil-based paints are the enamels, oils and filters. Within the two varieties are paints especially designed for use with airbrushes, paintbrushes and other applications such as the pigments (pigments are the only paints that are neither water nor oil-based).

### 2. What is each paint used for?

Although there are specialised paints for creating determined effects such as the filters or pigment, the majority of the paints are already available based on water or oil and serve almost all our purposes if used correctly. It is better not to give a specific use to each product and leave yourself open to many more possibilities as well as the option of discovering your own techniques.

### 3. What is an acrylic paint?

The acrylic paint is a very clean and usually odourless paint, based on water, alcohol or acrylic resins. Its main characteristic is that it dries quite quickly (for example like some types of white spirit). They provide bright colours and are appropriate for use with an airbrush, especially the acrylics designed for an airbrush.



#### 4. What is an enamel paint?

It is a relatively new type of paint belonging more to the 20th Century than to previous periods. Its main characteristic is that it takes quite a long time to dry, making it quite flexible when we have to mix or blend colours. But it also emits a strong and intense smell which can be unpleasant at times and harmful to some people. The colours tend to be toned down and not very bright.



#### 5. What is an oil paint?

It is a very noble material, highly valued among 19th and 20th century artists. Its high density and oily base make it a lively paint full of possibilities, although it dries very slowly and thus requires great patience. The colours are very intense and can be mixed with enamels to accelerate the drying process.



#### 6. What is a pastel paint?

It is basically a pigment hardened with Arabic rubber that when dry can be used as a chalk or charcoal. The modeller uses this material to extract the dust using it as a pigment. The pastel contains many impurities making it an almost obsolete product nowadays.

#### 7. What is a pigment paint?

This is undoubtedly the most revolutionary modelling product of the 20th Century. Until recently it was used primarily by railway modellers. Mig Productions has now introduced pigments into the world of military modelling in a more elaborate way, creating specific colours for use in surroundings, rusting and metals. This pigment is not the same as a pure pigment, because the pigments used for modelling are much finer and offer the appropriate range of colours for models. It can be applied alone, or by mixing it with any other product to create effects never seen before.





## 8. What is a filter paint?

It is a very current and innovative paint especially designed for making filters on vehicles. It is oil-based, but dries very quickly.



## 9. What is a priming paint?

It is a product especially designed to be applied as a foundation before painting the definitive base colour. Many plastic models tend to have an oily and extremely dark or very light coloured surface, which makes it difficult to apply the base colour. Priming leaves a smooth and uniform surface in a neutral grey colour which will assist us in the application of the base colour. It is necessary to use this product in a well ventilated place.



## 10. What is a liquid mask?

It is a viscous and dense product which is applied to a surface with a toothpick or paintbrush handle. It hardens upon drying as if it was latex, but it can later be removed easily and without damaging the paint underneath. In this way, we can mask some of our model's details while applying another colour over it. It is also useful for creating paint chips and camouflages.

## 11. What is an acrylic resin?

It is a product used to agglutinate other products such as pigments with plaster and earth that are used to create mud effects. If we dilute them highly, we can use them to fix the pigment onto a surface in dust form. When dry, they are extremely hard and transparent. They are totally different to white glue.



## 12. Which products are used to apply decals?

They are liquids that help to fix and adapt decals to the model's surface. These products serve as an adhesive and furthermore eliminate or reduce the thickness of the transfer's plastic support. Each product is different and it is convenient to follow the producers' guidelines.



## 13. What are solvents?

They are agents capable of dissolving a paint or material, even when it is in a solid or dry state. Although dry paint can be diluted it is not recommended, because all the paint's properties are destroyed by the solvent. The solvent is not a dilutant.

## 14. How many types of solvent are there?

Alcohol, nitro-cellulose solvent, acetone and water itself are the most commonly used solvents in modelling. Water, due to its special characteristics can also serve as a dilutant.



## 15. How should a solvent be used?

It is only advisable to use them for cleaning tools and when we want to remove incorrectly applied paint. But you must be careful, as many solvents can destroy plastic and resin. The nitro-cellulose attacks porous materials such as paper, cardboard and plaster.

## 16. What is a dilutant?

A solvent is an agent that diminishes the concentration of a liquid, maintaining its characteristics and composition. The dilutant is used to dilute paints thus facilitating their application with an airbrush. Theoretically, a solvent does not aggressively attack an already dry colour whatever the paint type.





## 17. Can I use a solvent as a dilutant?

It could be used, but it is not very advisable, as solvents are very aggressive and can damage our models, but if we know how to use them, they can be a great help occasionally. Water is a good example of this.



When using a dilutant, in this case turpentine, on an acrylic based surface, it will never damage the surface.



If on the other hand we use any type of solvent (except water) on an acrylic surface, it will destroy or damage the surface.



## 18. Which dilutant should I use?

Many specific dilutants can be found in the market, almost one for every type of paint available, although the manufacturers themselves are often unclear about the differences, which can be counter-productive for the modellers. Also, generic and non-specialised modelling products can be dangerous, even if these are sold as 'dilutants'. Never acquire a product that is not directly focused on modelling if you want to avoid unnecessary risks.



## 19. What is a cleaner?

Although they are half way between a solvent and a dilutant, cleaners are chemical products specially designed uniquely for cleaning tools. In many cases, they include soapy solutions. Thus, you should never use a cleaner as a dilutant.



## 20. What is a retardant?

It is a gel or liquid that serves to slow down the drying processing some paints, mainly quick drying acrylic paints. Its main drawback is that it alters the original colour making it more transparent and reducing its covering capacity.

## 21. What is a drying accelerator?

It is a product that speeds up the drying process of certain paints, especially slow drying oils. Gasoline for cigarette lighters can be used as a drying accelerator for oil paints.

## 22. Which products are available for making water?

Many brands commercialise various products to simulate water. Some offer an appearance more like gelatine than that indicated for a liquid, so we should be very careful. Water-based products are available, as are resin-based ones. The latter, with two components are the most realistic, though they are smellier and more complicated to use.







## 5.2. TECHNIQUES

### a) CONSTRUCTION as a support for painting

#### ***Planning a model before painting, preparing the surfaces.***

##### ***1. How should I breakdown my model for painting?***

The best way to paint a vehicle is by breaking it down into reasonably sized parts, that is separating the wheels, turret and chassis, though some fragile or tricky elements can also be handled separately. This will help us to paint all the elements with greater precision and comfort.

##### ***2. Should I arrange the tools before painting them?***

It is advisable not to stick them onto your tank, as you will then be able to paint them more precisely and cleanly, but it isn't always that easy, especially when the tools are fastened by various parts of the tank itself such as clamps. In this case, we should leave them stuck on the tank and very carefully paint them at the end.

### 3. Should I paint the wheels and caterpillar tracks prior to painting?

We are occasionally obliged to stick the wheels and caterpillar tracks on a tank. We should only do so if it is absolutely necessary. There is a special section on how to paint caterpillar tracks after they have been glued on the model.



### 4. When should aerials and fragile elements be added?

Always at the end of the painting process, because we will probably break them if we stick them beforehand.

### 5. How should I proceed with Schurzen armour?

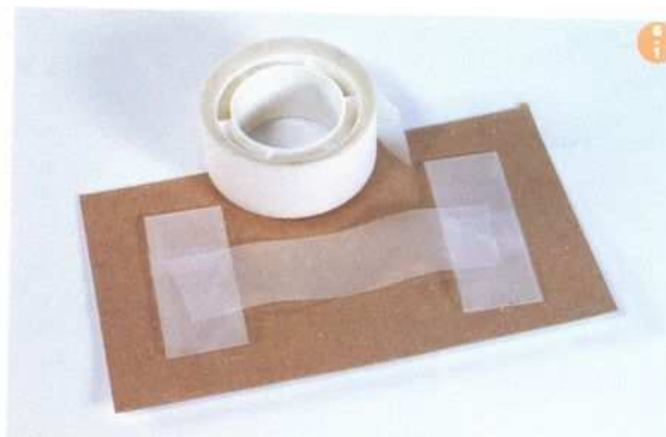
Always leave the schurzen structure glued and paint the armour plates separately. If you also leave the schurzen structure separate, it will easily fall off the model when you glue it onto the tank. This because you will be gluing it over an already painted surface.



### 6. How should I paint loose elements?

To paint armour, mudguards and other small details, you can prepare a support as shown in the image using sticky tape. This is the cleanest and easiest way.

Some small pieces should be painted on both sides and can be held with a small rod or toothpick and stuck with superglue.





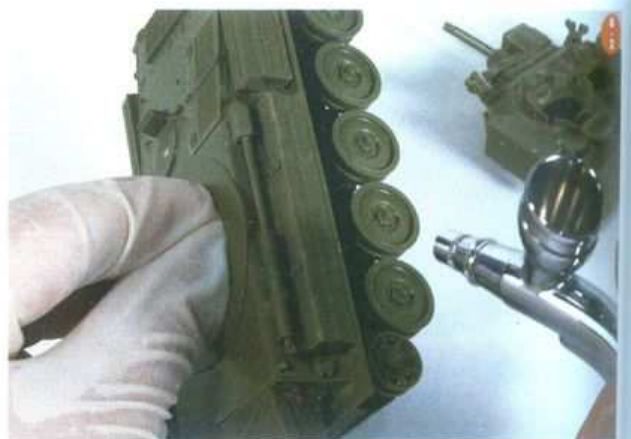
## 7. Should I remove a turret in order to paint it?

Always, because as well as helping us to hold the tank, it will allow us to access the parts hidden beneath it.



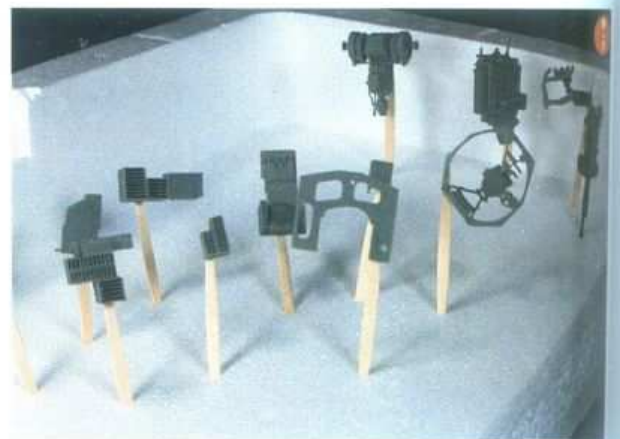
## 8. How can I hold the model to paint it?

You can fix the turret and small elements onto bottles of paint and the like, thus avoiding the need to take the model in your hands. The openings in the bottoms of the turrets are very appropriate for holding them, though always using latex.



## 9. What should I do if my model has mistakes?

First, you should paint all the inside pieces separately. If you stick all of them, it will be very difficult to paint it accurately. Once everything has been painted, glue it together and mask the hatchways. Once the external painting process has been completed, remove the masks with some pliers.





### 10. Should I treat the surface before painting?

It is highly advisable to clean the plastic pieces of the model with soap and water rubbing them with a brush. Leave it to dry in the open air and it will then be ready for painting. The model surfaces often have oily remains from the moulds, which would be an impediment when painting the base colour.



### 11. How should I plan the painting process?

We should decide which parts of our model can be painted separately and which ones cannot. Prepare the pieces on supports to avoid having to touch them with your hands. Always apply a primer, especially if the model includes photo-etched or metal parts. Finally, try to paint all the pieces at the same time that is, applying the wash to all the separate pieces, then the rusting effects, the dustiness, etc... all at the same time. Don't paint the central body of your model until finishing it and then begin to paint the loose parts from scratch. That would be really boring and tiring.

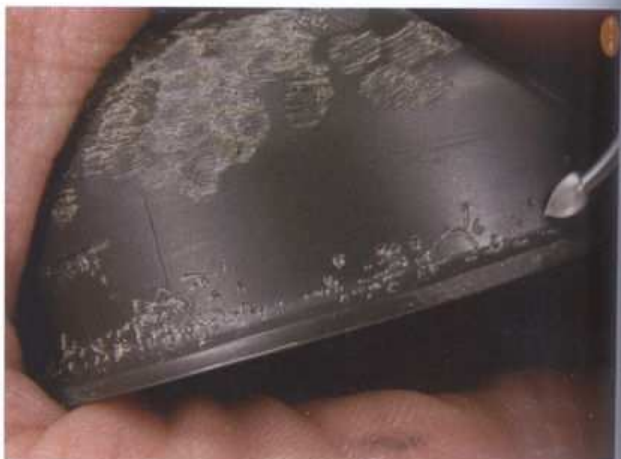




## Creating de textures: foundry metal, sand moulds, exhaust pipes...

### 1. How can I create the foundry moulded metal texture (allied tanks)?

Many World War II tanks were made from parts cast in industrially moulded pieces, which gave them extra rigidity as they had no weld seams that frequently caused vulnerability. These foundry pieces had marks and very irregular shapes that can be simulated with the use of files, drills and then joined with diluted putty. Try to combine small laminations with more longitudinal lines.



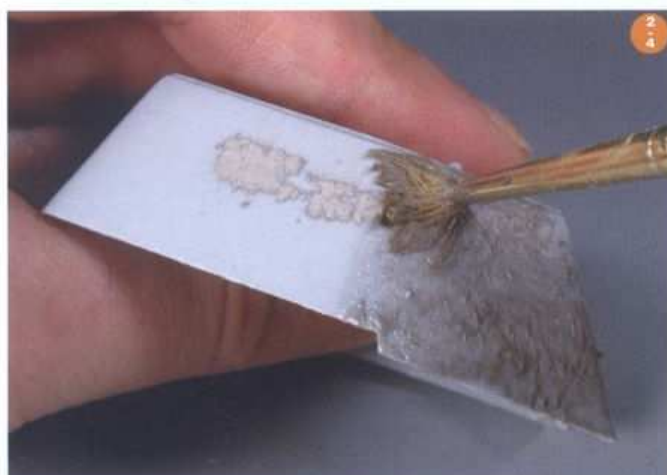


## 2. How can I create the texture of sand moulds (Russian tanks)?

The Soviets used a similar foundry method to that of the Eastern allies during the war, but they used moulds of inferior quality, using pressed sand to make copies, which gave an extremely rough texture in almost all their tanks, especially the T34 and JS series. To represent this result, we can use CAST A COAT products, specially designed for this effect.









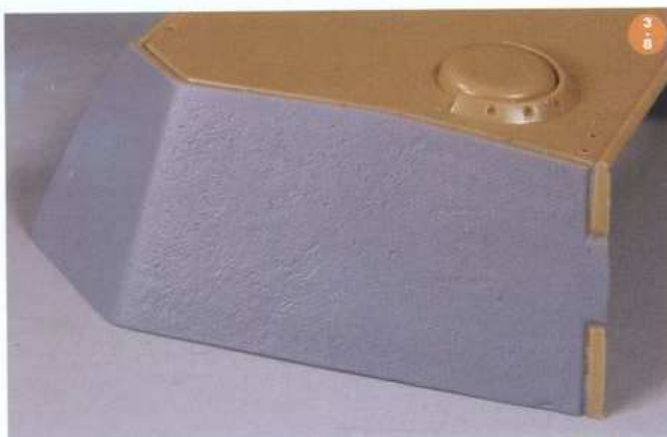
Here the difference between the sand texture and the model's original surface can be seen.

### 3. How can I create the texture of steel plate (German tanks)?

The Germans used a very efficient method for armouring their tanks, particularly the heavy tanks. They used thick steel plates welded together, which provided them defensive efficiency. These steel plates had a very special texture with laminations and irregular shapes that can be easily made with a drill. We will then soften the finish with glue and a fine file.







The difference between the steel plate and the model's original surface can be seen.

#### 4. How can I make an exhaust pipe texture?

By using Tamiya putty and an old paintbrush, it will be easy to create a simple texture, leaving the putty to dry a little, to later create the texture, applying pressure with the paintbrush.





### 5. How can I create the texture of a chipped surface?

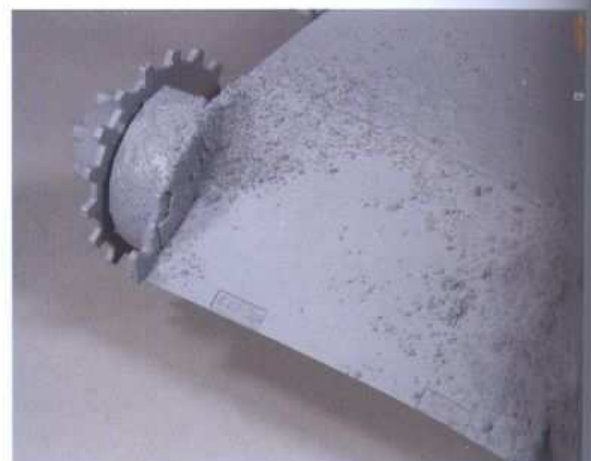
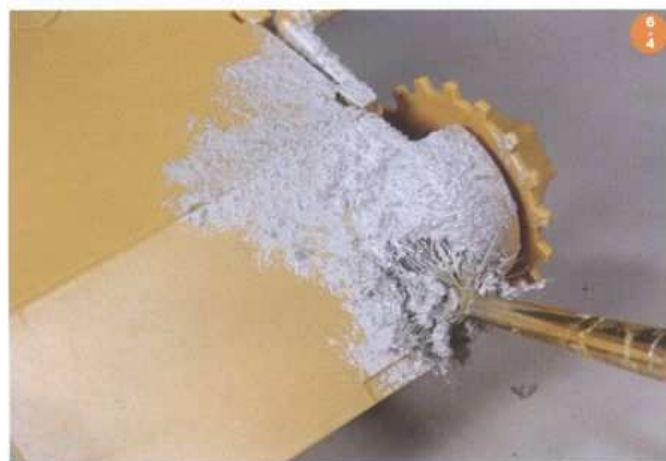
Many vehicles have chipped effects, due to the fact that the paint base coat had peeled due to external factors. Sometimes a shell, shrapnel and natural elements can make a tank a real relief map. To create these effects, we use MASKOL liquid mask to make the chips. Afterwards, we will apply Tamiya putty over it with an old paintbrush. Once the mask is removed, we obtain this special texture.





## 6. How to make mud texture?

Although it is better to make the mud at the end of the painting process, we can also do so at the beginning, mixing Tamiya putty with soil or sand and applying it to the surface with an old paintbrush.



## Special effects: Impacts, imperfections...

### 1. How can I create impacts on WWII tanks?

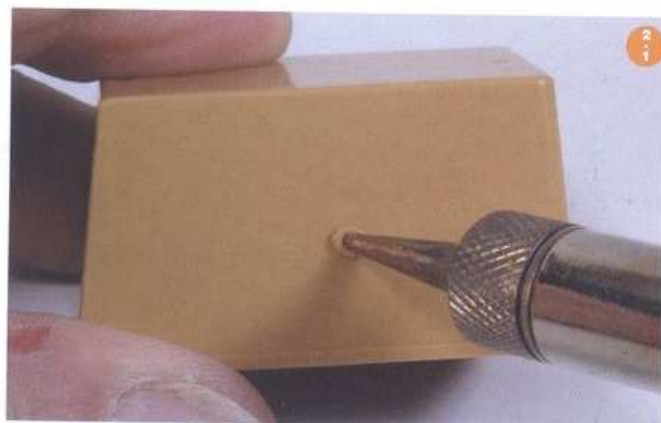
The World War II penetrating shells left crater-like features on highly armoured surfaces. We can create these effects using an electric soldering iron as shown in the photos.





## 2. How to create modern shell impacts?

Currently, more complex shells are used, tending to leave curious effects on the armour. The most original is undoubtedly that shown here, found on the T55's during the Gulf War. The missile cleanly perforates the armour, but it leaves a curious star-shaped mark around it. We will use the solder and the milling machine for this.



## 3. How can I make burnt wheels?

Fixing a normal wheel with a drill or lathe, we can eliminate the wheel tread and make the small channels produced by burning. This technique is not easy, but can be achieved with a little patience.



## 4. How

With a

## Photo

## 1. How

When  
metal  
surface





#### 4. How can I make wheels with damaged tread?

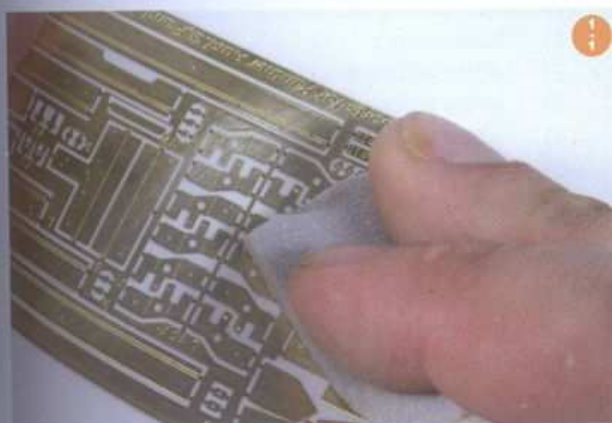
With a cutter, small grooves can be made on the wheel tread. Afterwards, the surface is softened with file...



### Photo-etchings and aluminium guns

#### 1. How should I handle an aluminium photo-etched part before painting it?

When painting a model with photo-etchings or aluminium cannons, we always complain that the paint doesn't adhere as well to the metal as to the plastic. To avoid this, we can pass a fine file over the surface which will assist in the stronger adhesion of the paint to the surface.





## b) PAINTING TECHNIQUES

Tank painting scheme (hacer un esquema o tabla para esta sección)

Those modellers who have trouble planning a complete painting process will find some basic suggestions for the majority of these cases. Of course, this is just an example and each modeller can create or develop variations, but this section will undoubtedly serve as a reference for the least expert. Each point corresponds to a question in this book, so if you don't know how to make one of them, look for the answer in the book's index.



