



THE

WEATHERING

MAGAZINE

by **MIG** Jimenez



AIRBRUSH 1.0



A.MIG 4535 - Issue 36 AIRBRUSH 1.0

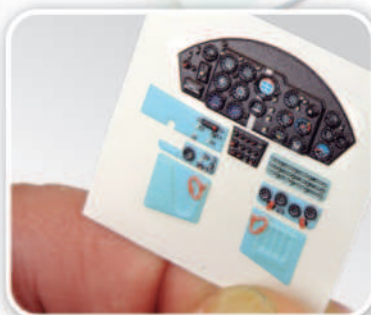
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THE WEATHERING MAGAZINE



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In our hobby, if there is one tool that burst in with force and radically changed the concept of finishing, it was the airbrush. The use of the brush as a tool for painting and applying effects continues to be a safe value, because of the control one has over it the ease of use.

However, without the airbrush, there is no way to achieve such a uniform and fine finish with a method that accurately imitates how most life size subjects have been painted in a reduced scale. With a little practice, you can also recreate complex camouflage patterns and apply fine lines and effects that would be impossible to achieve with a brush.

Indeed, both the airbrush and the compressor are expensive tools within the range of materials and products that we usually use on a regular basis. Given the years of enjoyment they bring with minimal care and basic maintenance, the airbrush radically improves your finished models, making them a real value for the investment.

Once you have made the decision to assume the cost, the next question is what brand and model of airbrush to buy? What type of compressor to choose? How do they work and what is the correct way to handle them? What are their most outstanding characteristics? There are considerable choices to be made and the different systems and qualities can be confusing and even discouraging. All of these critical aspects can be easily understood, and the TWM team will provide you with enough material and information to replace doubts and fears with fun and outstanding results.

Because the world of airbrushing is rich with information and holds many doubts and questions to clarify, TWM's has dedicated two issues of thorough content dedicated to airbrushing. In this first issue you will learn the fundamentals of the airbrush, as well as the different "power sources" and complimentary accessories for your airbrush. Some of the world's finest scale modelers will help you understand the differences between single and double action airbrushes and the most suitable purposes for each type throughout these pages. You will be shown how to dilute the different types of paints in order to maximise their characteristics. The most experienced modelers will benefit from our examination of common mistakes and errors that commonly occur during use and their corresponding solutions. Equally important is correct cleaning and maintenance techniques both for the airbrush and the compressor, as well as the different accessories used to ensure years of enjoyment from the key to the best finishes and weathering effects possible, the airbrush.

Jorge Porto del Corral



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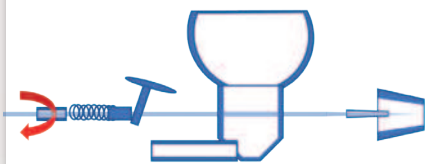
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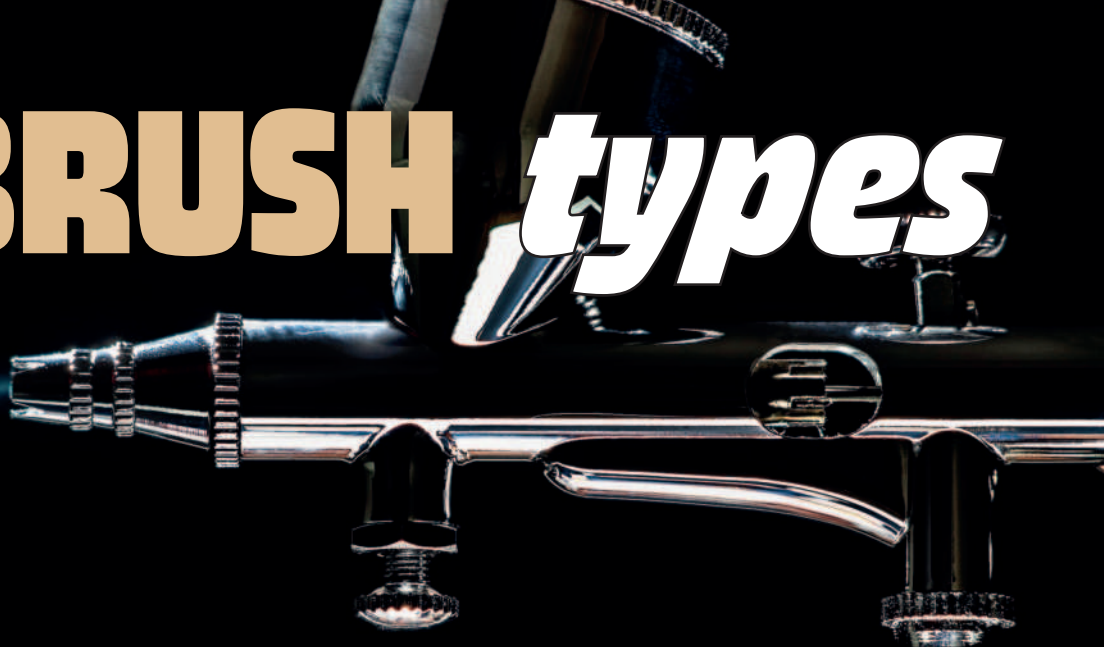
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AIRBRUSH *types*



Sergiusz
Pęczek



The airbrush is one of the most important tools in modelling, both for its fines and unique effects as well as versatility for multiple applications. Its operation is based on the principle of air + paint, varying only by specific characteristics, as each type of airbrush is designed for a specific function or activity.

One type of airbrush will be more suitable than another based on what it is being used for. A little small introduction into the differences between the different types of airbrushes will help you to make the right choice.

A) TRIGGER ACTION

Most airbrushes can be categorized as one of two types: **single-action or double-action.**

- **Single-action** airbrushes operate with a basic mechanism, pressure applied to the trigger simultaneously drives airflow and paint through the airbrush. The airbrush trigger has a single up-and-down movement, providing basic one-dimensional paint control. When the trigger is pulled, it introduces paint into the airstream with no control over the amount or pressure of air entering the airbrush, nor over the proportion of paint atomized into the airflow. The incoming air pressure can only be controlled from an external source. Single-action airbrushes are simpler to use and are usually less expensive, but their applications are limited if the user intends to apply effects much more artistic than simply applying a good, even coat of colour.

- **Double action** airbrushes allow the air and paint flow to be adjusted simultaneously through the trigger. By depressing the trigger, air is allowed to pass through the airbrush. Pulling the trigger back and forth simultaneously adjusts the amount of paint entering the airflow. This ability to adjust the paint flow while the airbrush is spraying, together with the modeller's adjustment of the distance to the paint surface, allows variation from fine to broad lines without stopping to readjust the spray pattern as is necessary with a single-action airbrush. This enables far superior control of the spray and enables a greater variety of artistic effects. Using this type of airbrush requires practice to achieve a moderate level of control and proficiency. The effort is well worth it, as dual action airbrushing offers unlimited artistic versatility. Double-action airbrushes are a more sophisticated design than single-action airbrushes which is reflected in the cost.

B) FEED SYSTEM

Paint can be fed from the paint cup at the top of the airbrush into the airbrush by gravity, this type is referred to as gravity feed or top feed. Other types include suction from a reservoir mounted on the bottom referred to as suction or siphon feed or from the side referred to as side fed. Each type of feed has unique advantages and disadvantages.

- **Gravity feed airbrushes** require less air pressure to operate because gravity helps the paint flow into the mixing chamber. Typically, applications with finer paint atomisation and detail requirements use this method as lower air pressure allows for more precise control of paint flow. However, the paint capacity of gravity fed airbrushes is limited.