### 1-TANK IN THE DESERT

- 1) grey base colour
- 2) sand base colour, satin airbrush
- 3) filters
- 4) washes
- 5) fading
- 6) chipped areas
- 7) chips
- 8) running rusty chips
- 9) rust streams
- 10) pre-dusting
- 11) dusting
- 12) oil effects

### 2-MODERN ALUMINIUM VEHICLE

- 1) base colour
- 2) satin varnish
- 3) filters
- 4) washes
- 5) fading
- 6) aluminium chips
- 7) pre-dusting
- 8) dry mud
- 9) oil effects

### 3-TWO-TONED OR THREE-TONED TANK IN EUROPE (SPRING-SUMMER)

- 1) colour base
- 2) satin varnish
- 3) filters
- 4) washes
- 5) fading
- 6) running rusty chips
- 7) pre-dusting
- 8) general dustiness
- 9) route dustiness
- 10) dry mud
- 11) oil effects

### 4-TWO-TONED OR THREE-TONED TANK IN EUROPE (AUTUMN-WINTER)

- 1) base colour
- 2) satin varnish
- 3) filters
- 4) washes
- 5) fading
- 6) running rusty chips
- 7) rusty corners
- 8) pre-dusting
- 9) general dustiness
- 10) route dustiness
- 11) wet mud
- 12) fresh mud

### 5-TWO-TONED OR THREE-TONED TANK WITH WINTER CAMOUFLAGE

- 1) camouflage base colour and camouflage
- 2) white airbrush colour
- 3) white colour in mapping
- 4) white chips in negative
- 5) filters
- 6) washes
- 7) running rusty chips
- 8) rusty corners
- 9) pre-dusting
- 10) wet mud
- 11) fresh mud

### 6-SINGLE-TONED TANK WITH A WINTER CAMOUFLAGE

- 1) base colour
- 2) white airbrush colour
- 3) white colour in mapping
- 4) white chips in negative
- 5) filters
- 6) washes
- 7) running rusty chips
- 8) rusty corners
- 9) pre-dusting
- 10) wet mud
- 11) fresh mud



**7-WINTER TANK**

- 1) white base colour
- 2) chips
- 3) more chipped areas
- 4) sponge chips
- 5) filters
- 6) washes
- 7) rusty corners
- 8) running rusty chips
- 9) pre-dusting
- 10) wet mud

**8-SINGLE-TONED GREEN TANK**

- 1) green base colour
- 2) filters
- 3) fading
- 4) washes
- 5) running rusty chips
- 6) pre-dusting
- 7) watermarks
- 8) dry mud
- 9) spilt fuel
- 10) crew footprints

**9-TWO-TONED OR THREE-TONED TANK IN THE DESERT**

- 1) sand base colour
- 2) camouflage colour
- 3) satin varnish
- 4) chips
- 5) filters
- 6) fading
- 7) washes
- 8) running rusty chips
- 9) pre-dusting
- 10) general pigment dusting
- 11) specific dusting
- 12) spilt fuel

**10-TANK RECENTLY OUT OF THE FACTORY**

- 1) base colour
- 2) satin varnish
- 3) washes
- 4) general pigment dusting
- 5) oil
- 6) crew footprints

**11-MODERN TANK MODERN ON PARADE**

- 1) base colour
- 2) satin varnish
- 3) washes
- 4) light pre-dusting
- 5) oil
- 6) crew footprints

**12-MODERN TANK ON MANOEUVRE**

- 1) base colour
- 2) satin varnish
- 3) filters
- 4) washes
- 5) pre-dusting
- 6) route dustiness
- 7) general pigment dustiness
- 8) spilt fuel

**13-ABANDONED TANK**

- 1) base colour
- 2) washes
- 3) fading
- 4) paint chips on a rusted area
- 5) running rusty chips
- 6) pre-dusting
- 7) general pigment dusting

**14-RUSTY TANK**

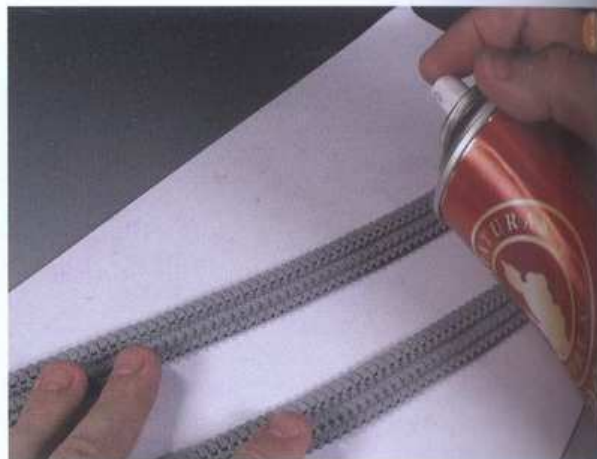
- 1) base colour
- 2) mapping
- 3) washes
- 4) mapping
- 5) wear with dry-brushing
- 6) chips with a paintbrush
- 7) aged rusty chips
- 8) fading
- 9) chipped areas
- 10) large rusted surface
- 11) rusting with pigment
- 12) general pigment dusting



## Priming

### 1. What is priming?

It is a layer of paint applied before the base colour. A specific primer is generally used, applied with a spray can or airbrush. A neutral grey coloured primer is normally used, to highlight any possible assembly faults and to help cover the original plastic colour.



### 2. When and what should I prime?

Terrains, metal caterpillar tracks, very dark plastic models, and very large vehicles are the most appropriate for applying a primer, although almost any model can be primed. You should be very careful with small models or models with very fine detail, because if not well controlled, the primer can hide the details.

### 3. Which primer should I use?

For large models or those with not much detail, we can use a grey colour Andrea priming spray, but for very fine elements, we can prime with Tamiya paints or Tamiya primer.

## Varnishes

### 1. When should I varnish a model?

NEVER, except if it is done at the beginning to adjust or protect the base colour or prepare the surface for decals and transfers or if the varnish is just used for specific effects. If a model is varnished at the end, this will make all our model's blends uniform, leaving it lifeless and boring.

### 2. Which varnish should I use?

The Model Air varnish by Vallejo is very good for use with an airbrush, among the acrylic varnishes and among the enamels; the veteran Humbrol is truly excellent, except the matt finish. Before using a varnish, perform a test with an old model.

### 3. When should I use a gloss varnish?

You can use Tamiya acrylic varnish combined with the base colour in order to prepare a soft and appropriate base for the washes. Humbrol enamel varnish can be used mixed with brown colours to produce oil and spilt fuel effects.



### 4. When should I use a matt varnish?

Use a matt acrylic varnish to accentuate the dry mud effect.

### 5. When should I use a satin varnish?

Once the decals or transfers are placed on the tank, apply Vallejo satin varnish with an airbrush.

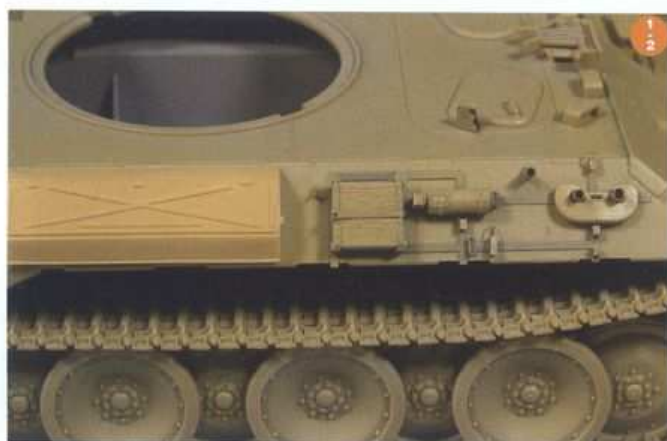




## Base Colour

### 1. How should I apply the base colour?

You should not attempt to cover the whole surface at once, but rather you should apply several coats and transparent layers to help the paint's adherence to the surface. If you try to cover the whole surface at once, you run the risk of applying too thick of a coat losing some of the details. Let each layer dry between coats, even if they are transparent.



## 2. What base colour should I apply?

It is appropriate to begin with a Tamiya base colour, as these colours are highly resistant as bases, although the colours are not very realistic. Once the Tamiya base colour had been applied, you can apply another base colour base from the Vallejo Model Air range, as they offer more lively and appropriate colours.



## 3. Can a base colour be decoloured, faded or lightened?

Yes, by mixing the base colour with a lighter colour, though this technique is becoming outmoded for many.

## 4. When should I add gloss to the base colour?

Gloss should be added right from the beginning, especially for each colour applied afterwards to create the camouflage patches. If we fail to do so, the camouflage will appear different from the base colour and will produce a strange effect.





### 5. *Can I apply the base colour with a spray paint?*

Yes, by using one of the numerous sprays available in the market for this purpose. This can replace the use of the airbrush to apply the base colour.



## Camouflages

### 1. *When should I apply a camouflage to a model?*

Overall when you are sure of how you are going to age and create the camouflaged model's surroundings. If you are unsure, it is better to practice with some monochrome models before embarking on a camouflaged one. There are also some models that are not suitable for the application of camouflage, because it breaks up their lines and shape. On the other hand, other tanks aid the application of camouflages, especially large scale tanks.

### 2. *What type of camouflage should I choose?*

Choose one that adapts well to your skills. That is, don't try to make an ambush camouflage if you don't know how to make the uncountable number of little circles. It is also important to know if you have the patience required. A well painted model with just one colour or a simple camouflage can be quite pleasing, but a badly painted model with a complex camouflage will disillusion the public at large.

### 3. *What paints should I use for a camouflage?*

Well diluted Tamiya paints are a magnificent choice for our camouflages, although the problem is that the colours available in their catalogue are not very appealing. Vallejo offers a greater variety, though these colours are difficult to use.

### 4. *Can I create a camouflage with a paintbrush?*

Yes, although this requires a certain degree of skill. Use Humbrol colours over an acrylic base. Dilute the Humbrol paint to the consistency of milk and apply it with the paintbrush in a single brushstroke. If you use acrylics, you should apply between four and six highly diluted coats. With Humbrol paints, just one is sufficient.





### 5. What are masks?

They are protections to cover or protect certain areas to avoid painting over them when using an airbrush or paintbrush. Both adhesive and air masks are available areas. The adhesives leave a clear border and the air masks leave a hazy one.

### 6. When should I use masks?

Masks are very useful if you don't possess the skill required for painting a camouflage freehand or if you want to make a hard bordered camouflage.

### 7. How can I draw a camouflage freehand?

It is very important to hold the airbrush confidently. Use both hands for improved precision.





## 8. How can I create a camouflage using both paintbrush and airbrush?

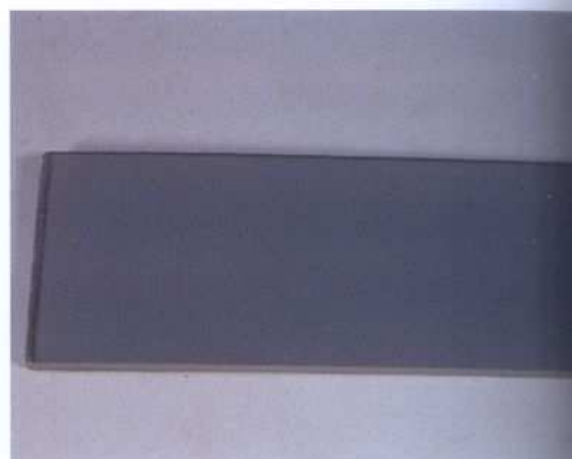
When you create large scale camouflages or have a large surface to paint, you can create a camouflage with a mixed technique. You should first draw the camouflage borders with a paintbrush using acrylic paints. Apply at least three coats. Afterwards, fill the centre of the camouflage with an airbrush, avoiding going too close to the borders.



## 9. What pressure should I use in my compressor?

For large patched camouflages, you can use a pressure of between 1 and 1.5 kilos. For line or spot camouflages, use less pressure (less than one kilo) and dilute the paint highly.

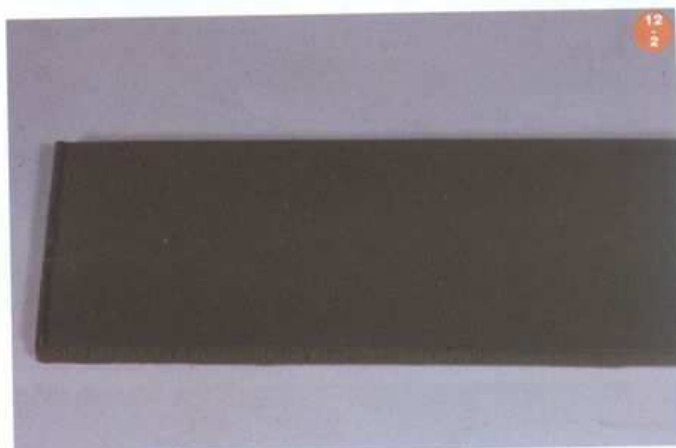
## 10. How can I paint 'panzer grey'?



### 11. How can I paint German yellow?

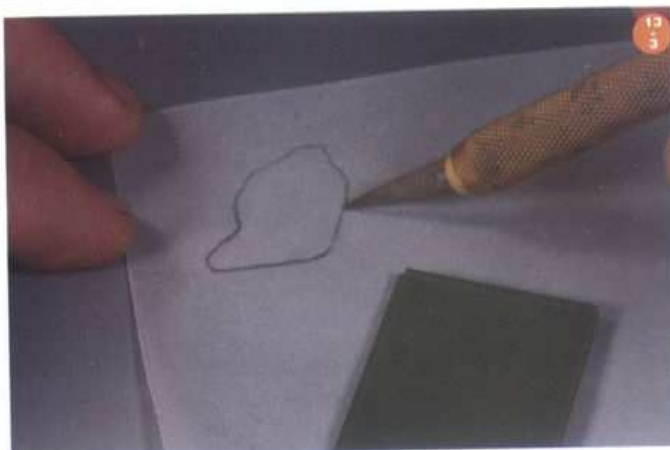
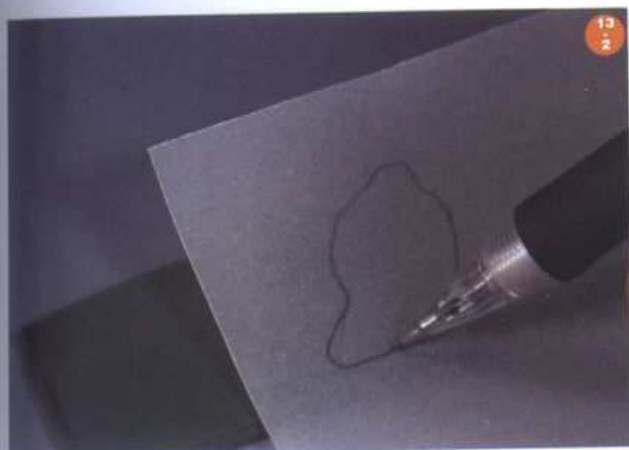


### 12. How can I paint an 'allied green'?

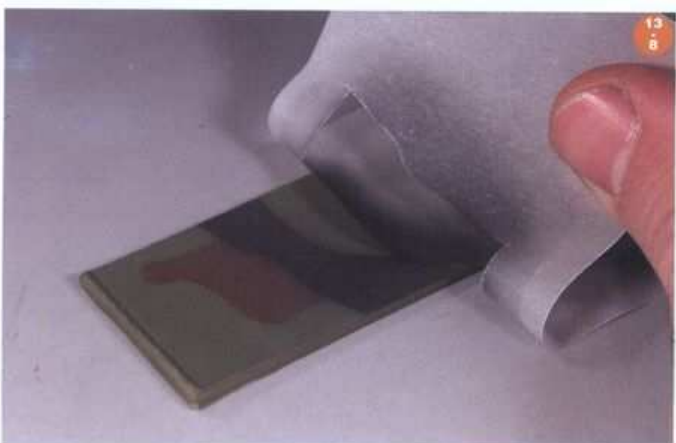
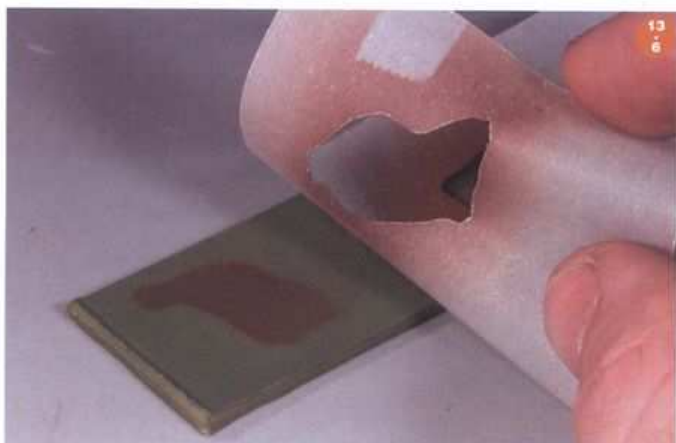
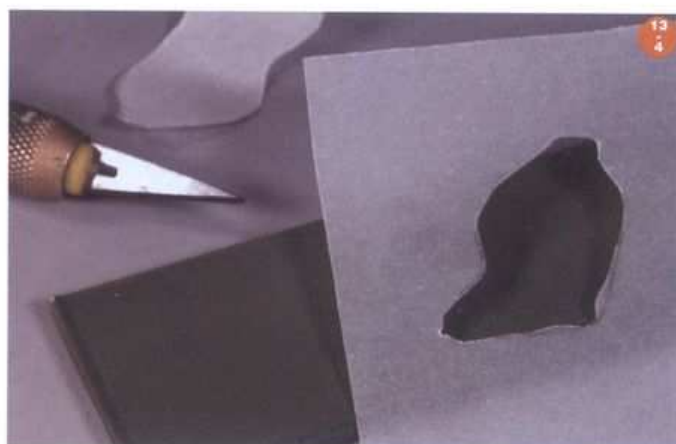


### 13. How can I paint a three-toned semi-hard NATO camouflage?

Use a semi-transparent tracing paper by means of a mask area in order to achieve softened borders.



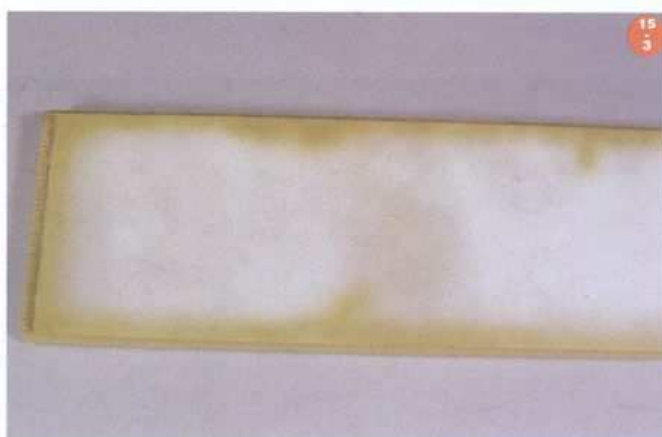




#### 14. How can I create a desert camouflage?



15. How can I create a winter camouflage?

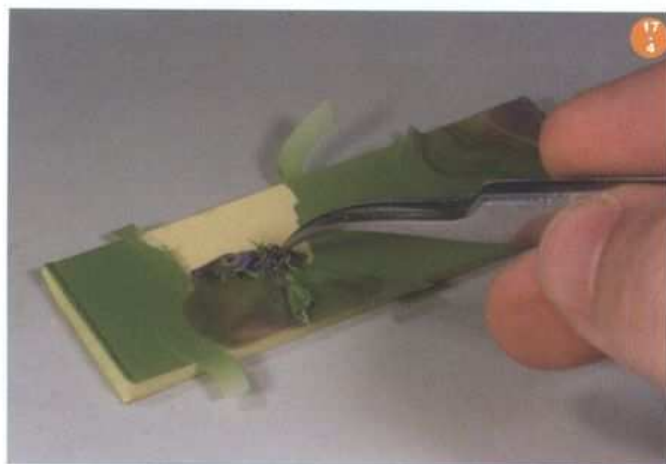


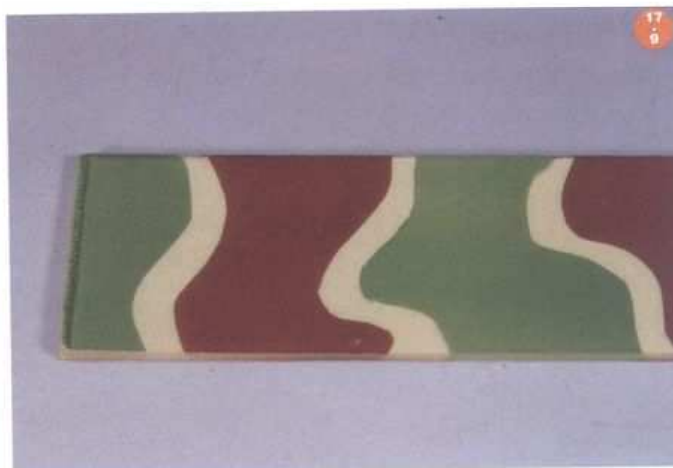
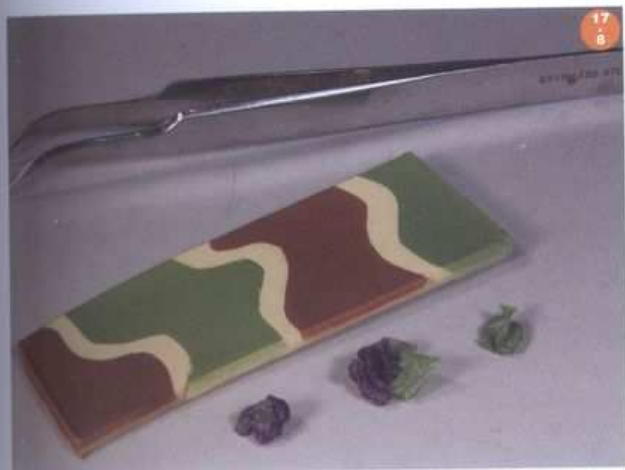
16. How can I create a two-tone cobra camouflage?



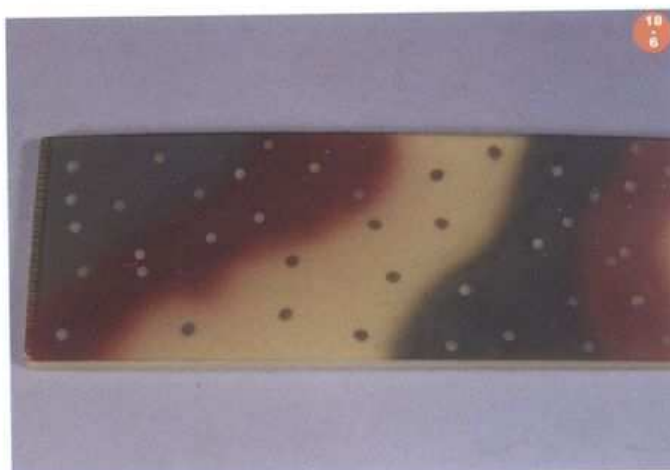
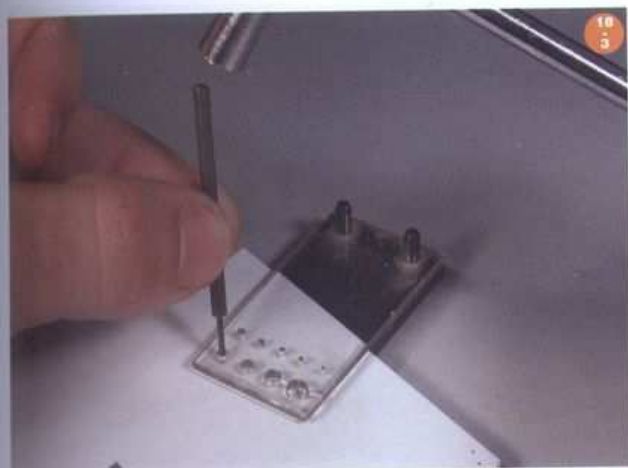


# 17. How can I create a three-toned hard-bordered camouflage?



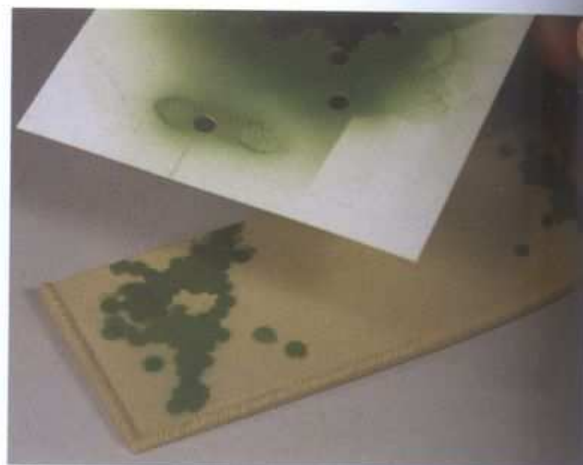
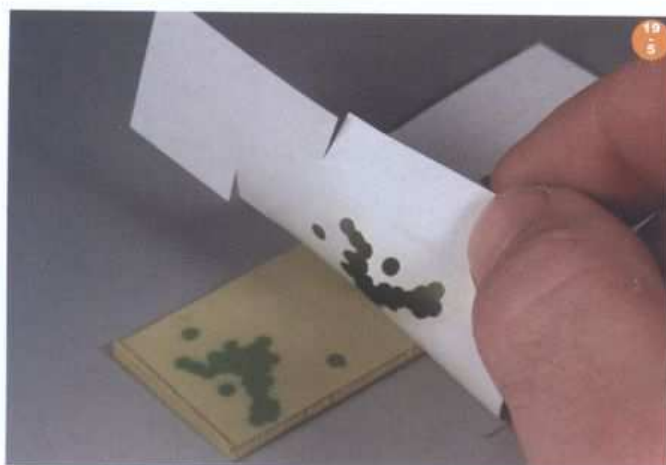
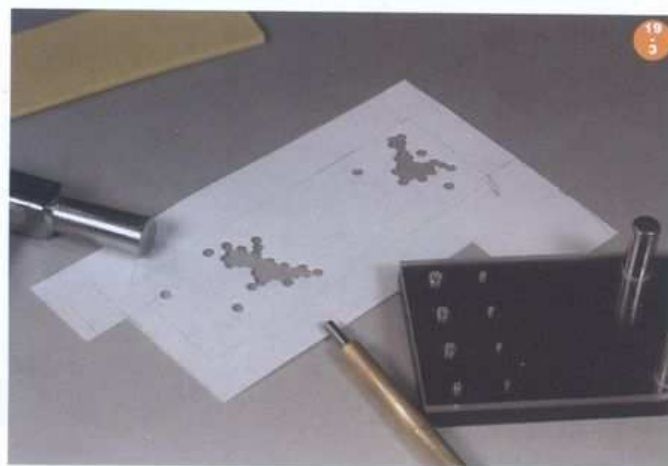
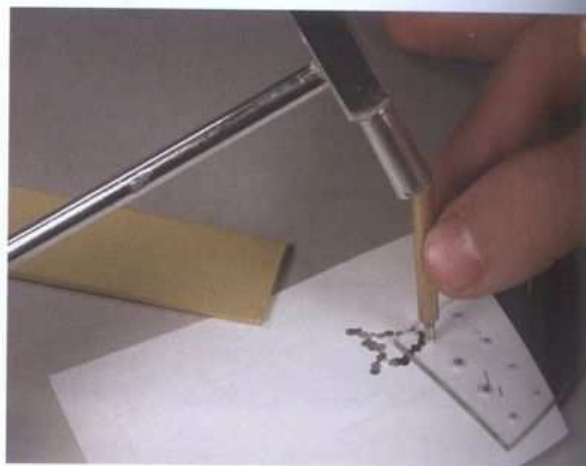


# 18. How can I create spotted ambush camouflage?





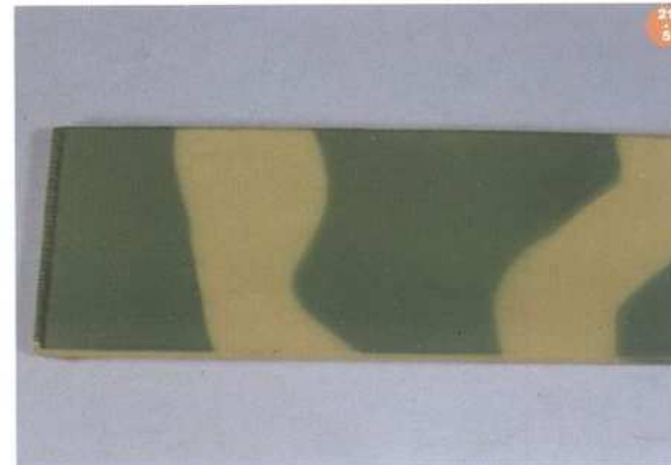
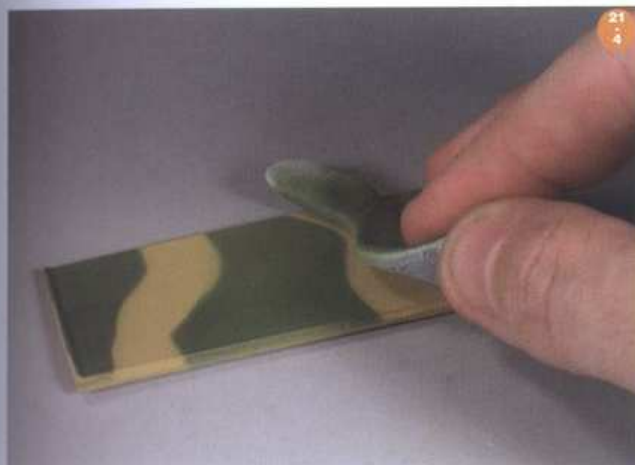
# 19. How can I create circular ambush camouflage?