- **Side and bottom feed airbrushes** allow the modeller to see over the airbrush. In addition, the former sometimes offer left-handed and right-handed options to suit the modeller more comfortably. The lower paint reservoir can be of various sizes, so it tends to have a larger paint capacity than the other configurations and is often preferred for large-scale work. Side fed airbrushes are a hybrid of the two and can use either a gravity style cup or a suction style bottle.

C) MIX POINT

Airbrushes can be divided into **internally mixed** and **externally mixed** airbrushes based on where the air + paint mixing takes place. With an **internal mix** airbrush, the paint and air are mixed inside the airbrush body at the tip, creating a fine paint spray. With an **external mix** airbrush, the air and paint meet outside the tip before mixing together, creating a coarse paint spray pattern. **External mix** airbrushes are less expensive and more suitable for covering larger areas with more viscous paints or varnishes, **while internal mix** airbrushes are more expensive and well suited for detail work with fine paints.

DIFFERENT TYPES OF AIRBRUSHES:

**1) Japonés Mr. Hobby
Procon Boy PS-270**
with 0,2mm nozzle and pressure
regulator on the body.

**2) AMMO de Mig Jimenez
A.MIG-8625 AirCobra**
double action and gravity feed,
0,3mm nozzle.

**3) AMMO de Mig Jimenez
A.MIG-8624 AirViper**
double-action gravity feed,
0.2mm nozzle.

4) H&S Infinity
with interchangeable cups and
pressure regulator on the air valve.

5) Paasche H0907
single action, suction fed with
external paint mix.

6) Badger Mod.100
double action, internal mix, side feed.

7) Elite E4182
double action, External mix,
bottom suction feed.

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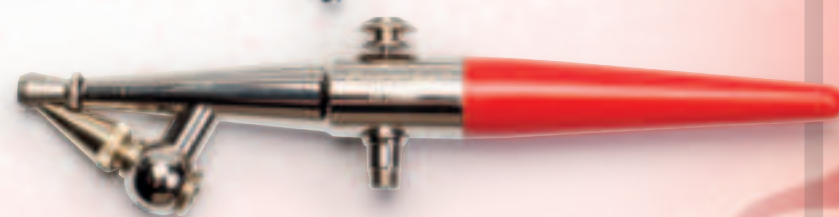
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THE USE OF SINGLE-ACTION AIRBRUSH

The first airbrush discussed is the least popular, but it still has its fans. It is a single-action, suction-feed airbrush with external paint mixing. It is particularly useful for painting large surfaces, due to its large paint supply cup.

The operation is very simple: pull the trigger as far as it will go and start painting. When you release the trigger, the compressed air is cut off and the airbrush stops painting.

The spray width is constant during painting and is adjusted by screwing or unscrewing the needle on the nozzle.



The more open the nozzle is in relation to the needle, the more paint will be sprayed and the wider the paint stream will be, and vice versa.



The airbrush is very easy to assemble and disassemble. As you can see, it consists of 4 basic components: body with handle, trigger and air valve, nozzle cap where paint and air are mixed, and the nozzle and needle.

THE USE OF A DOUBLE-ACTION AIRBRUSH

Gravity fed and internal paint mixing, dual action airbrushes are the most popular airbrushes in modelling.

In this picture you can see the two AMMO airbrushes specifically designed to meet the needs of modellers everywhere. The A.MIG-8625 AirCobra with a nozzle diameter of 0.3 mm and a larger paint cup is for applying primer, base colours, and standard camouflage patterns. The A.MIG-8624 AirViper with small cup and 0.2 mm nozzle has been designed for painting precise camouflage and creating fine lines and specialized effects.