## 20. How can I create two-toned soft-bordered camouflage?

Use this technique for vehicles with complex shapes where you cannot apply an air mask. Use Blue Tac as a mask.





## **Decals, Transfers and Numbers. Positioning and Protection**

### **1. How many types of decals are there?**

The most common and highly used are water decals, dry transfers and damp transfers. There are also adhesive stencils for numbers and insignias. The photo-etched stencils are similar to adhesives with the inconvenience of not being fixed to the surface and not being foldable or adaptable to the shape of the vehicle, hence they are not shown here.

### **2. How should I use adhesive stencils?**

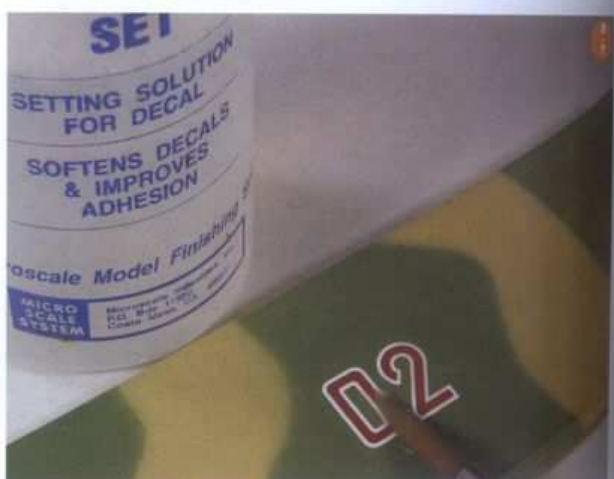




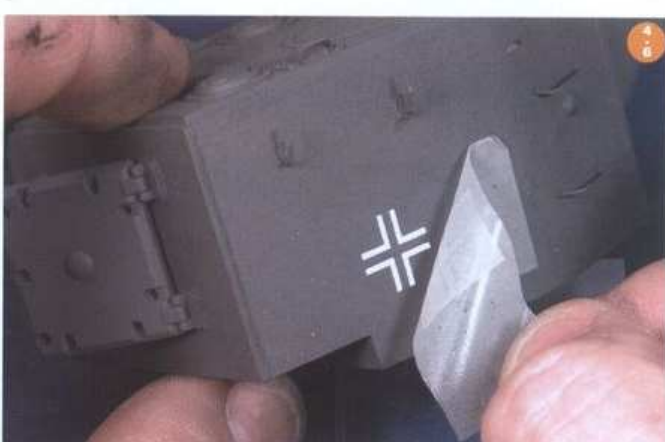
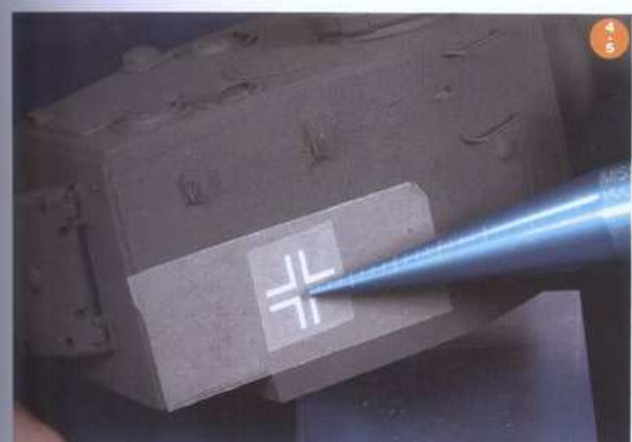
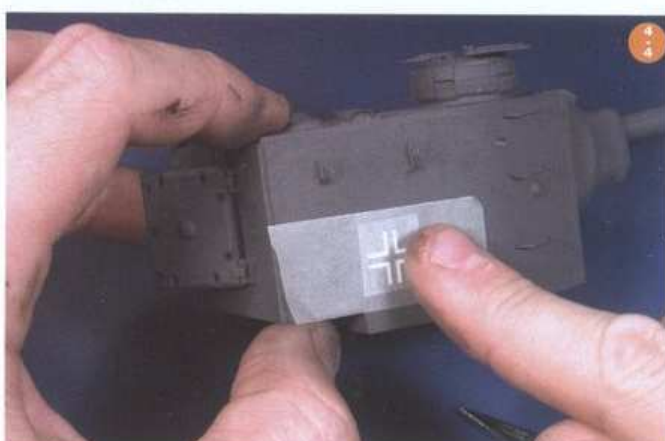
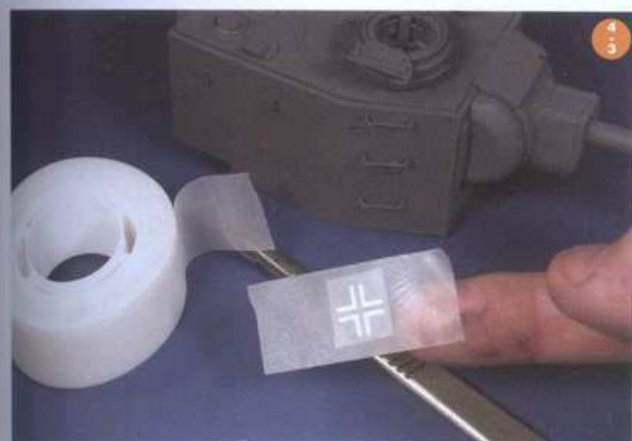
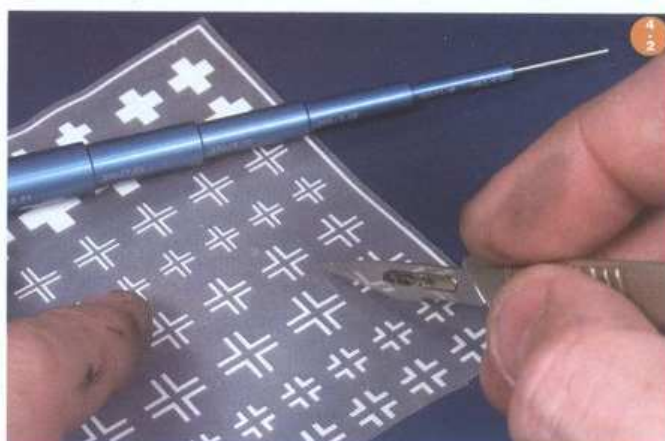
### 3. How should I use water decals?



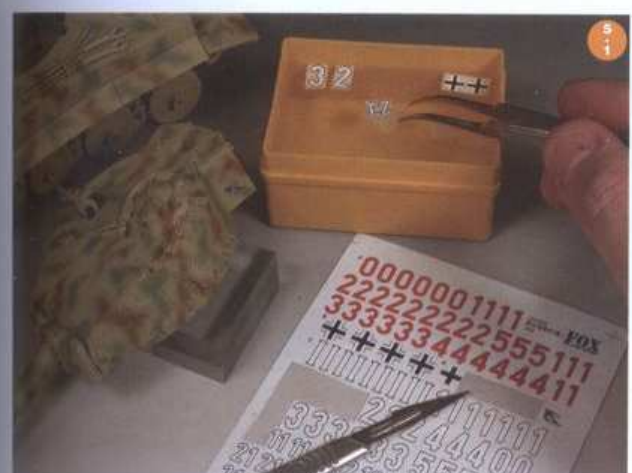




#### 4. How should I use dry transfers?



#### 5. How should I use damp transfers?







## 6. How should I protect the decals and transfers?

Once the decals or transfers have been positioned, they should be varnished with a satin varnish to protect them from later effects. Turpentine for example does not attack an acrylic base but it can destroy an unprotected decal.



## 7. On which types of surface should I use decals?

Always glossy, hence before applying a decal, you should always apply a gloss varnish to the area. This will prevent bubbles forming under the decals.



# Zimmerit

## 1. What colour should the Zimmerit chips be?

Although there are numerous theories on the original colour of Zimmerit, it was actually a greyish paste, similar to the colour of Tamiya putty, perhaps a little lighter and perhaps slightly yellow. Hence, if we make the superficial chips on the Zimmerit layer, these should be a bleached light grey colour. If the chips are deeper, the resultant colour should be grey, even if the tank priming colour were red or another colour, because the Zimmerit leaves incrustated remains on the original surface of the tank. As artistic license, we could paint the priming layer red if we so desired, to provide more colour to the rest of the model, but this wouldn't be very correct.

Another very interesting and realistic option would be paint the chips in the base colour, the same colour in which the tank was painted, because the tanks were often repainted in the front and the chips were usually covered with grey Zimmerit.



## 2. How should I paint the Zimmerit?

The chips are painted in a light grey colour and a light or gloss is later applied to the lower border to simulate the relief. We can do the same for the upper part, this time using a dark colour. Once dry, the best way to age the Zimmerit is with very soft dustings. You should never use a paintbrush to emphasise texture.



## Filters

### 1. What is a filter?

The filter is a painting technique that is used to enrich, unify and vary the tone of a base colour. It is useful for unifying a tank with a complex and contrasting camouflage, or to enrich a flat colour and also to vary the base colour we would like to bring this incorrect colour closer to a more appropriate one. The resulting appearance should be slightly satin.



### 2. What do we need to apply a filter?

Sin Industries filters are the most appropriate for modelling, because the colours are specially designed for military modelling and they possess the perfect quantity of colour. Simply shake them vigorously and they are ready to be applied with a paintbrush. Filters can also be applied with enamel paints and some diluents.



### 3. How should I apply a filter?

The filter should be applied with a soft rounded number 6 paintbrush. The paintbrush should be dampened with the "filter" and not soaked. The paintbrush should be passed over the surface once and no more than twice, avoiding the accumulation of paint in the corners or details. A slightly matt surface will help us to apply the filter. Many layers of filter can be applied, but the model should be left to dry for at least two hours in between coats. Special filters can also be applied, that is, a differently coloured filter for each part of the tank, which will provide a more realistic effect.





#### 4. What is the difference between a filter and a wash?

The filter serves to modify the base colour and enrich a surface in a uniform manner, while the wash serves to highlight the details and vehicle panels using a much denser and opaque colour.



#### 5. When should I apply a filter?

It is always advisable to apply filters to a model, as they provide us with the first real aspect and leave an adequate surface for the later application of the washes.

#### 6. Can a filter be replaced by another technique?

When we create wear effects with oil paints, this technique can cancel out the filters, overall if we apply a lot of wear to the whole model surface. But once and for all, it is better to apply the filters first in case some areas are left 'unworn'.



## 7. *Why does the filter have a glossy finish?*

If you create a filter with household means, using turpentine or some poorly recommended type of white spirit, we run the risk that our filter will have a glossy finish, or even that it will never completely dry. This sticky appearance is the fruit of having used an inappropriate turpentine. But a well applied filter can leave a slightly satin appearance, especially after a third filter, but it is always dry.



## 8. *How long does a filter take to dry?*

A Sin Industries filter takes approximately two hours to dry completely. If we make a hand-made filter from turpentine and oil paints, the model should be left for a whole 12 hours to dry between filters.

## 9. *How many filters can I apply?*

Only you can decide that, but it is normal to apply between three and five filters until achieving the desired appearance. You should consider that the superposition of the filters darkening the base colour is irreversible. Although you can apply a light coloured filter, this will not prevent the darkening of the model as a whole. Don't be afraid to investigate applying strange filter colours. You can apply a blue or orange without the colour being to noticeable. Remember that the filters are a very subtle build-up of colours.



## 10. *When will I know when I have finished the filter phase?*

Nobody can help you there, as you are the only person who knows the direction your base colour should take. If your base colour is too grey and you want to make it more yellow, apply as many yellow filters as you see fit until your idea is reached.

## 11. *What colours does should I use in the filter for a panzer grey tank?*

Blue grey and dark brown are the most appropriate for Panzer Grey tanks, usually too neutral and monotonous.

## 12. *What colours should I use for a green tank filter?*

If your green is too toned down, apply ochre, orange and brown filters. If the green is too yellow or bright, apply grey, dark green and dark brown filters.

## 13. *What colours should I use for a three-toned German tank?*

Ochre brown and light brown. If the camouflage is very lively, apply grey filters.

## 14. *What colours should I use for a white tank?*

Light grey, ochre brown and blue grey.

### 15. What colour should I use for a sandy coloured tank filter?

Use ochres, yellows, greys and light browns.

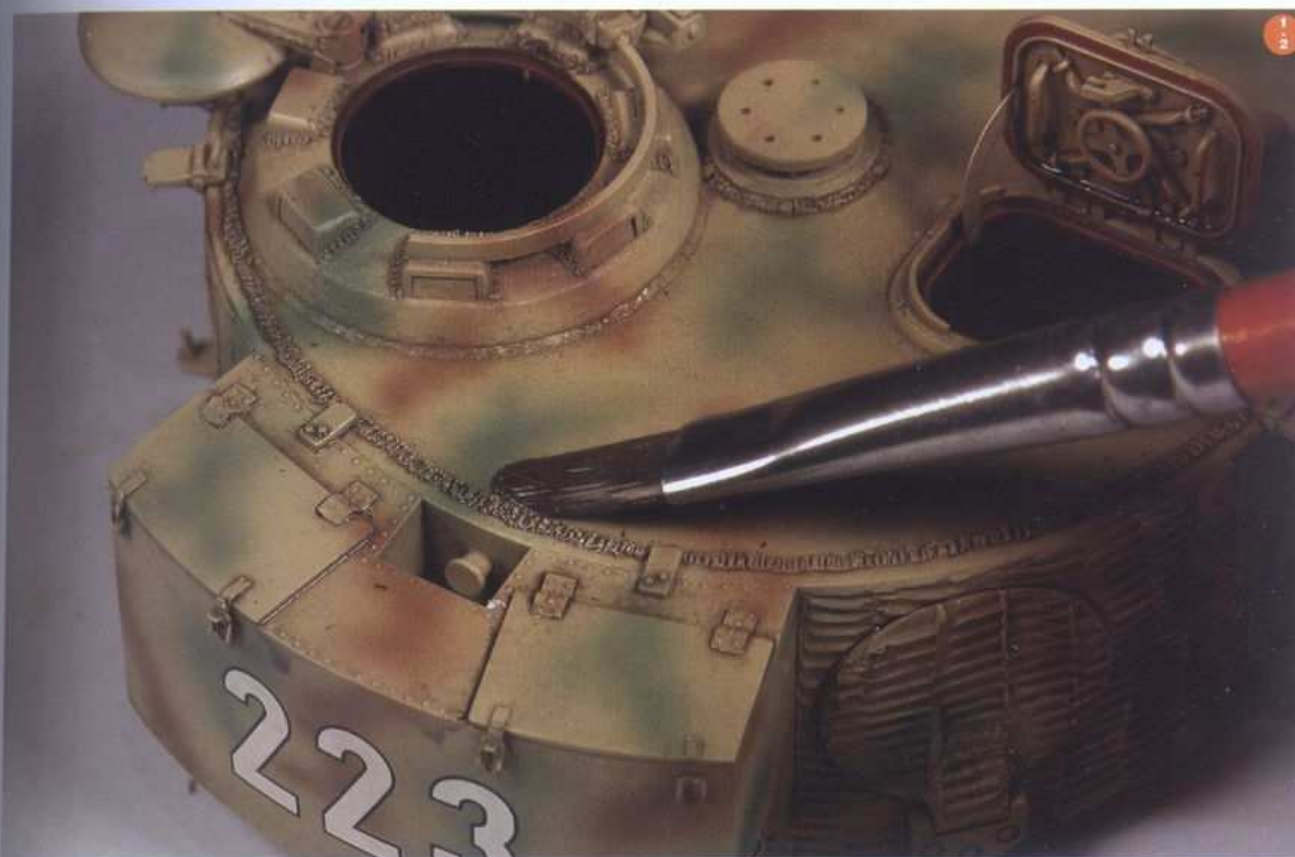
### 16. What colours should I use for a three-toned NATO tank filter?

Medium grey, grey-brown and dark brown.

## Washes

### 1. What is a wash?

It is one of the oldest techniques and also one of the most commonly used, but until very recently, nobody was really sure what it was. In fact, everything but dry-brushing has been called washing. But it is necessary to define exactly what a wash is, in order to progress and understand modelling. The wash serves to highlight details and vehicle panels with the aim of creating greater depth thus increasing the contrast which will allow us to better appreciate the different shapes of our model.



### 2. What do I need to apply a wash?

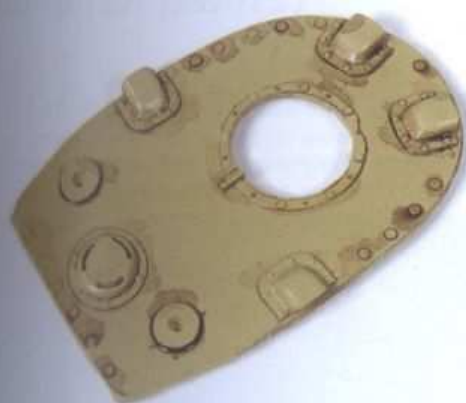
A dark brown paint mixture can be used, with oils or enamels, diluted with 80 to 70% of dilutant. A soft, rounded number 2 or 4 paintbrush should be used. If our model's base colour is enamel, then an acrylic wash can be applied, diluting them with water and later adding some alcohol.



### 3. How should a wash be applied?

With a mixture of dark brown diluted with turpentine, the paint should be deposited at the cracks and details of the model, without worrying if the effect is uneven. Leave it to dry for a few minutes and then with a clean paintbrush moistened with turpentine, the wash marks should be blended until they are soft and well defined.



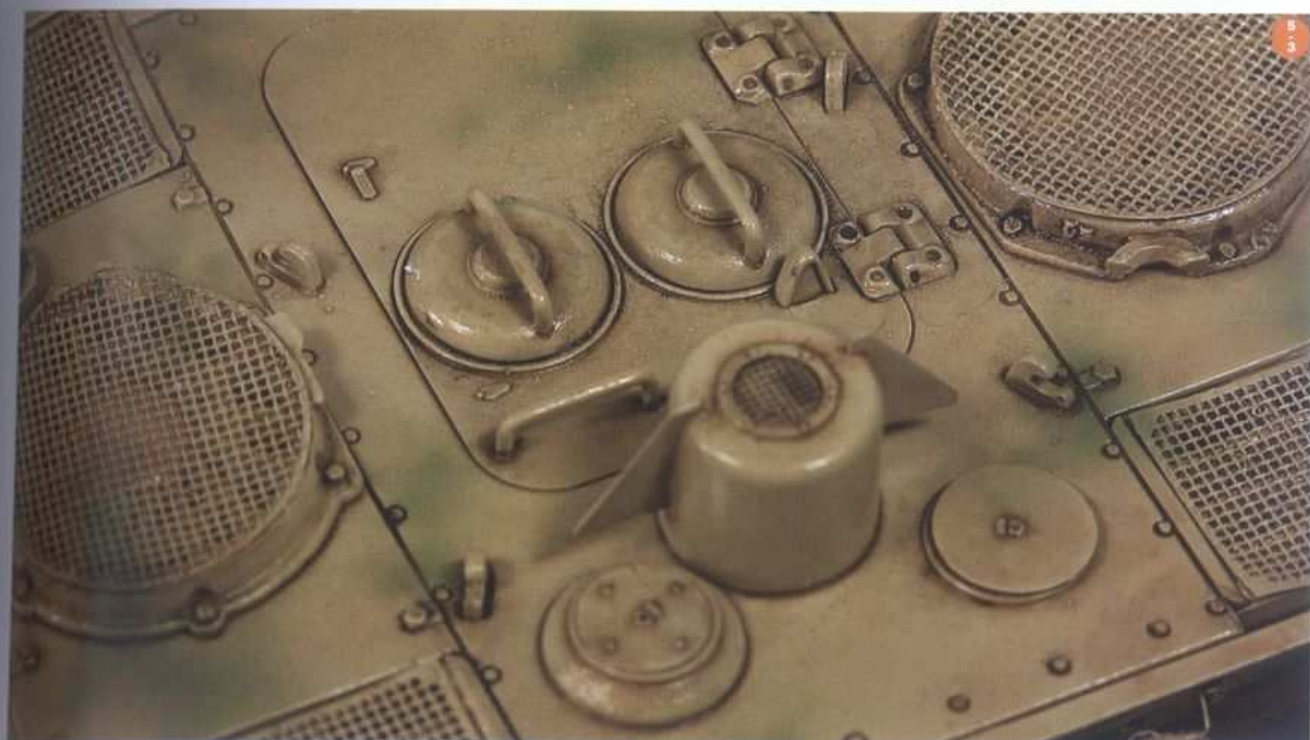


#### 4. What does a wash symbolise?

It represents all the dirtiness mixed with oil and fuel remains that collect around the rivets and also accumulate around the hatchway corners and door cracks. They generally represent accumulated dirtiness.