A.MIG-8625 AIRCOBRA

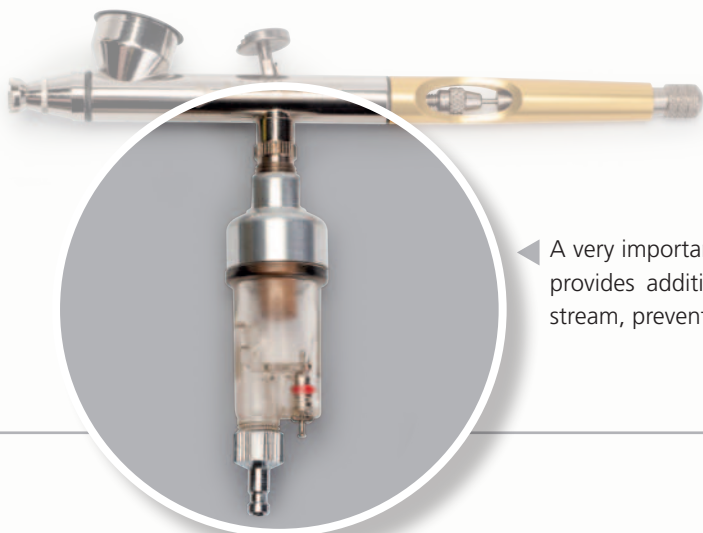
A.MIG-8624 AIRVIPER



To begin painting, press the trigger all the way down and the air flow will begin. The air flow is regulated by how far you depress the trigger.



When you gently pull the trigger back and the needle retracts, the nozzle aperture opens and the atomized paint is sprayed. The farther back the trigger is pulled, the more the needle retracts and the larger the nozzle opening becomes, resulting in a greater volume of paint entering the air stream.



◀ A very important accessory of the airbrush is the additional humidity filter which provides additional protection against moisture being introduced into the air stream, preventing failures when applying the paint.

COMPARISON OF TYPE AND NOZZLE SIZE OF THE MOST POPULAR SYSTEMS BADGER (AIRCobra – AIRVIPER), H&S, IWATA.



1) Badger (AirCobra – AirViper) – Features a large and easy-to-clean nozzle, the seal is produced by the perfect fit between all parts of the nozzle without threads or joints.

2) H&S – Composed of a large and easy-to-clean nozzle, it is sealed to the airbrush body by a Teflon O-ring.

3) Iwata – Consists of an extremely small and delicate nozzle that is somewhat difficult to clean due to its small size. A special spanner wrench is used to unscrew it from the airbrush body. Care must be taken when threading on the nozzle not to break the thread. Once it place, it produces a slight resistance.



From left to right Badger
Badger (AirCobra – AirViper), H&S e Iwata.



Example of
airbrushed vehicles.

THE AIRBRUSH



José Luis
López

1. USE

The most important thing is to have a clear answer to a basic question: why do you want an airbrush? Only when you know what you need it for, will it be easier and more intuitive to find the most efficient and least complicated way to work with it. In a very general way, we have two answers to the question, each of which implies a different philosophy of use.

USE 1

As a quick tool for covering large surfaces, and possibly camouflage application. Opacity and speed are primary requirements, requiring the use of paints that are not highly thinned. The tonal variety of the model is mainly due to the subsequent application of filters, oils, and pigments. At a later stage, highlights can be added with the airbrush by applying the lightest colour. When working with camouflaged models, the base colour is usually applied as follows.