#### 5. When should I apply a wash?

Whenever you want to contrast the model's details, especially those numerous details, rivets and hatchways. They work better on light-coloured vehicles than on dark-coloured red vehicles.





## Rain marks

### 1. What is a rain mark?

It is a technique for representing the marks left by the rain and humidity on the vertical panels of vehicles. Generally, all vehicles are always covered with some dust. When the rain or dew falls over it, the dust is dragged down the vertical panels, thus generating a series of vertical lines of various intensities.



### 2. What is required to create a rain mark?

A water mark can be made with dry paintbrush and a light sand or earth colour with its corresponding dilutant.

### 3. How should I apply a rain mark?

By using Buff and Flat Earth paints by Tamiya and diluting it with 90% water. Vertical lines are traced on the panels with a rounded paintbrush, trying to vary the thicknesses of these lines and avoid allowing them to touch each other. Once dry, the process is repeated, but this time adding new lines on top of the old ones.

### 4. When should I apply a rain mark?

Whenever our vehicle is in a dry area, where it has previously rained, especially on vehicles with large areas or highly contrasting camouflages. Try to avoid applying them to sand or light coloured tanks and vehicles, where the effect will not be well appreciated.

## Fading (oil paints)

### 1. What are fading effects used for?

The fading simulates the deterioration produced in tank paints by sun and rain action. A wear effect will improve the tank's appearance, overall if it was a plain colour without any camouflage, though they can also be used on camouflaged tanks.

### 2. When should I use a fading effect?

Oil paint wear can be used whenever the model is painted with acrylic paints. If the base colour is enamel, you run the risk that the prolonged exposure to of the base colour to the oil paint can damage the base colour.

### 3. How can I create horizontal wear?

Small quantities of oil are applied to the surface, starting with the lightest paints and finishing with the darkest ones, being able to use any colour from white, yellow ochre, blues (for green coloured tanks), greys and the whole range of browns. Once the colour points have been applied, they are blended with a clean paintbrush, moistened with turpentine, in a circular motion until the paint is mixed well, removing the excess paint.







#### 4. *How can I create vertical fading?*

It is applied in exactly the same way as the horizontal fading, but using a flat paintbrush to blend the paint with vertical movements.



#### 5. *Special precautions to be taken with fading.*

You should try to apply the appropriate quantity of oil, because by applying too much, you run the risk of obscuring the details. Place the darkest colours closer to the details and corners, as well as for the hatchways or zones protected from the sun. The light colours should be in the areas most exposed to the light. Don't pass the paintbrush over the same area too much when blending, or you will end up removing all the paint. You should try to reach the point where the paint is mixed with the background without losing it or covering it with too much paint. The model's surface can be moistened beforehand with turpentine, especially if the finish is too matt. Applying the fading effects after the washes and filters can be very appropriate.

## Decolouration or fading (with pigments)

### 1. How can I create a decolouration?

The fading caused by the sun can also be created with pigments. Fading pigments from Mig Productions will be used for green and grey tanks. They are not very appropriate for camouflaged tanks. The pigment is applied with a paintbrush to the vertical panels, trying to draw uneven vertical lines. Afterwards, the excess dust will be removed with another paintbrush.



### 2. When should I create a pigment decolouration?

On many occasions, we forget to create the fading with oils, or simply when the model is finished, the previously applied fading effect can appear very soft or subtle. In this case, to intensify the decolouration or fading effect, we can use this technique to contrast our final work.

### 3. Special considerations for using pigment decolouration.

It is very important for the surface to be slightly matt, so that the pigment adheres efficiently. Otherwise, it will be sufficient to moisten the pigment with a little turpentine or acrylic resin highly diluted with water. A final solution is to varnish the decoloured area with matt varnish, although this will excessively eliminate the desired effect.

## Dry-brushing

### 1. What is dry-brushing?

This is perhaps the oldest and most popular modelling technique. It represents wear caused by rubbing, that is, the wear action caused by rocks and stones or even a tree trunk. But they never represent the fading of the tank's paint, because the paint peels off, when coming into contact with the crew or external agents and produces chips. A few years ago, this technique was used extensively by many modellers to highlight the details of a model, without fretting if this is totally unreal and a real tank is never actually produced. We can actually assign other uses to the dry-brushing process, much more appropriate for achieving more realistic effects, though these are far removed from the process' original applications.



## 2. What is dry-brushing used for?

Dry-brushing can be used to represent wear from rubbing against any material or porous object such as cement, wood, stone, dry terrains, etc., but also to imitate the effects of rusted zones and large chipped areas.

## 3. How can I perform dry-brushing?

A large rounded paintbrush will be used, if possible an old one, because the rubbing action can ruin paintbrushes. Paint is loaded onto the paintbrush, which is then dried with a cotton cloth or absorbent tissue until the brush is almost clean from paint, with only a small trace remaining on the brush. Then the dry paintbrush can be applied over the desired zone, rubbing the surface in a circular motion. Finally, one should emphasise the fact that it is always best to use enamels for this technique.

## 4. Using dry-brushing for chipped areas

Dry-brushing can be used to create chips, especially on vehicles with another colour applied over the base colour, as is the case with winter or desert vehicles. We should combine this technique with real chips applied by a brush.





## 5. Using dry-brushing for rusting

By using a dark rusty brown colour, we can imitate worn and rusted areas caused by prolonged usage. Abandoned vehicles are ideal to put this option into practice.



## 6. Using dry-brushing for cleaning surfaces.

Sometimes, after applying the washes, we can see how some areas have ended up a little dirty and the result is neither clear nor clean. In this case, we can apply a very light dry-brushing to the affected areas to clean and purify the details, using a similar colour to the base colour, but never too light, as this will produce a "rock" appearance.



## Chipped paint

### 1. What should I know about chips?

Chipped effects are the most desired and hated by modellers, because if you know how to create them well, you can break hearts, but if you apply them badly, the model will end up in the rubbish bin or on the least valued shelf. Chipped paint is the most rebellious and difficult of all the effects. You should practice a lot and take inspiration from nature if you want to create them successfully. They are also extremely random and always manifest themselves in the least expected way. They are undoubtedly and will continue to be your nightmare and headache for life, unless you manage to dominate them like cowboy riding a wild bull. The chips will play with you, it will lead you to believe that you know how to do it, but only when you are practicing on an old model; when you are painting a flamboyant and recently painted Panther or Tiger, it will deceive you and transform itself into the most horrific of forms. The only solution for this is to observe real chips and to practice a lot. The paintbrush, paint used and your pulse can help to make the best chips effects.





## 2. What should the chips look like?

Areas surrounded by small gaps and scratches.



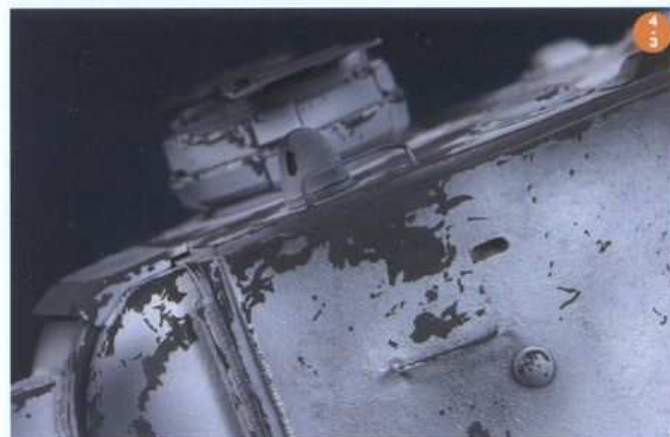
## 3. Where should the chipped patches be positioned?

As a general rule, they tend to appear near the edges, hatchway and door borders, on handles or light protectors, in horizontal zones, fruit of footsteps and on the upper parts of the cannons.



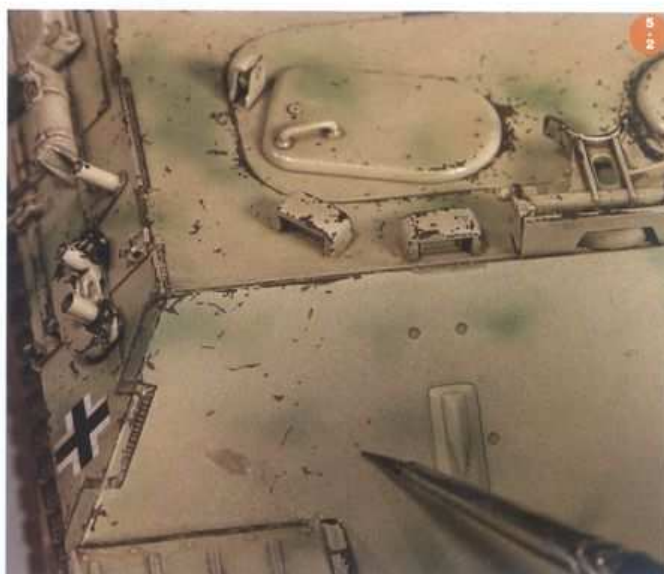
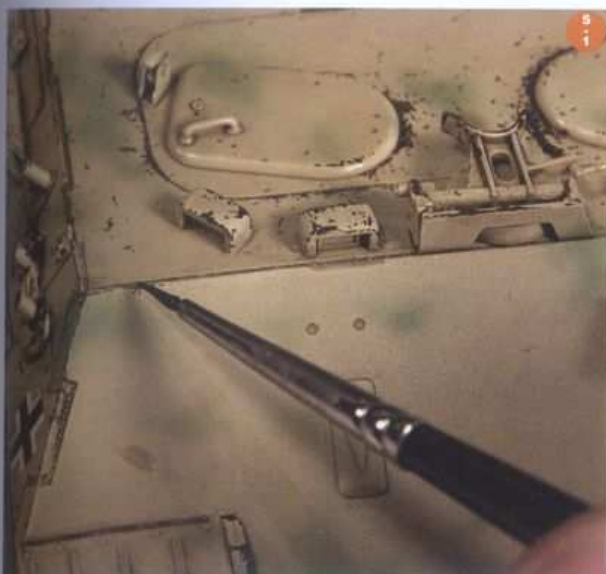
## 4. How can I create chips with a paintbrush?

Using a number 1 or 0 paintbrush, we dilute the paint until a quite liquid paste is obtained, which will allow us to draw the chips precisely. A very thick paint will produce too thick chips and excessively diluted paint will produce rounded and gelatinous chipped effects.



## 5. How can I create chips with a running rust effect?

Start by making small chips on the handles most prone to receiving hits or damage, to later create smaller ones in the most central and lateral areas, by making small points together with other thicker ones. On the thicker ones, draw a fine vertical line that will later be blended with a clean paintbrush moistened with white spirit. These chipped areas should be created with enamel paints. A touch of dark metal can also be applied to some of them, to simulate the effect of continuous usage.





## 6. How can I create chips with the sponge technique?

Moisten a piece of sponge with a little thick acrylic paint. Dry it a little with absorbent tissue and press the sponge over the surface of your model to achieve the effects of a highly corroded and peeled area. Don't abuse this technique, because its excess can result somewhat unreal.



## 7. How can I create chips using dry-brushing?

By using the dry-brushing technique and choosing a dark rusty colour, to imitate large chipped and rusted areas. Look at the section on dry-brushing to learn more about this technique.



## 8. Corrosion and scratches

Use a very fine paintbrush and acrylic paint to create this type of effects. The scratches were caused by rubbing against a surface with a sharp or pointed surface, and the corrosion spots originated from water entering between the metal and paint of a vehicle, thus creating small rust spots.





## 9. Negative and positive chips

We can distinguish between two types of chips, depending on whether the chips affects the paint occupying a large surface area or if the chips is just a small part of this colour covering the whole surface. The red circle indicates an area with positive chips, painted with grey paint over a white area. The green circle indicates negative chips, for which white paint was applied over a grey base.



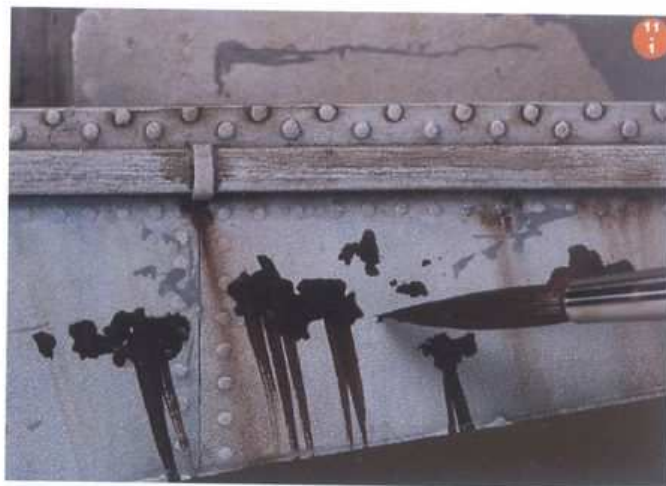
## 10. Chipped wood

These tend to have a longitudinal form, following the direction of the wood grain. Light colours can be used to imitate the clean wood that is exposed underneath the paint protecting it.



## 11. Chips on old rust

These are like the chips on running rust, but on a larger scale, more closely grouped together and with a greater concentration of rust streams. You can draw a small line of light coloured paint over the chips, in order to imitate the effect of raised paint.

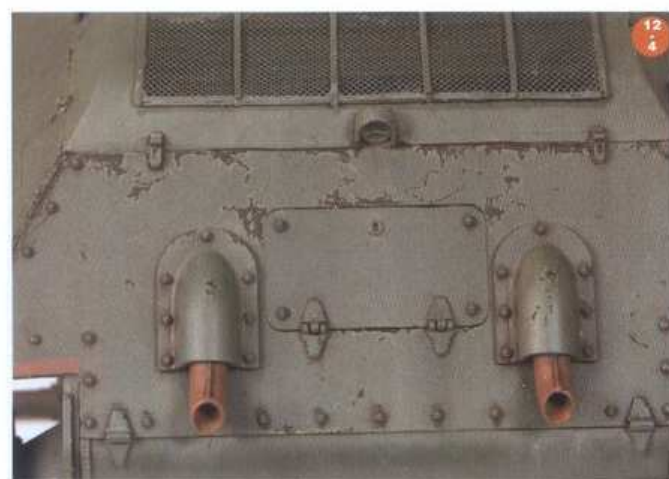


## 12. Recently rusted chips

This type is perhaps the most common of all and works very well on plain coloured vehicles with very complex camouflages. Firstly, chips should be created with a paint lighter than the base colour; on top of which another slightly smaller chipped area will be applied, this time using a dark brown colour.







### 13. Aluminium flakiness

This section will serve to describe all those chipped effects that are produced on non-corrosive metals, such as aluminium and lead. An aluminium colour will be used to represent these effects. You must be very careful with the tank weld lines, as these lines are made of lead and lead never rusts.



## Mapping

### 1. What does mapping symbolise?

Mapping represents all those irregular patches that can be detected on a tank but by nature are not really chips, but rather irregular randomly created stains. The term mapping comes from three-dimensional programs where textures are mapped on three-dimensional objects to give them colour. In the case of modelling, this means the application one or more layers of small patches as if they were maps of continents and combining them with other techniques employed above and below them, produce very deep and realistic effects. This is one of the most innovative and little known of all the techniques available.

### 2. How can I create mapping?

By using an acrylic paint, small irregular marks are painted around the tank's contours. The paint is left to dry and the process is repeated until the desired intensity is achieved. Once completed, dust and other environmental effects are used to smoothen the exaggerated mapping effects.





### 3. How can I create rusted mapping?

This option requires the combination with dry-brushing technique. You should begin by applying irregular mapping stains to later soften them with dry-brushing, thus breaking their hardness. After adding other rust and dust effects over this, a very realistic rusting effect is achieved.



## Rusting

### 1. What are the colours of rust? How to understanding rust

What colour is rust? All colours? No, but almost all of them. Bronze produces an oxide green and in steel and iron, we can find granite, ochre, black, grey, red, orange and even dark blue colours. We should not limit ourselves to saying that rust is a specific colour reference in a catalogue. We should adapt our colour to each situation, for example lighter more orangey rust colours are used for green tanks and browns are used for sand coloured tanks. When creating burnt vehicles, we should open up our whole colour repertoire to train our eyes to mix colours visually. This is what happens in the reality.





## 2. Why do desert vehicles rust?

It is very simple; the oxidising agent is not water, but rather it is oxygen, which is where the word oxidise comes. Hence a desert vehicle is just as rusted as one in Europe. Now, the rust streams on desert vehicles are quite a different matter. Although it does not rain very much in the desert, it is true that on the WWII campaigns in Tunisia, the rains were so intense that the roads were flooded. Generally and with the exception of the wildest deserts such as the Sahara among others, it rains a lot more than we think it does in North African and Middle Eastern countries. Hence, you should not be afraid to generously rust your vehicle should you so desire.



## 3. Rusting the corners

Using a dark brown enamel or oil paint, the most appropriate areas for rusting are painted. After a few minutes, these stains are blended with a paintbrush moistened with white spirit.





#### 4. Applying surface rust with a paintbrush

This technique combines various materials that offer very realistic results. We commence by painting the most protected zones in Humbrol number 62 paint, randomly creating the rust streams. Afterwards, with a similar colour, large chipped areas are created that will later be unified with oxide pigments.



#### 5. Surface rust with texture

This technique can be used for vehicles and highly rusted and deteriorated metal parts. First, the chips are painted in rust colour (large quantities), then a mixture of oxide pigment paints is made with plaster and acrylic resin. This mixture is deposited on the surface, applying pressure with an old paintbrush. Once dry, the finishing touches are applied to the whole area with pigments fixed with turpentine.







## 6. Rusted chips (see section on chips)

## 7. How can I create rust streams?

A vertical line is drawn with oils or enamels and later blends with a little white spirit and a soft clean paintbrush.



## 8. How can I create rust with pigments?

A small quantity of pigment is deposited on the surface and a few drops of turpentine is later added to compact the product.



## 9. How can I rust a large surface?

In this case, you should combine other techniques such as mappings (see section on mapping), rust streams and chips created with sponge.







## 10. How can I rust an exhaust pipe?

The quickest way to rust an exhaust pipe is by using pigments. We commence by adding the darkest pigment colours over an dark red dish-brown acrylic base. Afterwards, we will apply the lighter rust colour, focusing on the parts that are more exposed to the light. Finally the dust is applied and everything is blended with a little turpentine. For more information on exhaust pipes, refer to the 'Exhaust pipes' section.





## Dusting

### 1. What is dusting?

It is exactly the opposite of what our mothers and grandmothers do every day with those porcelain figures that they keep in their shelves and sideboards. That is, the aim is to add dust to our models to simulate the dirtiness of the battlefield and dirt tracks. The dusting techniques are easy to create, but if we abuse them, the results can be catastrophic.

### 2. How should I apply a pre-dusting?

With highly diluted Tamiya paints and applied with an airbrush as a very **IRREGULAR** layer of dust on the most appropriate zones such as the horizontal areas around the turret, underside and lower parts of the side panels. This phase is very simple, but vital to enable the later application of dusting with pigments.



### 3. How should I create a general dust effect with pigments?

You should have first applied a pre-dusting layer to assist the pigment setting. Afterwards, we will proceed to apply the darker pigment colours to the most protected zones and lighter colours to the zones that are most exposed to the light. A few drops of turpentine are added and the mixture is stirred very gently to assist it into the cracks and fissures and directing it away from the areas more prone to contact by the crew. Once dry, if the result is not convincing enough, we can moisten the area once again, to correct the part that we didn't like. It is highly advisable to start with light pigments









#### 4. How can I create dustiness caused by travel?

This should be conducted in the same manner as for the general dusting, but this time using a different colour on each wheel, this providing greater chromatic richness. It is very important to know that many pigment colours darken when wet, but regain their original appearance when dry.



#### 5. How can I create a specific dusting effect?

You can use this technique to dust small areas with greater precision and control. Apply the pigment directly with a paintbrush, over a matt zone or area that has already been treated with a pre-dusting. Afterwards, remove the excess pigment with a small piece of gauze or your finger.





## Mud

### 1. When should I apply mud?

Whenever you see glue stains or when you have made some kind of assembly error, mud can be used to cover it up. For God's sake! This is clearly not a joke, but until very recently, more than one modeller has used noble mud for such an indignant mission. Mud should not be used just to cover up mistakes, because mud is one of the most important elements of a model and it is not always easy to represent. Mud has a world of its own, its own physiognomy and behaviour and failing to understand this means making mud that looks like thick chocolate or the excrement from some strange type of animal. Hence the time has come to pay more attention to this such common element that we all love, though it remains too unknown to the modeller. Without going any further, it would be easy to find a modeller who invests three months painting a wonderful model and as the end spends just five minutes in applying a horrible creamy mud more appropriate for a breakfast toast than to represent dry mud in Kursk. A specific type of mud can take several days, especially if we want to enrich it with many blends and forms:

### 2. How can I make dry mud?

Theoretically, dry mud is less voluminous than fresh mud. Firstly because it doesn't have the water to moisten it and secondly because due to its dryness, it has less adherence capacity and falls off easily: Dry mud can be made by mixing light earth colour pigments with plaster or fine pumice stone. If a matt acrylic varnish is added, the mud's final appearance will be improved. Apply the mixture with an old paintbrush via the wheels and try to create irregular patches over them. Always apply the mud over the pre-dusted zone.





### 1. How can I create damp mud?

Damp mud is mud that has begun to dry, so drier and wetter areas can be present at the same time. Mix earth colour pigments (medium, not very dark colours) with plaster, acrylic resin and gloss acrylic varnish. The mixture should be applied with an old paintbrush on the lower parts of the tank and left to dry. Once dry, small touches are applied with lighter pigment colours to simulate the drier zones. You should always apply mud over an area which has at least received a pre-dusting.







#### 4. How can I make fresh mud?

Fresh mud always has a very dark appearance due to the liquid it contains. But fresh mud should not be interpreted as if it were clay or runny chocolate. Fresh mud should have a lumpy and rough, but never gelatinous appearance. To make it, you should mix earth or very dark mud pigment colours with plaster, acrylic resin and gloss varnishes. It should be applied with a paintbrush on the lower parts of the tank and then left to dry. This type of mud should always be applied to a zone that has already received a general dusting.