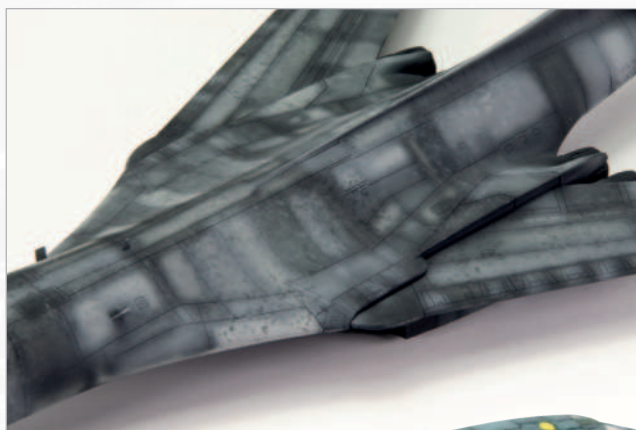
USE 2

An advanced use of the airbrush requires the use of thinner paints, the application of more heterogeneous base colours in a range of tones that normally do not require the subsequent application of filters or other techniques used to vary the tones of a base colour. Highly thinned paints are used which has low covering capacity. The heterogeneous base colour is created by superimposing layers. It is a slow process used to subtly change the base colours and use auxiliary means such as stencils. This method is used on single-colour vehicles where you are trying to avoid a homogeneous base colour by adding the variation of highlights and shadows.





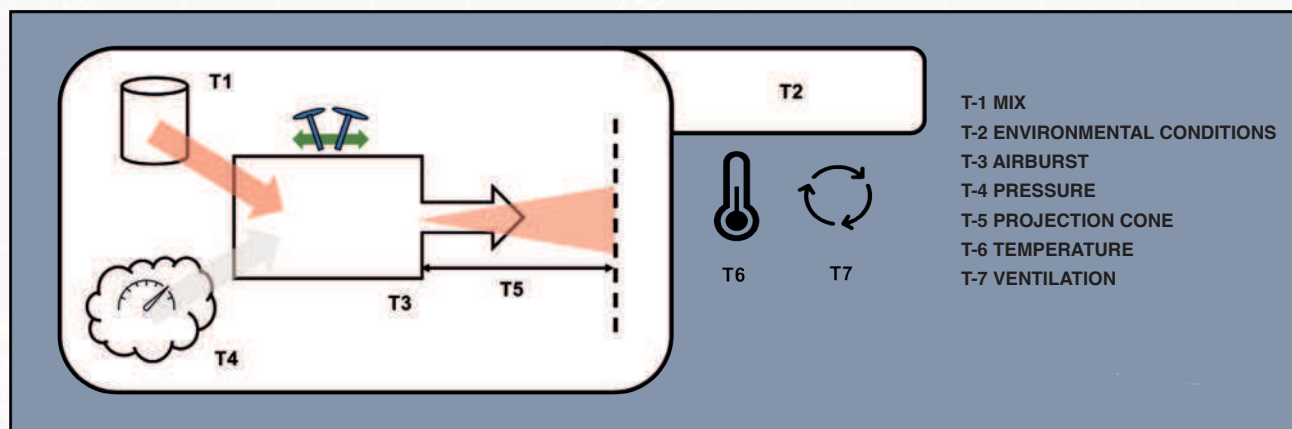




2. THE TOOL

Imagine the airbrush as a black box with three **INPUTS** which are the paint, the air, and the environmental conditions. With these **INPUTS**, the airbrush sprays a cone of atomized paint used to paint a model. The **INPUTS** used and the way the airbrush is handled depends on the application and desired finish.

Because this is a tool that works symbiotically with your hand, the airbrush has two variables of use: the amount of paint projected which is controlled by the trigger, and the distance between the model and the airbrush nozzle.



EACH ASPECT DESERVES FULL ATTENTION.

2-1. INPUT ENVIRONMENTAL CONDITIONS

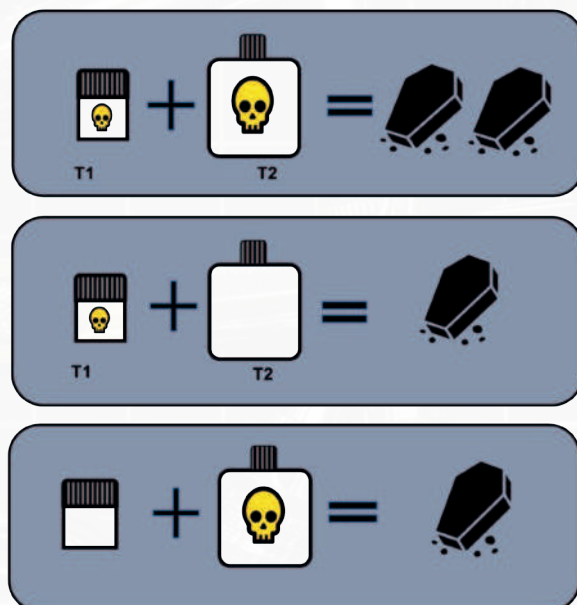
This aspect is basic, work in a well ventilated area free of drafts or wind, preferably at temperatures between 20 and 25 degrees, the ideal atmospheric humidity and no dust in suspension. The dryness of the environment or excessive heat causes the paint to dry between the tip of the airbrush and the surface of the model. The dust in suspension mixes with the paint and adheres to the surface of the model.