## Caterpillar tracks

### 1. Concepts about Caterpillar Tracks

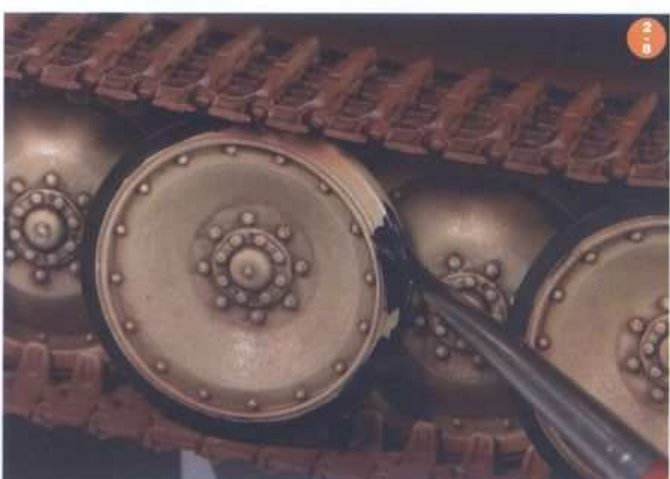
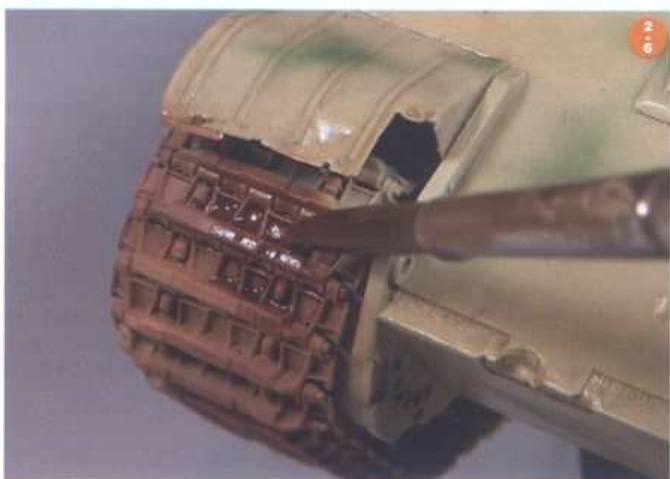
This part of the tanks always resists the modeller's skill. On many occasions they don't know how to paint them, whether to position them on the tank or to paint them separately and others don't know how to wear them or treat them. Many believe that the caterpillar tracks should always be rusted, while this is not necessarily true. Certainly, caterpillar tracks always end up taking second place on our model and we tend to invest little time in them because we don't know what to do with them. You should realise that the caterpillar tracks are another living part of the tank, as they adapt to the terrain they move over, assuming the terrain colour and changing their appearance easily with the passing days. A caterpillar track can go from being shiny and polished to becoming rusty in just a few days. All these factors should be taken into great consideration when making models. You should define where the tank is to be positioned in order to know how to paint it. A caterpillar track only has a completely rusted effect when it is recently produced and has been stored in a factory. At this moment, it has a reddish and matt appearance, like the railway rails when they are left unused. Once they are placed on the tank and begin to roll, the metal on the outside areas becomes polished and acquire a darker metal colour. The caterpillar tracks on dusty terrain adopt the colour of the terrain, because the dust and dry earth becomes encrusted on the porosity of the rusted links, such that it is very difficult to remove. The problem is that the majority of modellers are used to seeing rusty coloured caterpillar tracks almost from when they start modelling and furthermore, when observing the photos in their books, they discover with confusion that all the photos are in black and white and it is impossible to distinguish what colour they really were. But this can be resolved by buying a book of colour photographs of modern tanks, because a caterpillar track is essentially the same as it was 60 years ago.

### 2. How to paint caterpillar tracks when they are already stuck on the tank? (dry mud)

Perhaps, the most difficult way of painting a caterpillar track is when it is already stuck to wheels of the tank and we don't have the option to paint them separately: This is twice as difficult if mud also has to be applied to the wheels with everything assembled. In this case, we will first paint the base colour of the model and then very carefully paint the caterpillar tracks by freehand with an airbrush, with the help of a paper mask if necessary to avoid marking the rest of the tank. The first washes will then be applied with a dark colour and the wheel tyres will be painted with a paintbrush. After applying a general dusting with pigments fixed with turpentine, a mixture of dry mud will be carefully applied on the outside face of the caterpillar tracks using an old paintbrush. The excess is removed with a small cloth or piece of absorbent paper and once dry, the polished part is painted with a dry brush and steel colour enamel. With the help of a graphite propelling pencil, the inside parts of the caterpillar tracks are painted: just the part that should have become polished by the wheel action. Finally, the black part of the wheel tyres in contact with the caterpillar tracks are painted with pigment.

















### 3. How should I paint rusted caterpillar tracks?

This type of rusted caterpillar tracks is appropriate for those tanks that have been abandoned or were destroyed after having been in action on the battlefield, so the effects are not appropriate for a tank in the factory. We commence by painting the caterpillar tracks in a light earth colour, just the opposite to what we did for dry mud caterpillar tracks. Afterwards, different dust and earth colours are applied with pigments fixed with turpentine. A dark brown rust colour is used and applied by dry-brushing on the external and internal parts of the caterpillar tracks, to simulate the rusting of the polished metal. Finally, small touches of pigment P031 are applied with a paintbrush to soften the rusted effects on the inside face.









#### 4. How can I make dusty caterpillar tracks?

The caterpillar tracks that are a mixture of iron and rubber (jelly tanks in general) require special attention although they are very easy to paint. The metal part will be painted rust colour and the rubber in matt black. A mixture of brown colours is applied to the whole caterpillar area and fixed with turpentine. Once dry, lighter pigment colours are applied and the excess is removed with the fingers or with a cotton cloth.

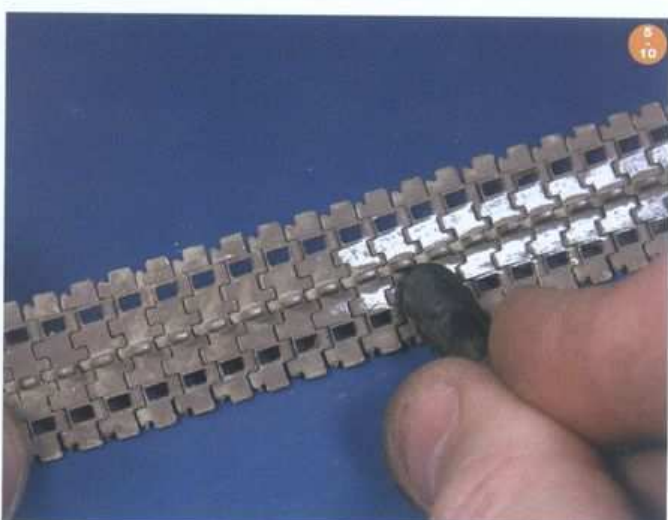




## 5. How can I make moist and muddy caterpillar tracks?

Start by painting the caterpillar tracks in a light brown colour and later dust it with earth colour pigments. Once dry and after having fixed it with white spirit, a moist or fresh mud mixture is made with pigments, acrylic resin, plaster and gloss varnish. It is applied unevenly to the outside face of the caterpillar track with an old paintbrush and left to dry. Afterwards, a large grained piece of sandpaper is used to rub the outermost part of the metal to eliminate the paint and leave the metal colour of the caterpillar track exposed. Naturally, this can only be done with Friulmodel type metal caterpillar tracks. On the inside face, a graphite rod is passed over the zone in contact with the wheels to imitate the polished metal.









## Wheels

The wheels can totally alter our model's appearance (in contrast to caterpillar tracks on tanks, where almost any solution can more or less work well). You should pay attention to the environment where our vehicle is to be located, trying to define it as much as possible. That is, a truck wheel in a desert plain will not have the same appearance as the same truck in the same desert zone, but travelling on a road. The dust, mud and other effects act on these elements in a very special way depending on how they are present in the surroundings and what the vehicle is doing at that particular moment in time. You should observe vehicles in your usual surroundings; your own car can serve as an example, but also the diggers and trucks that you can see in your streets every day. Hence, you will be able to describe the immense number of variables that can affect a wheel.

I have felt it necessary to gather together five different types of wheels, in different environments and situations that cover the majority of our needs. The examples have been taken from the same model of wheel (specifically an American wheel) that could well be situated in any place in the world. You should remember that techniques can be applied to any wheel on any type of vehicle at any time of year.







# 1. How to paint wheels in desert asphalt zones?

1. The vehicle base colour is painted with Tamiya paints.
2. Then the tyres are painted using black acrylic pigments.
3. Gulf War Sand is applied with a paintbrush particularly insisting on the tyre.
4. Afterwards, the surface is soaked with Mig Thinner to fix the pigment, moving in a circular motion towards the centre of the wheel.
5. Once dry, the appearance should be very uneven.
6. Now, the tread of the tyre is treated dry-brushed, using a dark grey Humbrol paint.
- 7-8. This is the resulting effect.



## 2. How can I paint wheels in a desert terrain?

1. The vehicle base colour is painted with Tamiya paints.
  2. Then the tyres are painted using black acrylics.
  3. The tyre tread is dry-brushed with the whiter Humbrol number 94 paint.
  4. Now pigment is applied around the wheel rim, using pressure with the paintbrush to ensure the paint's adherence.
- 5-6. This is the resulting effect.





### 3. How can I paint wheels on asphalt in the winter season?

1. The vehicle base colour is painted with Tamiya paints.
2. Then the tyres are painted using black acrylics.
3. Using the Tamiya buff colour paint applied with a paintbrush, soft water marks are painted in a radial direction. The paint must be highly diluted.
4. Now a prior mudding will be applied, using Humbrol brown paints and oils, painting from the centre outwards.
5. A mixture of plaster, gloss varnish and brown colour Humbrol and oil paints is made.
6. It is mixed well until a quite thick paste is achieved.
7. Air is directed over the paintbrush containing the paste with an airbrush, attempting to splash the wheel in a radial fashion.
8. The final appearance should offer a variety of different gloss and satin finishes.



#### 4. How should I paint wheels on asphalt in a hot season?

1. The vehicle base colour is painted with Tamiya paints.
2. Then the tyres are painted using black acrylics.
3. Pigment is applied with a paintbrush with pressure, over the whole surface.
4. Afterwards, the surface is soaked with Mig Thinner to fix the pigment, moving in a circular motion towards the centre of the wheel.



9. Now a dry-brushing is applied on the wheel, using a dark grey Humbrol paint.
10. Appearance of the wheel before creating the splashing.
11. Tamiya buff colour paint is mixed with an abundance of water a paintbrush is soaked with the liquid. Air is directed over the paintbrush with an airbrush to splash the wheel.
12. A very fine splashing should be created in a radial direction towards the centre of the wheel.
- 13-16. The finished wheel.





## 5. How should I paint wheels in a muddy terrain?

1. The vehicle base colour is painted with Tamiya paints.
2. Then the tyres are painted using black acrylics.
3. Some soft water marks are applied in a radial direction with a paintbrush and a buff colour Tamiya paint. The paint should be highly diluted.
4. We are going to prepare a mixture of light mud with plaster, pigments and acrylic resin.
5. A drop of resin is deposited over the pigments and plaster.
6. With an old paintbrush and a few drops of water, the mixture is stirred until a paste is obtained.
7. Air is directed over the paintbrush to remove the excess mud mixture.
8. Now the same is done for the wheel.
9. The process is repeated with different colours and left to dry between coats.
10. The next step is prepared with a mud colour pigment and gloss varnish.



11. The mixture is removed with a paintbrush.
12. Now it is applied over the wheel tread, attempting to paint a part of the sides in an uneven manner.
13. Appearance of the finished wheel



## 6. How can I paint the metallic wheels of a tank?

It is very easy to imitate the effect of polished metal on a tank. Apply Xtracolour Oily Steel or similar enamel paint with a dry brush in a longitudinal direction on the surface that is in contact with the caterpillar tracks. Just one layer should be enough, although we could repeat the process to achieve a more glossy effect.

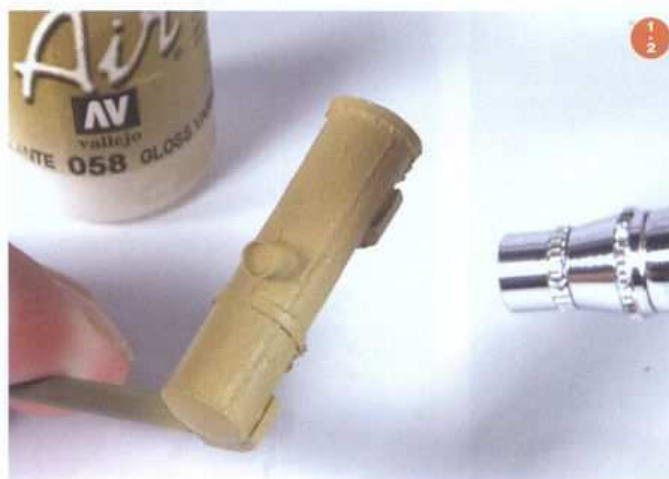


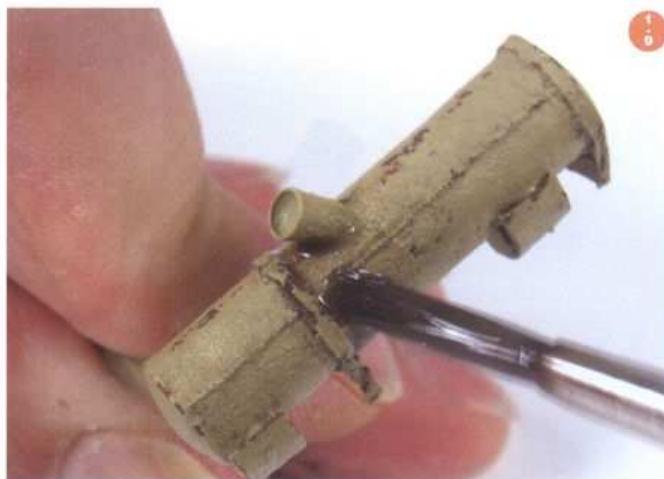


## Exhaust Pipes

### 1. New Exhaust Pipes

When a vehicle has spent a few weeks fighting at the front, the exhaust pipes still maintain the original factory colour: The exhaust pipes are not rusted at the origin, but they rust quickly aided by the heat of the motor fumes. In order to create an exhaust pipe that has received little use, you should respect the base colour, adding as many small corrosion points and dirtiness as you see fit and do the same for the smoke.



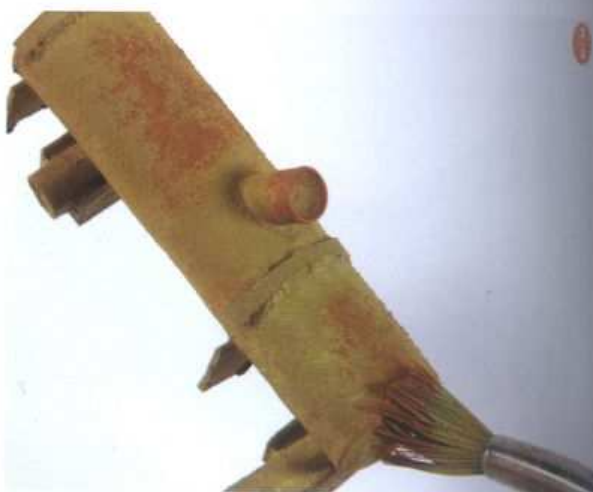


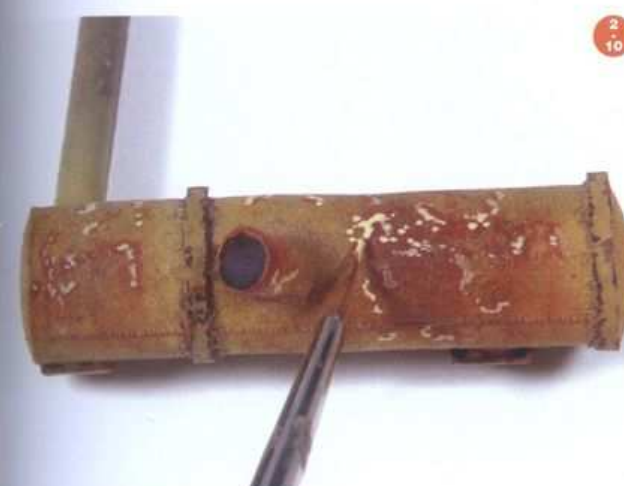




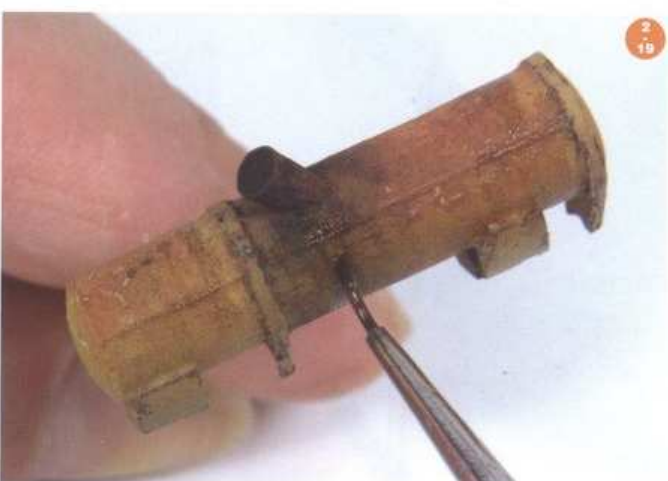
## 2. Used Exhaust Pipes

Used exhaust pipes show a large rusted area although the factory base colour can be perceived at least on a third of the surface. You should begin by painting the exhaust pipes with the base colour progressively rusting the zones that are more exposed to the light with different blends of running rust.









## 8. Rusted Exhaust Pipes

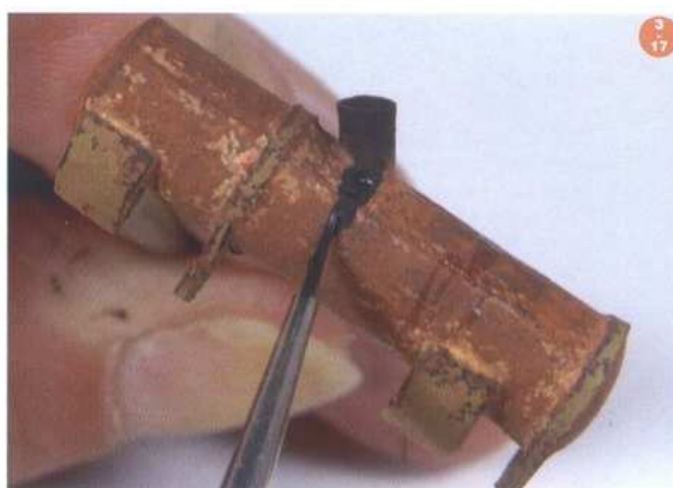
The most veteran and used vehicles can present exhaust pipes such as this one, full of dirty rust, but one can also appreciate the remains of negative corrosion in the original colour. The process begins with painting the exhaust pipes in rusty colours and by applying negative corrosion in the original colour combined with streams and rusted corrosion.











## Smoke

### 1. How can I create effects on the exhaust pipes?

A very easy and controllable way to make smoke effects on vehicles is by using the Black Smoke P023 pigment. It can be applied directly with a paintbrush over a matt surface, close to the exhaust pipe or cannon barrels.





## 2. How can I create ash on burnt vehicles?

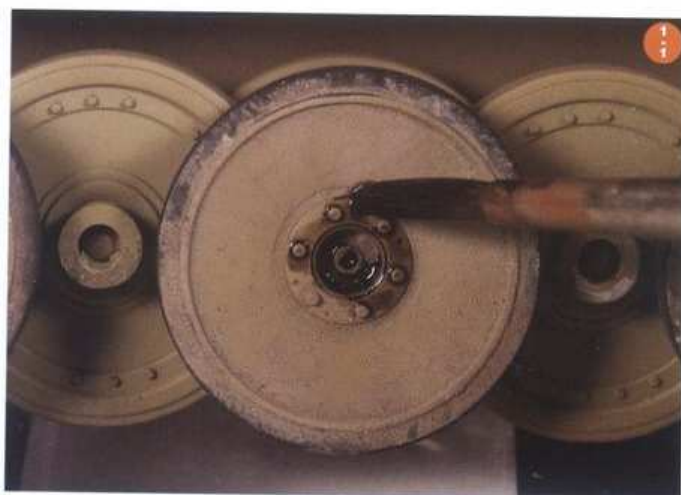
In order to create ash effects on burnt vehicles, large quantities of P023 black pigment should first be deposited, forming small mounds and humps and we will then allow some small specks of P022 white paint to fall over these: To fix the pigment, we will carefully allow some drops of turpentine to fall and let them spread out over the whole pigment by diffusion. Without touching absolutely anything, we leave it to dry. Once dry, the impression of volatile and loose ash is pleasing.



## Special Effects

### 1. How can I create oil stains on the wheels?

Many vehicle wheels release oil with the rotation and contact with the dirtiness and dust, producing a blackening and thick effect around the zones that they fester. A very dark brown colour is mixed with a gloss enamel varnish and this is mixed on the central parts of the wheels in a very uneven manner. This should always be applied over a surface where a general dusting has already been applied with pigments. Once dry, the same colour will be loaded onto a paintbrush and air directed over the paintbrush with an airbrush to splash the central part of the wheel. It is not necessary to treat all the wheels in the same way. You can leave one wheel clean, another with the initial stain and the rest also with the splashing effect.







## 2. How can I create rust marks on the mudguards?

Sometimes, specific elements that are welded or joined to the vehicles fall off and leave behind them a rust mark. Mask with sticky tape the area that should not be rusted and paint the rest with an airbrush using rust colours.



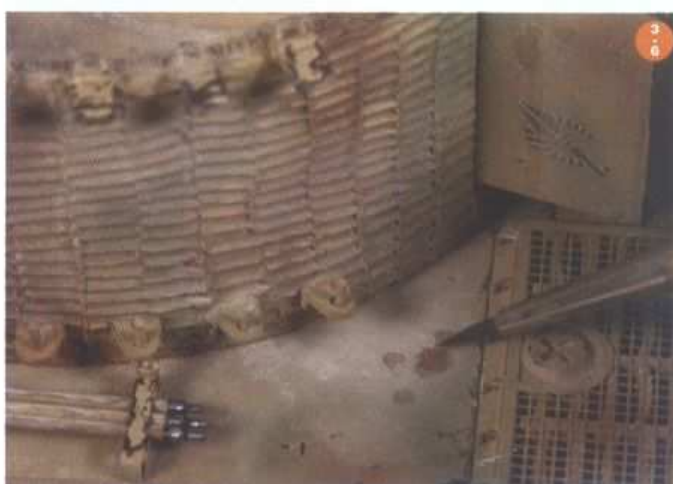




### 3. How can I create oil effects?

Dilute a dark brown mixture with black and paint fine semi-transparent 'clouds' with a paintbrush on the areas close to the motors and hatchways. Leave the first marks to dry and create some more a little thicker and with a slightly satin finish, painting over the previous effects.







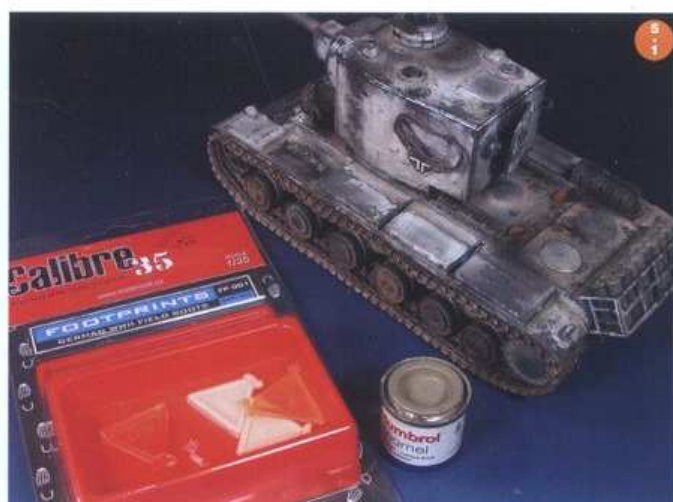
#### 4. How can I create the effects of spilt fuel?

Make a mixture of brown and black enamel and oil paint, mixed with gloss varnish and a little white spirit. Draw uneven vertical lines and leave it to dry. Afterwards, draw new and thicker lines over the previous ones to obtain the effect of freshly spilt fuel.



#### 5. How can I create the crew's footsteps?

Use the Calibre 35 footstep markers, impregnate the footprint with a dry earth coloured enamel paint. Press the marker over a flat surface until you can observe that the boot mark has been perfectly drawn. At this moment, apply the footprints on the tank in logical zones and without exaggeration.





## Tools and Accessories

### 1. How can I paint a fuel drum?

This accessory is always very useful and decorative on any type of truck or vehicle. It can be painted almost as if it were another vehicle but simplifying the processes. If you must paint several for the same scenery, try to paint each one in different colours and with varying degrees of dirtiness and dustiness.











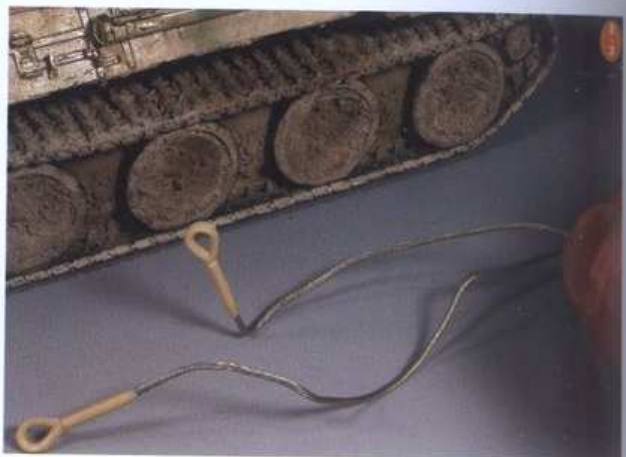
## 2. How can I paint a helmet?

This simple element can always give a lot of life to our tanks. Paint the base colour with acrylics, using either a paintbrush or airbrush. Apply a dark brown wash and allow it to dry. Finally, apply a buff-coloured Tamiya water mark, letting it accumulate in the more horizontal areas.

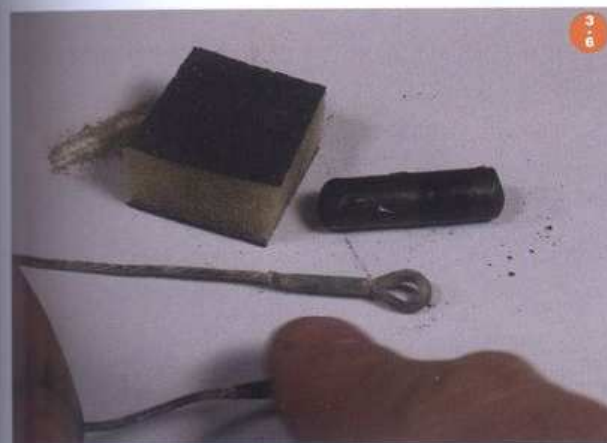


## 3. How paint a towing cable?

Begin painting cable in metallic black. Later dust it with pigments removing the excess with a finger. Finally, apply a little graphite dust with the finger.

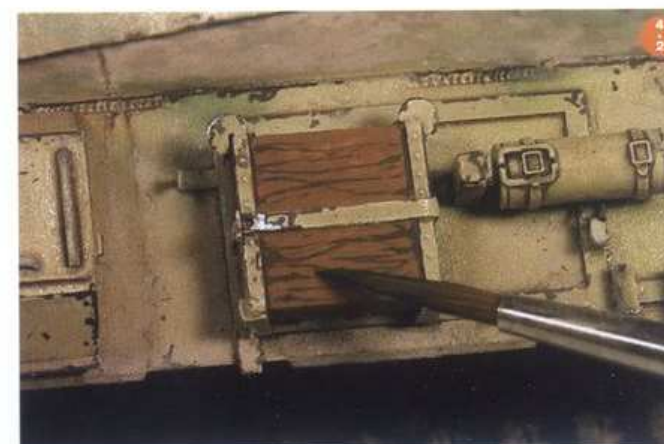




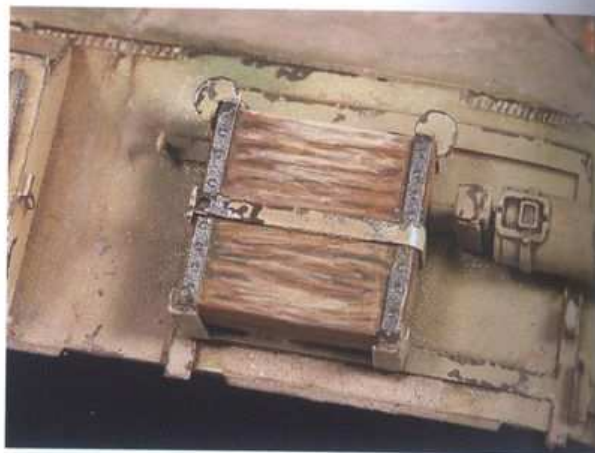
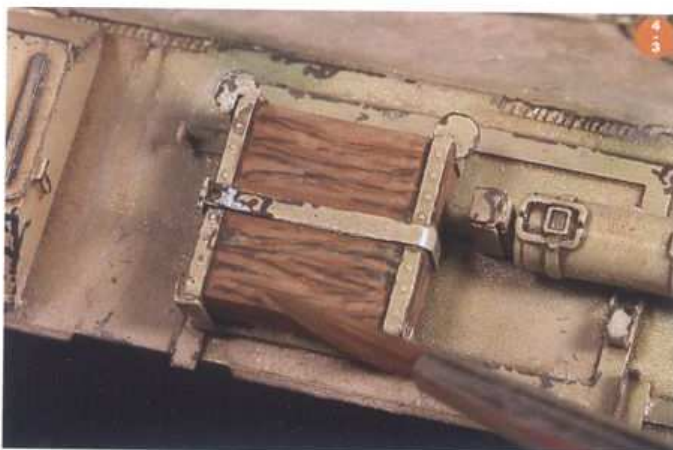


#### 4. How can I paint a wooden jack block?

Use the paints offered by Andrea in matt finish to paint the jack, starting with a medium colour to later draw the wood veins in dark and light colours.

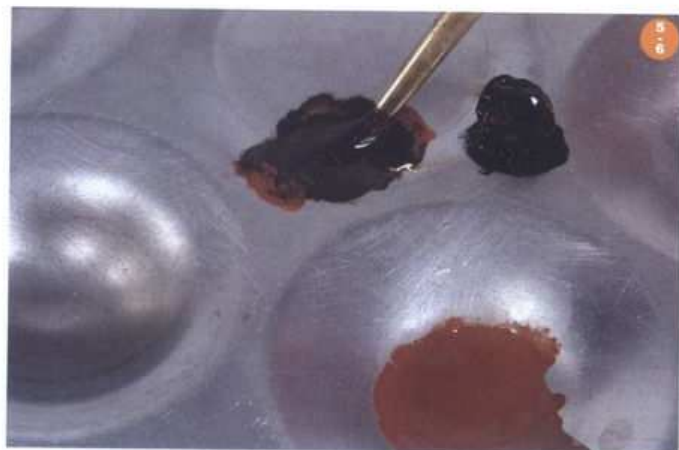






## 5. How should I paint a jack?

The painting process for a jack is exactly the same as that for painting any other part of a tank, but emphasising the chips and washes to a greater degree.





5-9



5-9



5-10



5-11



5-12



5-13



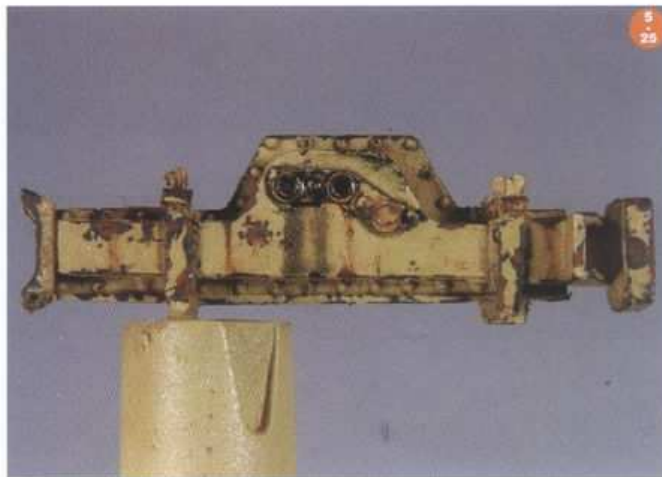
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5-15

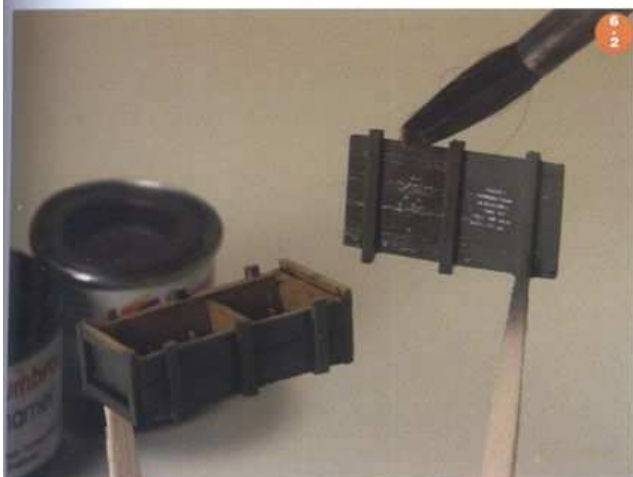






## 6. How should I paint wooden boxes?

A simple method for painting boxes consists of painting the base colour, applying some dark colour washes and adding a general dusting. Afterwards, should you wish to, wooden chipped effects can be created (see the section on wooden chips)







## 7. How can I paint a cannon barrel?

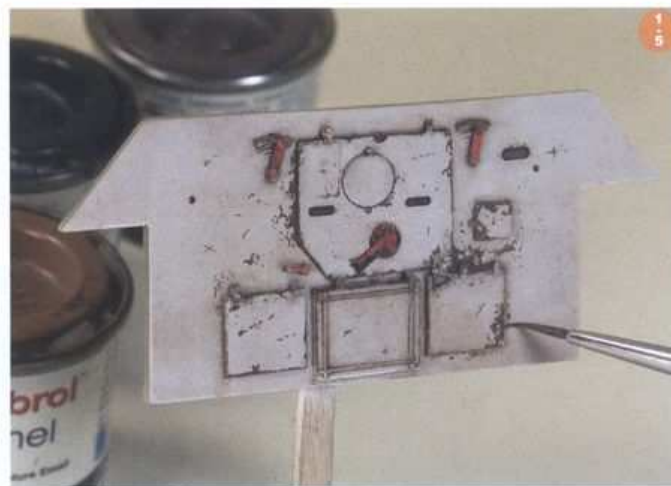
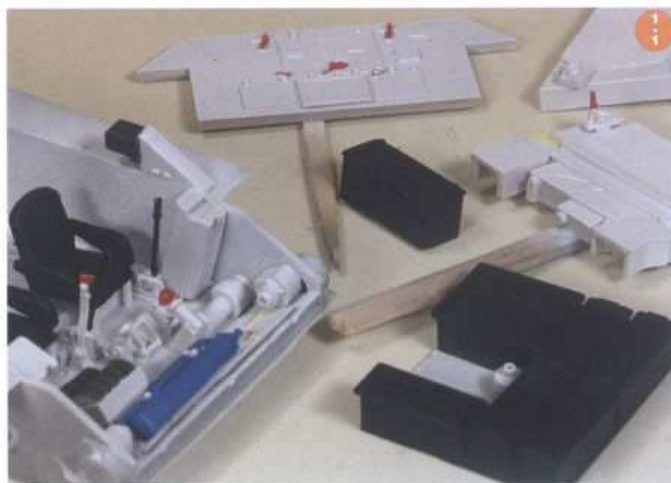
As opposed to what we think, it is difficult to find a cannon barrel that is completely black due to missile smoke. Only a very old tank could present this effect. But as a general rule, the barrels are not so smoky. The barrel should be the same colour as the tank, except some that can be a burnished metal or patina black colour. The inside of some cannons can be painted in red primer, overall if the cannon is new. Finally, we can create some corrosion.



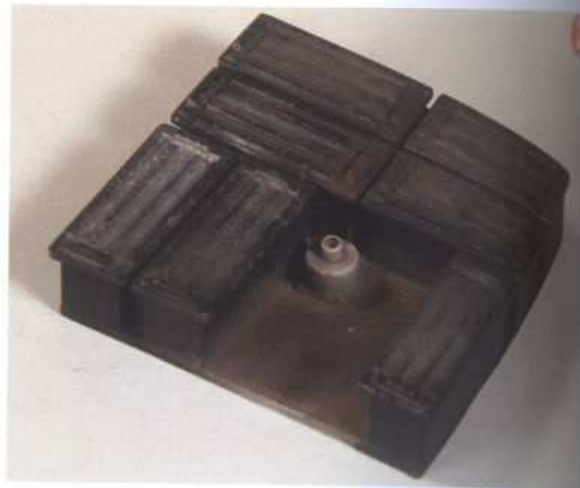
## Interiors

### 1. How should the inside be painted?

You should pay special attention to the insides of tanks. First you should try to paint each part separately to have better precision with the details. Specific washes are subtly applied to highlight the details and afterwards some corrosion and dust or dry mud effects can be created, coming from the crew boots. Wasting effects cannot be applied to the inside, because it is not exposed to the elements. The inside should be as realistic as the outside and you should be careful not to dirty it too much.















## c) SURROUNDINGS AND DIORAMAS

### 1. How should I plan a diorama?

There is a golden rule that you should never forget when you want to create a diorama or vignette. The least possible amount of space should be used to represent your idea, because every extra square centimetre used unnecessarily will cost us valuable hours of work. To represent a forest, it is not necessary to make 60 trees, as with one or two well positioned ones we can generate the same sensation. It is very typical to hear of modellers who want to make a diorama with five or six tanks, 20 trucks and four blocks of buildings, combined with 300 figures that would be painted by a friend. As we all know, these dioramas are almost never completed and those that are finished are very bad quality or are poorly balanced. Perhaps we have something to learn from the Japanese modellers, who have become specialised at making a small terrain of work or art with perfectly narrated stories, due to the scarcity of space available in their houses. Hence we will focus on small scale sceneries that we can be sure to finish, with two or three figures and one vehicle. More pleasure can undoubtedly be obtained from something like this than from an unobtainable dream. There are very few privileged modellers in this world with the patience required to create something like that. Perhaps Bob Letterman is the best example. In any case, when embarking upon a diorama, we should have a very clear idea in order to define what is required and which tank and figures to use. You should start by making a mobile structure that will allow us to move the elements to adjust the composition. If the tank is not very well defined for the moment, another one that we have completed can be used to see the volume that it will occupy. Finally, the terrain volumes and details are created. Stick the vehicles and figures at the very end, as with the fragile and small elements. This is a basic notion of dioramas, but this theme would need a book completely dedicated to it.







## 2. How can I create the volume for a terrain?

The easiest way to create an elevated terrain is to use polystyrene foam, which is easy to cut, cheap and resistant. You should avoid wood, because it is very heavy, and plaster, which is flammable. Expanded polystyrene foam can be stuck with white glue.

## 3. How can I create a





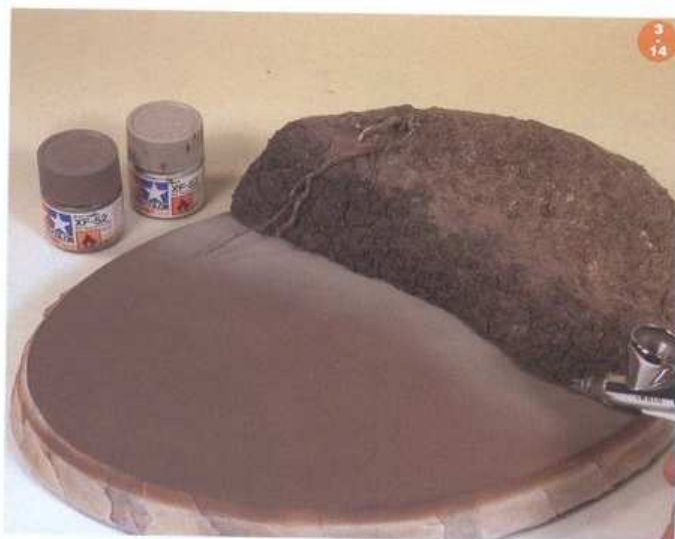
### 3. How can I create a terrain?

Starting from a foam volume, it will be very easy to create an uneven terrain using modelling clay and various natural materials such as branches, stones, and sand, which will then be stuck with white glue over the modelling clay. An acrylic primer should be used before starting to paint the terrain. You should be careful, because enamels attack the foam and can cause it to disintegrate.









#### 4. How can I create water?

There is a wide range of products available for making water, but many have a more gelatinous effect than that of real water. Polyester resin is one of the most efficient products for making both transparent and coloured water. In this case, we have used Andrea Miniatures artificial water. When it is necessary to create an area of deep water, but we have no more than a few millimetres available, we should do the following: Paint the bottom with dark colours, using lighter colours at the edges of the banks and around submerged objects. Afterwards, isolate the porosities and dips with a gloss acrylic varnish and make a kind of swimming pool with sticky tape. Pour in a first layer of resin slightly coloured with Tamiya paint, leave it to dry and apply another more transparent layer. The last layer will be completely transparent and before it is dry, the surface should be pressed with the handle of a rounded paintbrush to simulate the water waves. When dry, the surface can be varnished with a clear gloss varnish and small objects and floating leaves can be placed on the surface.













## How can I paint cobblestones?

You should start by painting a light colour to later highlight each cobble with a dry brush and dark grey paints. After painting each cobble a different shade of grey, the whole area is dusted with pigments. An air mask can be used to contrast some zones using an airbrush and a dark paint. If heavy tanks with metal caterpillar track have passed over the cobbles, the resulting chips should be created, using a very light grey colour and painting lines to imitate the caterpillar marks with a paintbrush.





## 6. How can I paint bricks?

Starting from a light grey colour, the bricks are highlighted with different shades of brown and orange. Some bricks are painted with a paintbrush in different colours and the corners are later darkened with dark coloured oil paints.



## 7. How can I create earth and loose stones?

It is often interesting to stick various stones and sand on a previously painted tank or terrain, to give the impression that they are loose. Deposit small amounts of material in the desired places and allow several drops of engraving glue used for railway modelling to fall on the model. Once dry, varnish the zone with an airbrush and a matt varnish.

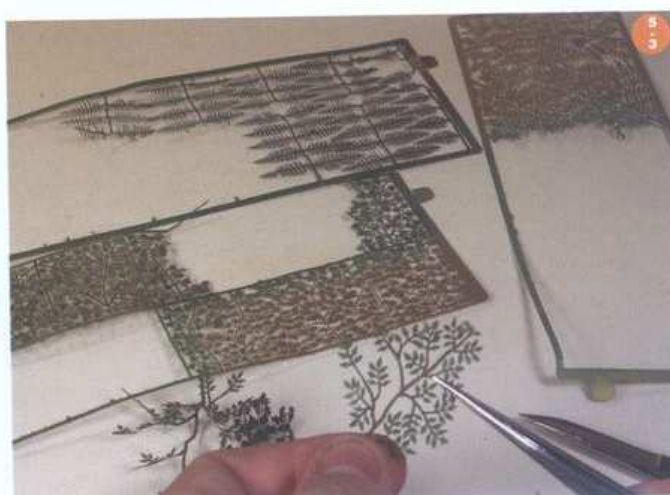






## 8. How can I create a simple vegetation?

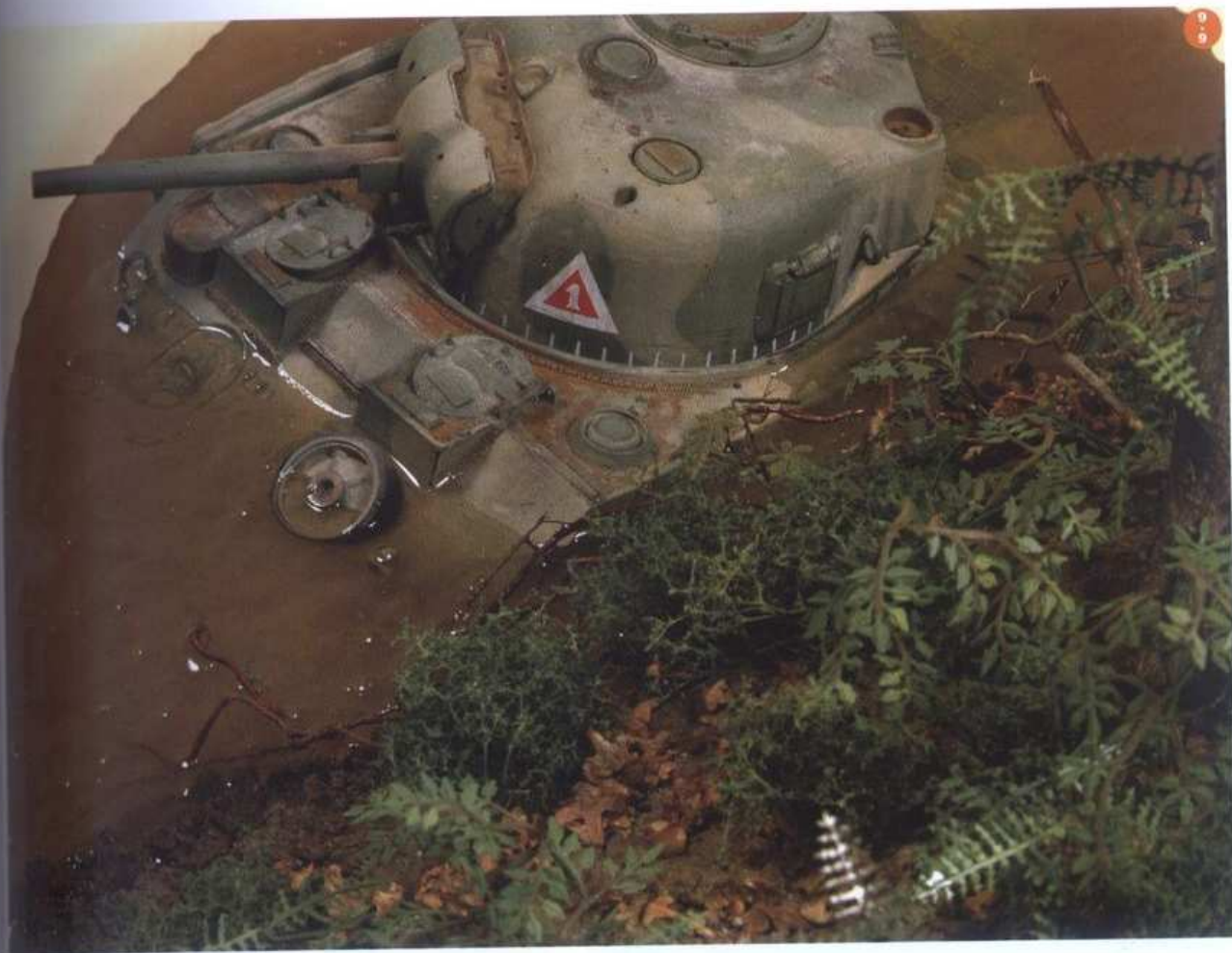
One very easy way to make realistic vegetation is by using photo-etched plants. There are many brands offering a wide variety, many of which are very realistic. Prime then paint the plants with an airbrush before cutting them out. With a paintbrush you can paint each leaf a different colour, along with the trunks and branches. Afterwards, cut out the plant and fold it carefully using some pliers. Stick it in place using superglue and combine it with some real branches taken from the countryside.











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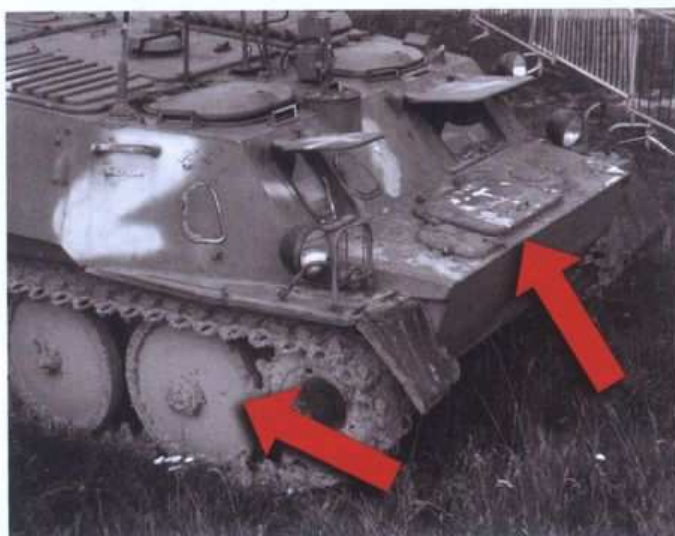


## 5.3. MISCELANEOUS

### 1. Practical Interpretation Questions

#### 1. How should I interpret black and white photos?

One of the most important parts of historical modelling is how to correctly interpret black and white photos. In the majority of cases the modeller doesn't know how to distinguish between a sand or green coloured tank or whether it is really covered in dust. We don't know how to differentiate the tank's mud colour either and even less so whether the darkest colour should be the brown or the green. The only solution for this is to observe colour photographs, even though they may be modern vehicles, because this will largely help us to supplement the lack of themes available on the Second World War. In this photo, you can see how the colours change considerably when they pass from colour to greyscale. For example, if you look at the front of the tank in the black and white photograph, you will note that what is really a grey coloured area can appear to be the same green colour of the camouflage. Or, if you look at the wheel zones, you may think that the wheels are green like the rest of the vehicle, when they are actually muddy. Only the small clue given to us by the rough wheel texture can lead us to think that we are dealing with mud and not a base colour.