2-2. INPUT PAINT

A very important point is that the paints used must be airbrushable. I would say that 90% of the complaints (and trauma suffered) by modelers using the airbrush do NOT come from a malfunction of the airbrush, but from the wrong choice of paints, thinners, or solvents used.

In short:

- *Not all paints are airbrushable. Use only those that are specifically manufactured to be airbrushed directly from the bottle.*
- *There is no such thing as a handmade, miracle solvent that will make any paint airbrushable.*
- *Use solvents and paints of the same brand. Do not use solvents of one brand with the paint of another.*
- *The concept of "acrylic paint" is very dangerous when understood in a general way. There is nothing in common between the acrylic paints of many different brands. Never think that a solvent for acrylic paints is suitable for any kind of acrylic paint.*



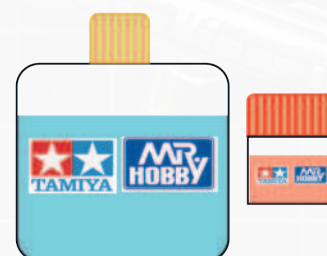
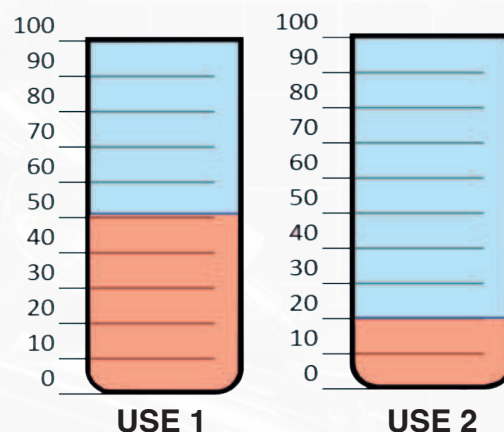
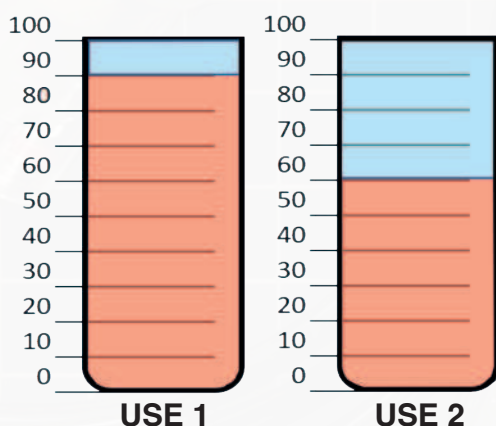
With these points clear, the INPUT of paint is very limited:

• USE 1:

In the case of AMMO paints, these can be airbrushed directly from the bottle after it has been thoroughly shaken. Adding 10% thinner makes the mixture somewhat easier to airbrush. In the case of other paints which are more dense such as Tamiya require no less than 40-50% thinner.

• USE 2:

When using AMMO paints, the solvent ratio can reach 50% or more. To create the maximum translucency with Tamiya, the ratio of thinner added goes up to 90%.