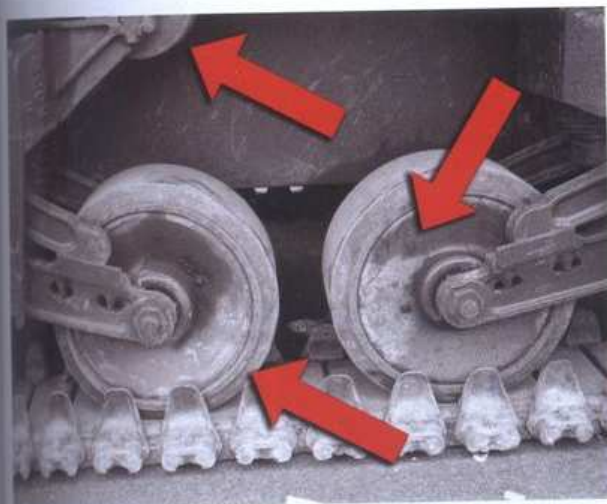
In this other photo, the results of transforming the image into a greyscale are even more alarming. In the upper black and white photo we could never imagine that the turret is painted with red primer rather than green, as would be the most logical. Hence, you can have an idea of the amount of problems that can be encountered when looking at period photos of tanks in 1945, where many of them went into combat in primer colours, or on many occasions the camouflages were applied over the primer. Thus, the possibilities are almost infinite and nearly no history expert would be able to tell us whether a tank was painted one colour or another unless he also had a colour photo of the same model. So, it can be a good idea to apply the effects and colours that can be seen on modern Second World War tanks. Of course, there are scientific methods for deducing what colours these grey blends actually were, but that requires a great deal of artistic knowledge and the use of techniques that would be very laborious and extensive to describe here. There are a lot of people who devote themselves to criticising the colours that other modellers apply to their models, using the official RAL colours as a guideline, the official guide that was used at the time, but these are nothing more than absurd theories that have no place in modelling, firstly because the paint suffered from many decolorations on the battlefield, secondly because each factory used a different colour and thirdly because making a model is not the same as a real tank and we should know how to interpret and adapt the colours to each scale.





## 2. How should I interpret a real reference?

You must learn how to read photographs, analyse each change of blend, stain and shadow. You should always search for a zone in the photo where you can be sure that it is the exact colour of the tank and from there onwards analyse which zones are lighter, matter, or darker in order to know what is mud, oil or rust. In this photo you can see, for example that the wheel rim is rusted, when the most logical is that is polished by the caterpillar tracks. But if it was polished, the greyscale image should show the shine of polished metal, hence it is easy to deduce that the wheel rim is rusted and the tank is not in service.



## The origins of modelling

### 1. Who were the precursors of vehicle painting?

Perhaps it was Sheperd Paine in the '80s who helped us to understand modelling in an artistic manner in his fabulous book 'How to build dioramas', which still remains an extremely useful and inspiring book, even today. But it was certainly at the end of the '80s when François Verlinden revolutionised vehicle painting to imaginable limits. For all those who have lived through that era, it was like a never-ending source of inspiration and fresh ideas whose effects have lasted up to the present day. But the Verlinden era ended in the mid '90s when the already popular 'Spanish school' arrived on the European scene banded by Rodrigo Hernández accompanied by numerous modellers such as Carlos de Diego Vaquerizo, one of the first Spaniards to receive a gold medal at Euromilitare, a competition that was originally exclusively for figures. The Spanish school continued propelled by many other good modellers who focused all their efforts on painting vehicles. Great master painters also surged at the end of the '90s, many of whom have successively lost their presence in current day modelling field, for a variety of reasons. Jean-Baptiste Verlhac was one of the most important, together with James Blackwell, Mirko Bayern, Marenj Van Gils, Makoto Takaishi, and more recently Mario Eens, Adam Wilder, Bernard Lusting, Alessandro Bruschi and Phil Stutcinkas, not to mention the multi-talented Marcus Nicholls. All of them have focused their efforts on improving the painting of military vehicles.

## Modelling today

### 1. Is the Internet important for modelling?

Fortunately, the Internet greatly impelled the field of modelling, acting as a medium for spreading techniques and our own work. The Internet can be a means of finding a critical voice for our work to help us evolve. It is also a very useful and advisable tool for retrieving information unavailable by other means. But the Internet can also be a destructive element if you don't know how to filter its contents. If you let yourself be carried away by everything that you can see there, you may feel bad or inferior or that you 'don't reach the grade'. Some specific Internet forums gather together the best modellers, enabling us to contact them directly and learn more, but many other sites are handled by the commercial departments of a range of firms where different ways of thinking are censored simply because they mention the competition's product.

### 2. Should we show our models in the Internet?

In the majority of cases, it can be highly recommendable to show your work in the Internet. But remember that you will not always receive a reply and this does not mean that your model has not been seen and liked. Always accompany the photos of your models with a question to encourage the net users to provide their comments. A very important piece of advice is that...you should never show your models on the internet if your photos are bad or mediocre. This can affect the users' opinions and you will receive an answer that does not reflect the reality. Compare your photos with some already existing ones to know whether yours are good or not, and in the latter case, ask how you can improve your photographs in the forums. On the other hand, if you are a modeller thinking of publishing in magazines or already do so, I don't recommend that you publish your work on the Internet before doing so in the magazine, or if you must, it is preferable to publish a small show of photos by way of a preview, always mentioning where and when the model is to be published. This will help you to maintain a good relationship with your editors.



### 3. Can the Internet replace the modelling magazines?

The technology would need to advance greatly in order for this to happen. In spite of the Internet's ease and freeness, it would be impossible for the Internet to completely replace a printed publication at this moment in time. The reasons are very simple: Being able to hold a magazine in your hand and peacefully look at the photos or quickly search for a page, especially when you have a lot of magazines stored, is something irreplaceable not to mention the versatility of a magazine or book. They can be taken anywhere, to bed before going to sleep, to the pub to share with some friends, or in your own garden. Fortunately, we are living beings and not cybernetic, and still need social relationships and our environment and as long as computers don't have the same appearance of a 'magazine', the real ones are safe.

## Where is modelling going to

### 1. Are there different types of modelling?

Yes. In fact in Europe, these different tendencies are beginning to be called 'schools' or 'styles'. The Spanish school was perhaps the most important due to the great revolution it created at the end of the '90s, assisted by the publication *Euromodelling*. This school broke down all the boundaries and managed to become popular practically all over the world. Meanwhile, Italian and Belgian schools began promote their styles with similar effort. Japan was another great path to follow, especially after the popularisation of the Internet. The American continent has always been more disconnected from what was happening in Europe and their style followed different paths to the Europeans. As opposed to the more technical modelling and less innovative painting styles of the American countries, the Europeans focused mainly on the painting and on the most artistic and visual aspects. From another point of view, however, it was perhaps a few modellers who created styles and set trends, like Sheperd Paine or Verlinden and more recently Mirko Bayern, Marinj Van Gils and Marcus Nichols. Some modellers take offence when they are told that their model has the same style as that of one of these people, but one must admit that many of these great modellers knew how to find something really attractive that many have desired to be able to create themselves.





## 2. Can I influence my country with my modelling?

Perhaps not your country, but you can definitely have an influence where you live. Many Nordic countries have produced very good modellers though with a toned down excessively contrasted painting style. This is due to the natural light present the whole year round in these countries. The cloudy days tend to tone down the colours and a modeller from cold and wintry zones can find himself influenced by this. Contrastingly, if you live in sunnier areas, such as the Mediterranean or the Southern USA, it is very likely that you will have to paint your models in light and luminous colours and use less contrast.

## 3. Is it possible to invent new techniques?

Of course. Although it seems impossible to invent a new dry-brushing or filter technique... there are a multitude of paths and combinations for generating new painting methods. This is certainly not easy and creating a new technique is simply a question of a lot of work, some inspiration and of course being open to all possibilities. Often, a technique results partly from necessity, so that ...the more worries and needs that you have to deal with, the easier it will be to discover something new.

# Modelling and Competitions

## 1. Can competitions help me to evolve?

To a certain degree they can, though a competition will not necessarily help you to evolve. If the competition simply serves to ascertain your current level, to discover if someone has done something new, or to share techniques, then it will surely be very positive for motivating us to continue improving. But a competition can generate a lot of anger could make us stagnate and worse, because we will not be open to improvement, just to the competition itself.

## 2. What does winning medals in competitions mean?

For many people, it is the only important part of a competition, though sadly they always deny this. Many claim that the medal they won was not their main objective, but rather see what was there at the competition and to see their friends. I can assure you that this is a lie. It is enough to see a person without a medal to see the other side of their face. I have met loads of people who were only interested in that precious metal and for them it was only worth the weight they brought home. They desperately search the lists of prize-winners to see their name followed by: gold, silver or bronze. So we should respect these people and allow their ambition for the noble metal to be transformed sooner or later into frustration. However, I advise you not to be around these people when they don't win any prizes. At this stage, I'm sure you can think of more than one modeller with these characteristics. But if you are asking yourself how should I receive my first medal?...or simply what does it mean if I don't win a medal?...you should know that receiving a medal, even in the most prestigious competition depends on the opinions of just three or four people who feel that they are qualified to judge your work. If the opinion of these people is very valuable, then receiving a medal can give you a lot of encouragement and energy, but not receiving a medal should not be a great drama for you, if you trust these people. The radical problem is when you believe that the jury evaluating your work is not qualified to do so, yet you win a medal. I would certainly feel worse. Under these circumstances, before attending a competition, consider the quality of the competition, if the organiser is a shop with commercial interests or a club dedicated to modelling; whether money prizes are offered or only symbolic trophies; and whether the judges themselves are at least modellers, or a mixture of a

journalist, an artist, a retired soldier and the town mayor. Medals can sometimes be positive if you are seeking to promote your work. A model that has won a GOLD medal will always be more interesting to be published in a magazine. In any case, a medal can be encouraging and it is always pleasant to receive one, but you should never forget that no medal can measure your level as a modeller.





### 3. What criterion to competition judges follow?

For the majority of cases, we can say that the criterion used are mostly subjective and personal, though some would disagree with this. Most of the times that I have spent with judges from different competitions in various places of the world, they have begun with their typical and subjective phrase: "Personally, I like this model for the gold". Perhaps they said this after a quick objective and independent analysis of the model, placing to one side their own tastes, but I doubt it. Modelling is not like a sport competition, where the first person to arrive wins. Here, there is nothing better available to measure which model is better or worse; the judges simply rely on their own experience and tastes. It is not the first time that a judge in a large competition awards the best medals just to German vehicles, because that is his specialisation, forgetting that some model vehicles may be deserving of large prizes. Perhaps the correct question is not 'what criterion do judges follow?' but rather 'why do we subject ourselves to their criterion?'. Maybe because we have no alternative.

In any case, a modeller who wins a golden medal will always think that the judges are very good and professional and the modellers who win nothing will think that the judges are blind or gave the prizes to their friends. You should remember that whether they are good or bad judges, professional or not, veterans or amateurs, friends of some competitor or enemy of many of them, their opinion will always be subjectively based on their own level or what they consider to be a good level. There is no way to measure a model, we cannot use a speedometer, chronometer or anything of the like, only our own personal taste. Hence it is very easy to see in the competitions how almost all the best trophies are awarded for German themes, which is the favourite topic for nearly 80% of the global modelling population. Thus, could we say that if we present a German model at a competition we will have more probability of winning? Hence could we say that if you present a German model in a competition you have a greater chance of winning? Undoubtedly, if it is well painted. At least you have more probability of winning that if you present a Brazilian Osorio, a Chinese tank or a Taiwanese Army truck. Perhaps not many of you like to hear this, but it is the hard reality of competitions. Similarly, a good base for your tank or a frame for your diorama influence the final decision, or at least serve to attract the jury's attention in the first place, even though the competition rules clearly explain the base will not affect the result. What happens is that although theory and reality may be the same, the modelling judge is human and acts as such, no matter how hard he tries to avoid it. If the possible to measure the model with a chronometer existed, the results would be very different. Hence, in spite of what they say, remember that modelling is the art of deceit, of leading others to believe that an insignificant piece of plastic is a miniature tank. If you manage to trick the judge into thinking that your model is the most attractive, most realistic, finest and most original, then you will have possibilities of winning.





# Modelling and Art

## 1. Is Modelling an art?

Firstly we should ask ourselves what is ART? Art is the manifestation of human activity, through which a personal and selfless vision interprets the real and imaginary with solid, linguistic or audio results. Hence we would say that modelling is art, but although the use of this flexible language should be advanced, especially in learning the basic and fundamental pillars because even today, there are still some modellers who are shocked when they show their model to another modeller who tells him: "nice Sherman with winter camouflage!" when what he really wanted to make was a green Sherman in Italy, but full of dust, but by making it so light, it looked like winter camouflage. This type of errors caused by an inappropriate use of the technique is very common but this means that our modelling is not yet a 'mature' art and is still considered by many as 'little toys' or 'craftsmanship'.

## Questions that prevent us from sleeping at night

### 1. Who are we?

The modeller is on the road to extinction. Its path ended with the dinosaurs, now the Playstation will put an end to all the modellers. In spite of the fact that modelling is a hobby as old as our own history, the end of the golden era that we are currently experiencing is drawing near. Computers are putting an end to the illusion of being able to reproduce scale models and the new electronic games are making teenagers and children lose all interest in modelling, because a video game is much more appealing than a model. Furthermore, we are changing the hobby ourselves, transforming it into a purely technical field and making it almost impossible for beginners. The almost compulsory inclusion of photo-etched parts, conversions and all sorts of accessories to improve the detail is leading modelling to lose its freshness. The young boy buying a modelling magazine for the first time and sees that in order to build a model moderately well, you need to invest three months of work and spend more than 60 or 70 Euros on basic material, will prefer to spend this money on a couple of video games that will provide him with much more fun. Modelling is beginning to become classist and elitist and that is what will eventually kill modelling for good, once our generation leaves this world. We are certainly like a great star that will end up being transformed into a black hole after having shined for so many years.

### 2. Where do we come from?

In the prehistoric era, humans had already begun to make reproductions of daily objects and animals for more or less mythical ends. Through the entire history, models have been the basic element for explaining the world around us, because there were no photo-etchings or aerial views. Modelling has been used to represent battles and structures in many cases such as children's toys. In more contemporary history, modelling has had its heyday with lead figure collecting that represented vivid battles by their ancestors and to a large degree, modelling has always been linked with games. In the 20th Century, modelling already undertook an important change with the appearance of the new war machines, making the understanding and possession of scale models a very important factor. Throughout the war, soldiers on both sides used model aeroplanes in order to later recognise them, as with tanks and other vehicles. After that, many people were anxious to have those such amazing models that changed the world and that's where the real modelling as we know it today began. The first brands of models offered basic metal wooden and plastic kits that were quite different from the original model. The arrival of the '70s and '80s revolutionised the industry and brands like Tamiya, Revell, Airfix and Italeri began to make really beautiful kits that appealed to a lot of people. The '90s were devoted to resin and the Verlinden era and the year 2000 brought the most golden modelling period, when the modeller is far from abundant and where the Internet has made the world a smaller and closer place.

### 3. Where are we going to?

More concretely, what immediate future awaits us? For the modeller who has been able to buy this book, an unimaginable future awaits, full of new kits and qualities never seen before. The great variety available and a lowering of model prices has encouraged us to continue making models without stopping to rest, though this saturation forces us to search for ever more original models in order to stand out among the rest of the modellers. The proliferation of new magazines and books will help to greater promote painting techniques and we will be able to create better and better models. Expectations are increasing not only in the painting, but also in the assembly and this can be dangerous. When it takes almost a year to build a model, because you have to add 30 photo-etching, 50 resin and interior accessories, aluminium tubes and chains with microchips installed, this doesn't encourage us very much to make new models. It wouldn't be the first time that we have heard a modeller say that he cannot start to build his Tiger because he hasn't got the special photo-etching for the part that supports the or the jack, or that he is waiting for some special titanium aerials to arrive in order to make the Ausf F version of the remote control that is different from the Ausf G by three millimetres in length. Extreme cases like these, though they seem hard to believe, are not too far from the truth. We should try to find a reasonable balance, even going back to making models straight from the box, almost without any accessories, in order to more focus on the painting and dioramas. Otherwise, we run the risk of becoming frustrated and becoming purely collectors of boxes of models, with no greater illusion that awaiting the next new releases by Dragon or AFV. This book aims to open a door for you little by little to the past, where the most important was to enjoy and finish the models, not to buy them; a past where the most important thing was to see how it rained in the street while we relaxed without haste painting our model's accessories or searching in some book for a version of our model in order to make the chips or more dust. The key to our modelling future lies in the past, even if we can only manage to make modelling last for another 3000 or 10,000 years. If we forget that modelling is to be enjoyed and to make us feel happy, then modelling will have really died.



#### 4. *Is there life on other planets?*

I don't know, but if there is, I'm sure that they also make models.

#### 5. *Is it really necessary in this world to have that class of people who always criticise the work of others but never do anything themselves?*

Absolutely. Modelling is like a small ecosystem where an infinity of different people live together and cause the evolution of modelling. One of these beings is present the whole world over and lives near the modelling shops and currently in the Internet forums. He adopts uncountable nicknames, according to the country in question, but they are one and the same person, a being dedicated to criticise everything we do. He starts by numbering all the faults of our model's assembly and ends by saying that apart from the fact that the colour is incorrect, this model was never used in that battle. He will use any means to humiliate you, especially if the majority of your town's modellers are present and he will try to give all kinds of technical explanations as to why your mud or fuel colour is incorrect. In spite of the fear that these malign beings can give us, their existence is completely necessary, because they unknowingly provoke in us an additional reaction that drives us to make another even better model, even though we are aware that they were not right because they have never even tried to stick two pieces of plastic together. When the same specimen lives in your Internet forum, he is known as a VIRUS, though it is not the same thing that attacks our computers, but rather our models. If one of them ever gives you a positive comment, then he would be called a MIRACLE.

All of this forms part of our world and without it, right now I would be unable to write these lines that I dedicate to them. But if they manage to discourage you some day, think about all those other people who are anxiously awaiting your next finished model in order to enjoy it in the most intimate silence.

## 6. FAQ MODELS GALLERY

Several models have been featured in the many techniques explained here. Models were selected specifically to illustrate and cover the greatest number of questions. For example, although an Italian Tiger I may not be overflowing with originality, many aspects of general interest were covered with it. Remember that this book has been written to answer questions and not to present an abundance of imagination and skill. Only the Stalingrad diorama was made with the double intention of teaching and training us to make something really interesting.





### 1) Panther D, 1943 KURKS.

This model tries to represent one of the numerous Panthers that fought in the Battle of the Kurks. The appearance is not excessively old, because these tanks were brought to the front quite quickly especially for the occasion. However, this example is perfect for demonstrating the appearance of a tank in a hot and dry terrain, where the dry mud and dust combined to form a satin surface usually found on an infrequently used vehicle.







## 2) German KV II.

The winter theme required a whole model, because as well as showing the winter effects themselves, it could serve to define many aspects of the chips, mud mapping, etc. These KVII's were captured in large quantities by the German Army that modified various parts in order to adapt them to their army's needs, such as changing the dome's position, a Notek addition and a German jack, as well as a basket for carrying extra ammunition.









### 3) Tiger I 1945 Italy.

In February of 1945, 15 Tiger I Mid's of the 504 PzAb's were moved to the 508 PzAb's as reinforcements for their diminished late Tiger I's. This model tells the story of these 15 tanks that changed unit and were left abandoned in Northern Italy due to a lack of fuel. A luxurious tank for showing Zinmerit, wet transfers and oils and rust effects.









#### 4) Sherman "El toro".

This amusing vignette set on a Pacific island was used to explain how to make vegetation, terrain and some environmental effects such as water marks and rusting.









## 5) Destroyed T34.

This new Verlinden kit inspired in one of my own models was the perfect excuse for explaining the complexities of rusting and burnt vehicles.





## 1) We need this Turret. Stalingrad 942

In autumn 1942 things became quite tough for the Soviet defenders of this city Stalingrad. The scarcity of resources, arms and ammunition were such that the Russians had no choice but to make use of any available resource. A T34 STZ manufactured in a factory in the same city was hit in the cannon by enemy shells in the outskirts of the city, using the weapons, but not the crew. In an attempt to continue using the same tank, the crew drove the tank behind the enemy lines that was then the shores of the great river Volga. Thousands of landings of every type crossed this immense river every day bringing ammunition, fresh men, material and taking back the wounded. Among these landings, there were Bronekater 1125's, which were ships armed with T34 turrets. One of them was sunk by a enemy shell while unloading material at an old landing site in the city. The ship sunk, but the stern remained afloat and was ingeniously used by the desperate T34 crew to recover the turret that the Bronekater would never use again. Once the original tower had been removed with a crane located near the boat, they filled the gap between the ship and the port with tree trunks and with the help of chains, managed to bring the heavy turret to the shore to later position it on the tank.