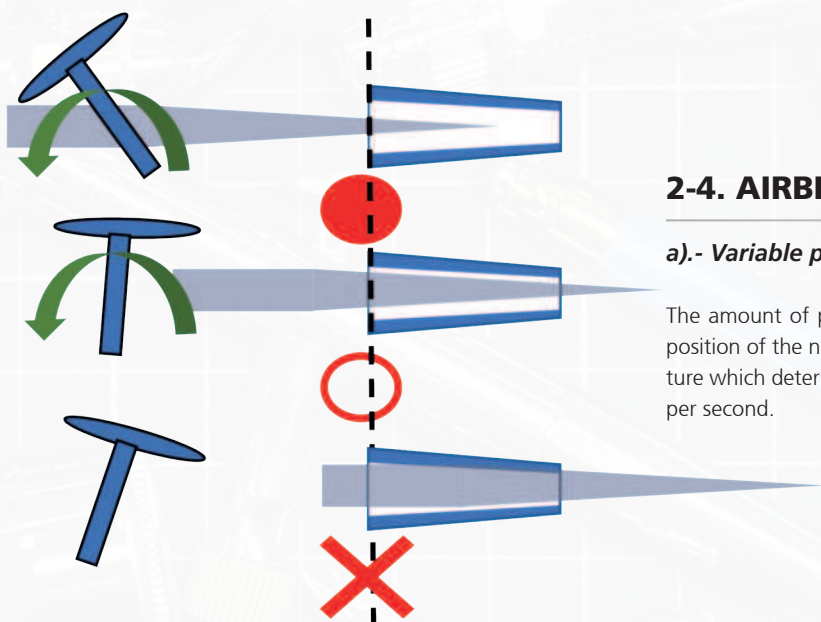
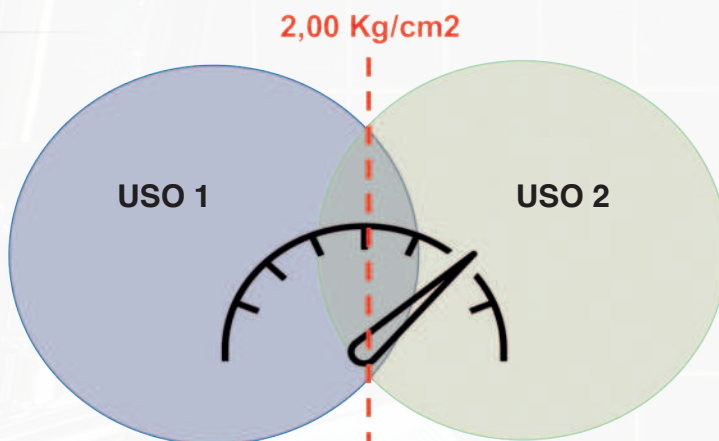


2-3. INPUT AIR

The easiest way to understand the function of air pressure is to imagine blowing on a table. If there were fine sand on the table, you would have little trouble getting it to move and disappear. As the grain size of the sand increases, you would find it more difficult to propel the sand. You would need outstanding lungs to move small stones.

The compressor is our lungs, and the degree of dilution of our paint equates to the size of the sand being blown.

With **USE 1** you will need high pressures (between 2.00 and 3.00 Kg/cm²) and with **USE 2**, these pressures vary between 0.50 Kg/cm² and 2.00 Kg/cm².



2-4. AIRBRUSH VARIABLES

a).- Variable paint quantity - trigger

The amount of paint sprayed at any given pressure depends on the position of the needle in relation to the needle taper and nozzle aperture which determines the volume of paint that your airbrush projects per second.

With **USE 1**, we are looking for opacity, homogeneity, and above all, speed which is one of the airbrush's greatest advantages. Instinctively modelers tend towards a maximum needle opening in an effort to cover surfaces quickly. The model must constantly be moving so that you are never stopped in one place. If a large amount of paint is projected per second, it will take a long time to dry. If you hold the airbrush still in one spot, the surface will become flooded with paint.