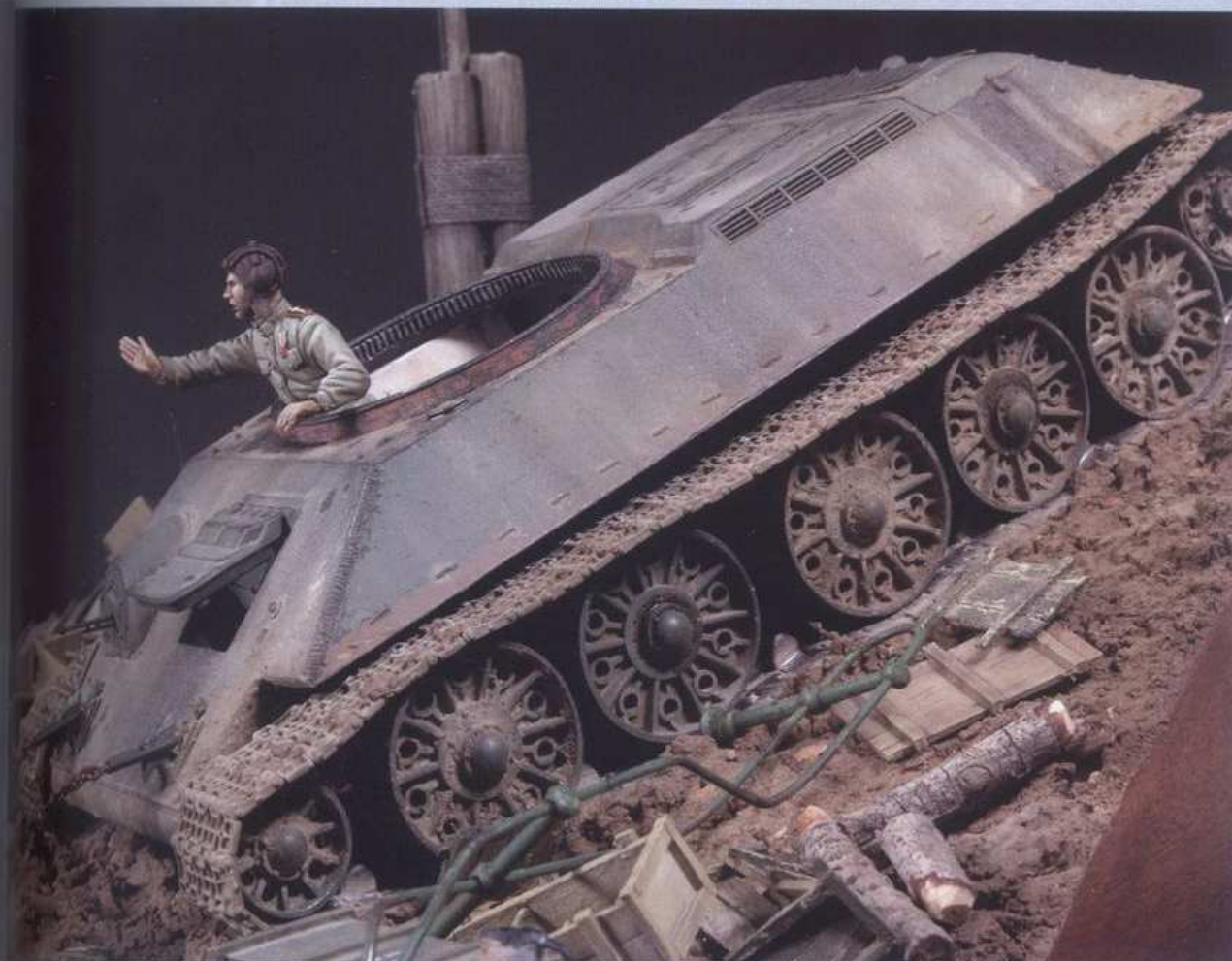








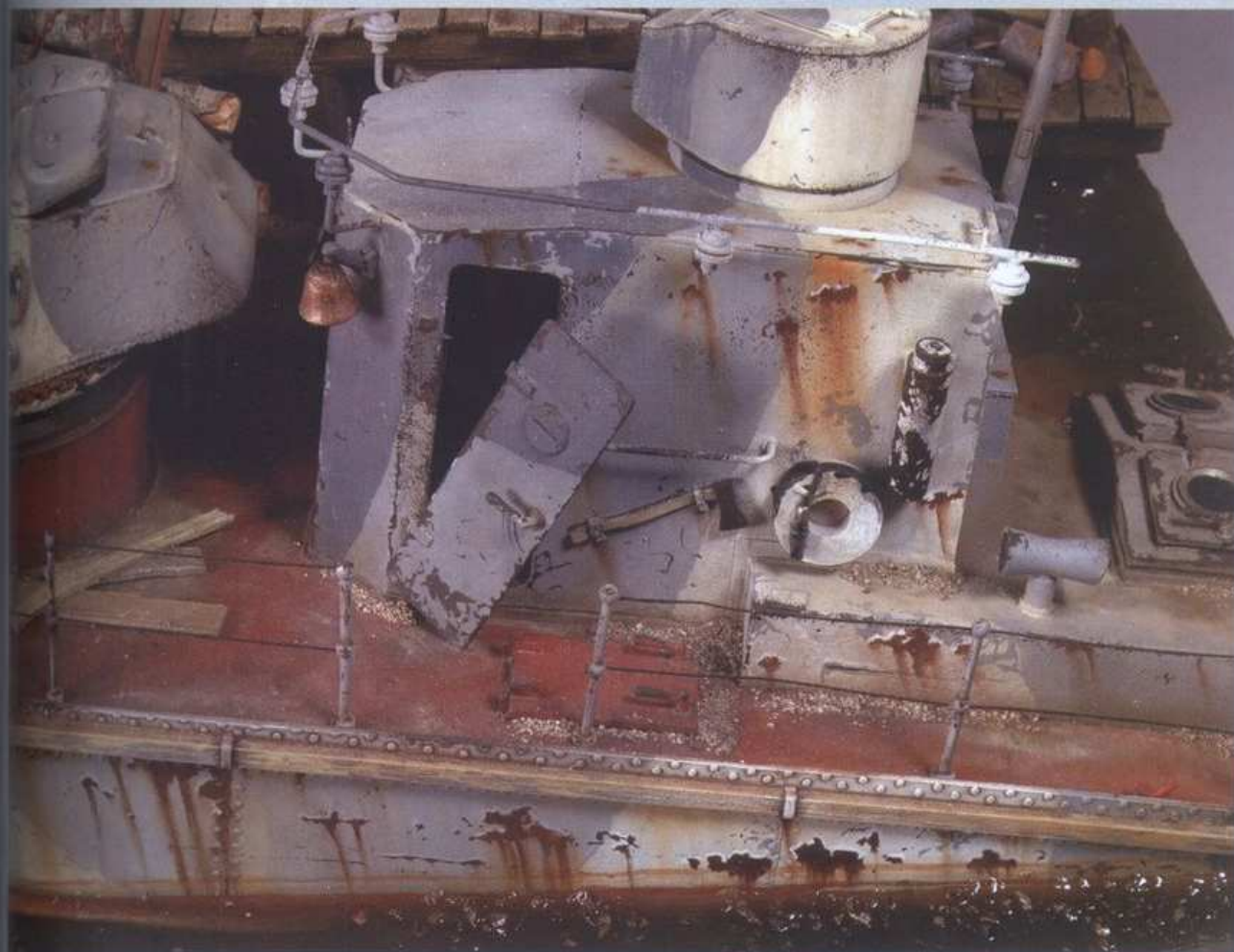
















## 7. BIOGRAPHICAL GALLERY

Many models are held by the author of this book, models and dioramas that have certainly been useful as the raw material for many of the techniques shown here. Many of them served to commit mistakes that can be of use to all of us today, in the sense that we will never have to commit these errors. Others were great successes, from which some of the most innovative techniques were developed, such as the Type 69IIC, from which the first filters were developed, the Sherman made from a Punk figure that served to create the first Mapping, or the Ural 4320 that inspired the first shines on a military model.





# 1. PANIC IN THE BACKGROUND Berlin-Waidmannslust 1945

JSII Dragon / StugIII C Dragon L/48 (1/35)

Year 2001

Carlos Elías / Jorge López / MIG Jiménez









## 2. LAST BREATH OF THE PANTHER

Panther Tamiya (1/35)

Year 2001

MIG Jiménez

Currently in the Tamiya Museum Collection



## 3. TRUBIA

Scratch (1/35)

Year 2003

MIG Jiménez

Currently part of Kaz Yoshioka's private collection





#### 4. T34 ZNG CROATIA

T34/85 TAMIYA (1/35)

Year 1996

MIG Jiménez



#### 5. POLISH DIKERS

(1/72)

Year 2000

MIG Jiménez





## 6. LAST BREATH OF THE PANTHER II

Panther Tamiya (1/35)

Year 2001

MIG Jiménez/ Pepe Rosado

Currently part of Pepe Rosado's private collection (Spain)





## 7. THE SECRET ARMY, Captured HETZER Warsaw 1944

Hetzer Dragon (1/35)

Year 2000

Mandu/MIG Jiménez





## 8. RED DEATH, WHITE FIELDS

T34 Tamiya (1/35)

Year 2003

Mig Jiménez

Currently part of Kip Andersson's private collection (UK)









## 9. SINAI'S CLAW "SAM2" IN YOM KIMPUR 1973

SAM2 Azimut (1/35)

Year 1999

Jorge López/MIG Jiménez





# 10. BDRM 2

BDRM 2 Dragon (1/35)

Year 1995

MIG Jiménez





## 11. FRANCE 1985

M4A1 Verlinden (1/35)

Year 1995

MIG Jiménez





## 12. IRAQ 1991

T55 Tamiya (1/35)

Year 2004

MIG Jiménez





### 13. PzIII M ANTI-MINE 1946, Denmark

PzIII M/N Dragon (1/35)  
MIG Jiménez





# 14. STUG III TRANSEXUAL 1945 Czechoslovakia

StuG III G Late Tamiya (1/35)

Year 2002

MIG Jiménez





# **15. EGYPTIAN M88, 1991**

M88 AV Club (1/35)

Year 2000

MIG Jiménez



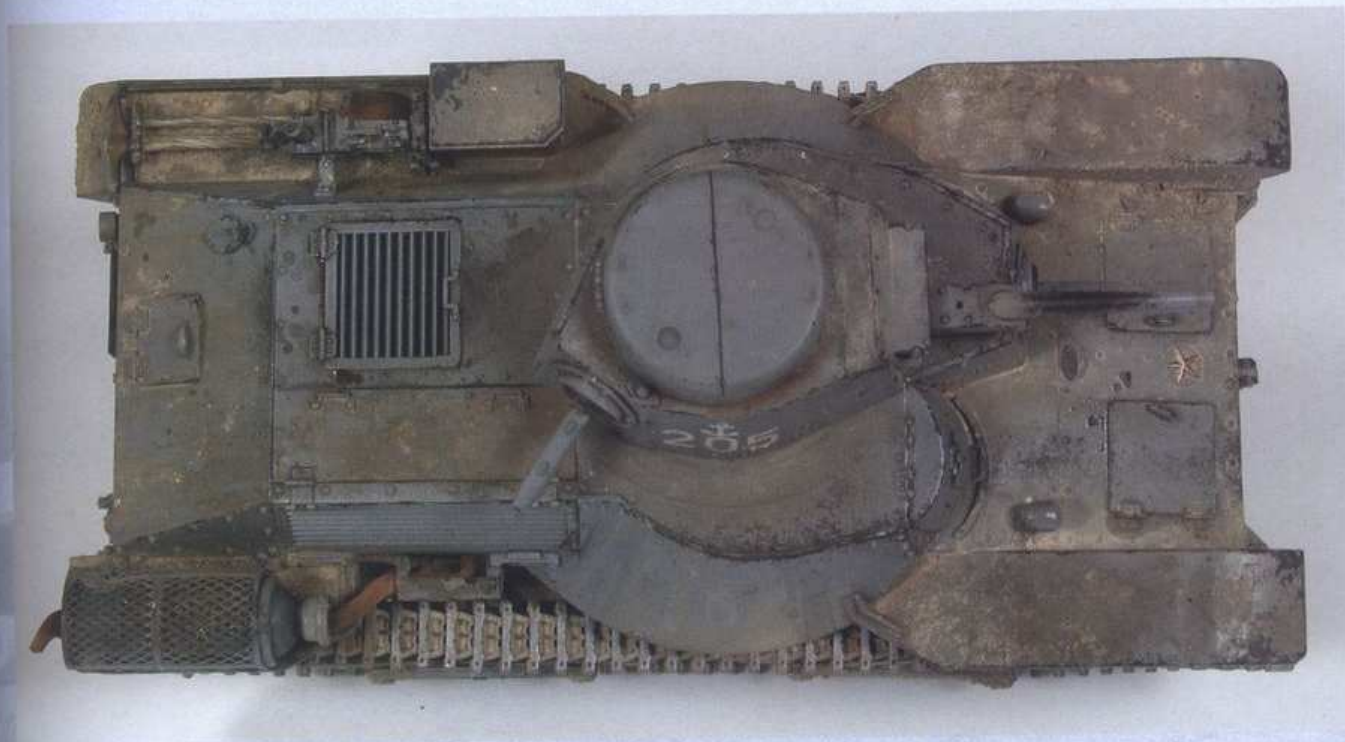


**16. THE BATTLE OF SAIPAN.**  
**60th Commemoration Naval Forces**

Type 95 Fine Molds (1/35)

Year 2004

Mandu / MIG Jiménez





**17. BIG WIESEL.**  
***Certain Shield Germany 1991***

Wiesel AFV Club (1/35)

Year 2000

MIG Jiménez





**18. AMX10. 1<sup>er</sup> Regimen Etranger de Cavallerie. Bosnia 1995**

AMX 10RC Azimut (1/72)

Year 2000

MIG Jiménez



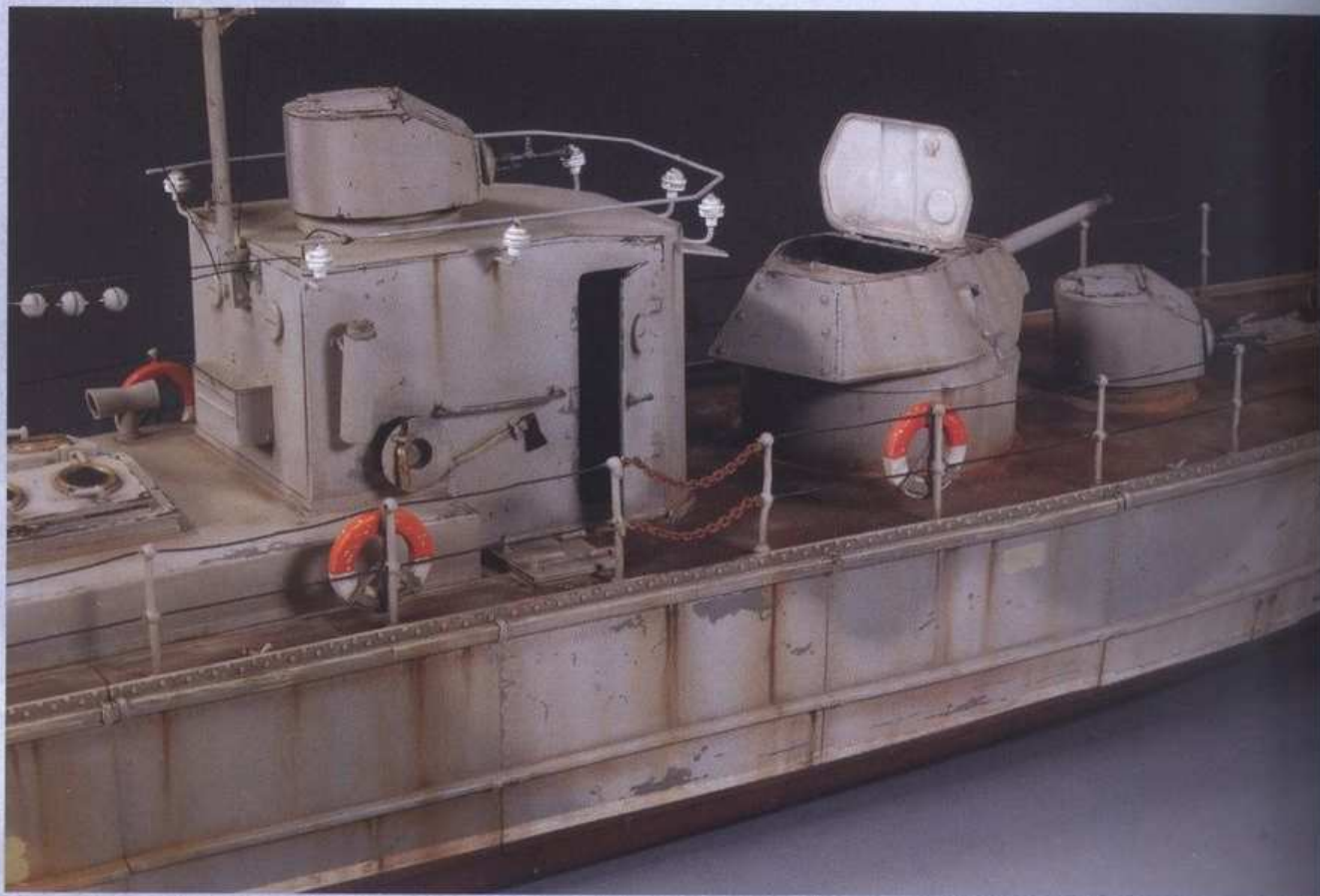


# **19. BRONEKATER BK 1125**

MIG Productions (1/35)

Year 2005

MIG Jiménez





**20. BE AWARE: POLIZEI!!  
SS-Pol Geb Jb. Rgt.18, 1944**

L6/40 Victoria Models (1/35)

Year 2004

MIG Jiménez





## 21. L6 / 40 AFRICA

L6/40 Criel Models (1/35)

Year 2000

MIG Jiménez

Currently part of Raymond Giuliani's private collection (France)



## 22. Eastern Front

WTM 1/144

Year 2002

MIG Jiménez





### 23. PzIV F1 Winter

PzIV F1 Tamiya/MIG Productions (1/35)

Year: 2004

MIG Jiménez





## 24. PzIV Burn Out

PzIV J Tamiya (1/35)  
Year 2001  
MIG Jiménez



## 25. TIGER COCKTAIL (Vodka, Water, tiger and a bit of ice)

Tiger I Early Italeri (1/35)  
Year 2001  
MIG Jiménez









## 26. THE SOVIET PULLOUT 1988 Afghanistan

Ural 4320 (1/35)

Year 1999

Jorge López/MIG Jiménez





**27. TUNISSIA 1943**

Marder III Tamiya (1/35)

Year 2001

Joan Sánchez / MIG Jiménez





## 28. AFTER THE BATTLE. Mortal remains of Berlin June 1945

Panther G Tamiya (1/35)

Year 2000

MIG Jiménez





## 29. NIBELUNGENWERK'S LAST SON St. Valentin January 1945 Germany

Jadtiger Revell (1/35)  
Year 1999  
MIG Jiménez





**30. KVII THE DEFENSE IN THE KRUPP PLANT August 1945 ,Germany.**

KVII Tamiya (1/35)

Year 2000

MIG Jiménez



**31. BRITISH BEDFORD QL**

Bedford QL Scratch (1/35)

Year 1998

Jorge López/MIG Jiménez





### 32. LA RECONQUISTA Boadilla del Monte

PzI B Szveda / Aber (1/35)

Year 2001

MIG Jiménez





### 33. BORN IN U.S.A. *Arab lebanese Army 1975*

M41 Skybow (1/35)

Year 2004

Jorge López/ MIG Jiménez





### 34. MALASSIAN DUCK

Duckw Italery (1/35)

Year 2003

Jorge López/MIG Jiménez





### 35. BEDFORD

Bedford Scratch (1/35)  
Year 1998  
Jorge López/MIG Jiménez





**36. MARDER III WINTER**

MarderIII M Tamiya (1/35)

Year 2002

MIG Jiménez





### 37. DRY REFUEL? Lost in Russia

Sdkfz11 AFV Club (1/35)

Year 2002

MIG Jiménez









### 38. WORK OF A BRITISH DEMOLITION TEAM *Western Desert 1942*

PzIII G Dragón / Interior Scratch (1/35)

Year 1998

MIG Jiménez





### 39. German T34

German T34 - Pz.Kpf.Wg.747 (r)-1 Tamiya (1/35)

Year 2005

MIG Jiménez





#### 40. TECHNICAL BJ44 LAND CRUISER (w BROWNING Cal.50 version)

MIG Productions (1/35)

Year 2004

MIG Jiménez





# **41. TECHNICAL BJ44 LAND CRUISER (Transport version)**

MIG Productions (1/35)

Year 2004

MIG Jiménez





**42. TECHNICAL BJ45 LAND CRUISER, Long cargo version.  
(w SOVIET B11 GUN 106mm Recoiles version)**

MIG Productions (1/35)

Year 2005

MIG Jiménez





### 43. TECHNICAL BJ44 LAND CRUISER (w DUSHKA version)

MIG Productions (1/35)

Year 2004

MIG Jiménez





#### 44. PZIA AFRICA

Pzl A Tristar (1/35)  
Year 2003  
MIG Jiménez  
Currently in the Charlie  
Pritchett collection, (USA)





**45. THE TAJIKISTANE COW,  
an amazing cow with 2S1.  
February 1995**

2S1 Skif (1/35)  
Year 2000  
MiG Jiménez





#### 46. PANTHERA JIRAFÁ

Panther A Cromwell Models (1/35)

Year 2001

MIG Jiménez





**47. PzIII J winter**

Dragon (1/35)

Year 1996

MIG Jiménez





## 48. M48 Vietnam

Tamiya (1/35)

Year 1996

MIG Jiménez

Currently in the Euromodelismo private collection.





**49. M48 IDF**

Tamiya (1/35)  
Year 1995  
MIG Jiménez





## 58. T34 K.O.

Verlinden / Mig Productions (1/35)  
Year 2005  
MIG Jiménez

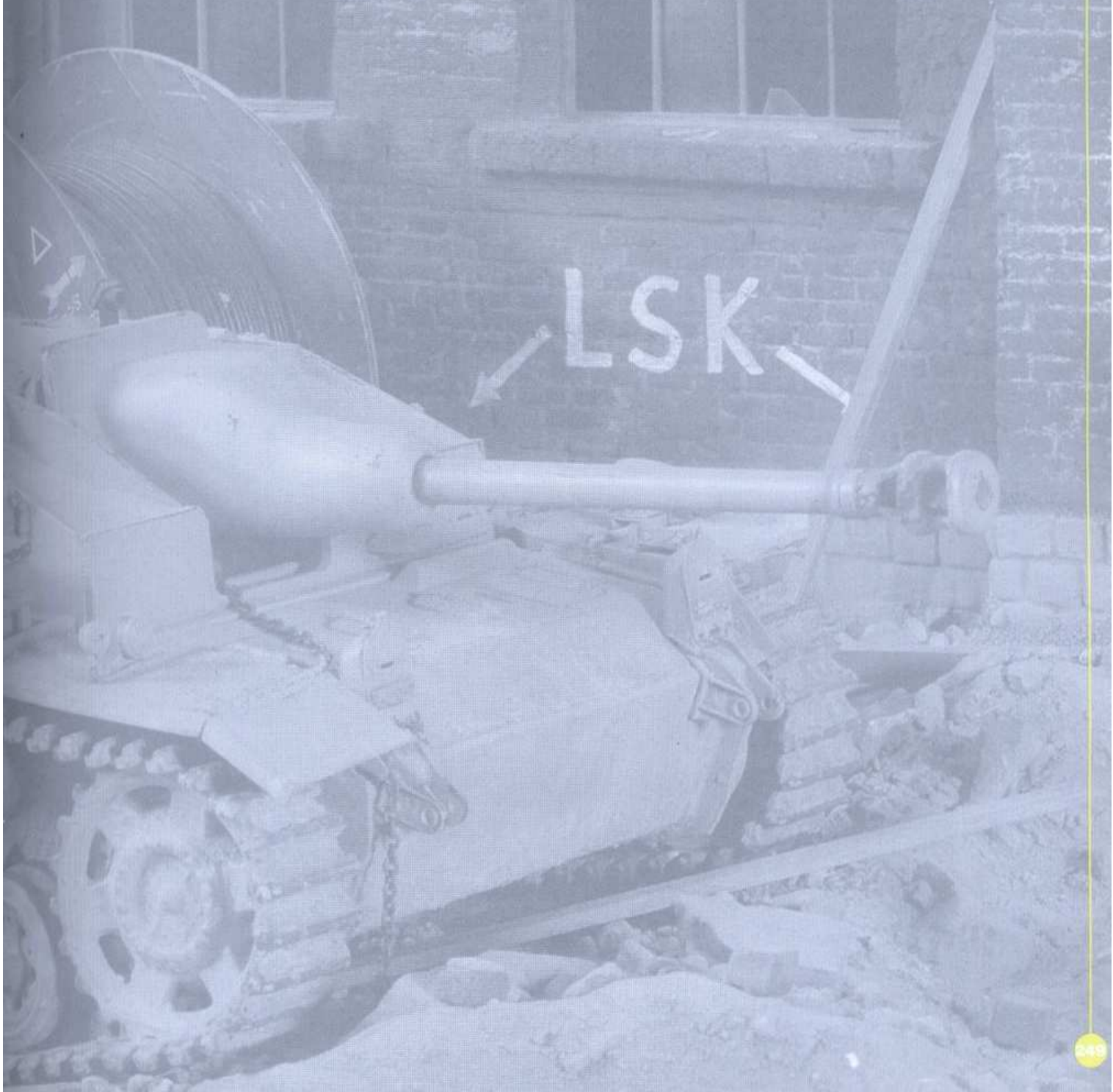








## **8. CONCLUSION**





## **What comes next?**

### ***1. Future Projects.***

As far as I am concerned, I have earned the right to take a rest after having dedicated ten years exclusively to the development of painting techniques, devoted to spread them throughout all the countries of the world to finally gather together everything I have learnt from myself and other modellers in a single book. This project has cost me physically and mentally but it hasn't taken away my desire to open a new tomorrow and start painting it. There is still a lot to be done and the book that you have in your hand is just the beginning, the foundation for creating real models, starting to develop new techniques and gather them together in future publications. However, it is still necessary to go back and gather together many other techniques that have been left out of this book due to a lack of space, such as painting vehicle canopies, tanks under the rain, kit bags, motors, tanks in small and large scale... a complete repertoire of more interesting themes that I promise to begin writing about right now. I really believe I will forget to breath- there is no time to do so.