With **USE 2**, you instinctively work with minimal trigger movement to avoid saturating the surface. The precaution of never painting the same surface twice within a short period of time is equally valid. For transparent dirt effects, transparent colours, delicate skin tones, burnt effects, and most other airbrushed weathering effects require a minimal amount of paint.







b).- Variable distance

It is very important to know that the airbrush projects a cone of paint. This cone, which will be referred to as the projection cone, will be more or less perfect depending on the quality of the airbrush and its cleanliness. Regardless, you can imagine it as a cone with the tip of the needle as its vertex.



The effective distance of this cone is normally limited to about 40-50 cm. At this distance the sprayed paint will be almost dry due to the action of the air. The probability that the sprayed paint has also accumulated particles suspended in the air is highly likely.

The smaller the distance between the airbrush and the surface, the smaller the cone development will be and the paint sprayed will be spread over a smaller surface. If the surface is completely perpendicular to the needle axis, the painted surface will be a perfect circle. When sprayed from an angle, the projected paint will be elliptical. Each airbrush has its own angle of projection.

With **USE 1**, the distance will not be less than 20 cm, as a large quantity of paint is projected across a wide surface evenly without allowing paint to pool in any one area.

With **USE 2**, these distances can be up to 1.00 cm for precision work, with distances of between 3 and 10 cm being the norm. Although the application area is limited, a small amount of paint is used so there is no risk of flooding the surface.

3. PLANNING

Using an airbrush requires time and planning, these are key elements to successful results.

The routine I recommend is as follows.

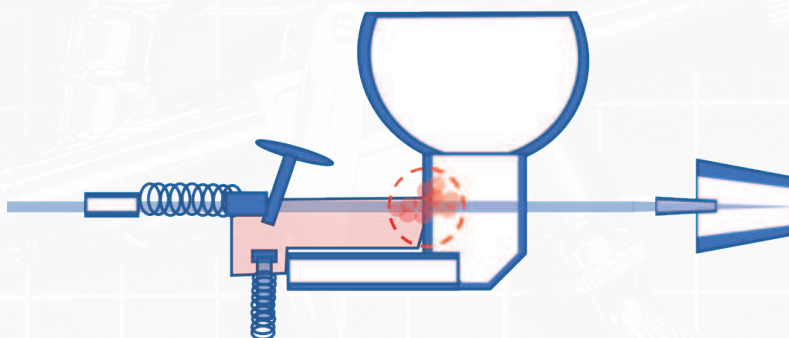
- Disassemble the airbrush needle, clean it thoroughly using a cloth and acetone.
- Clean the inside of the nozzle with a damp lint free cloth to remove any residue or accumulated dust.
- Check that the inside of the nozzle is free of dirt or dried paint build-up on the inside diameter.
- Turn the compressor on at maximum pressure.
- Pour a little water into the cup and airbrush it with wide and continuous movements of the trigger until there is no water left.
- Set the compressor to working pressure.
- Shake the bottle of paint to be used thoroughly.
- Mix the paint with the solvent in a separate container, do not mix in the airbrush paint cup.
- Place a small amount of paint in the cup. It is very important not to add too much.
- Test the mixture and warm up your hand by painting on paper at different distances. Never start painting directly on the surface of a model.
- Paint the model based on whether you require USE 1 or USE 2.
- Because a small amount of paint has been used, the cup will empty quickly. At this point, pour a little solvent into the bowl and work a brush around the inside of the colour cup to clean it. Always dump the dirty solvent from the colour cup – never spray the remains of the cleaner through the airbrush.
- Using a lint free cloth, dry the inside of the bowl, then pour some solvent into the paint cup and spray it through to flush out the airbrush.
- Shake the mixture and pour a small amount into the colour cup and spray it through the airbrush onto scrap paper before committing to the model.
- The process takes about 10 minutes during which time the cup will have been filled half a dozen times. After pouring out the cleaning solvent, clean the needle and check the nozzle, where some semi dried paint is bound to have accumulated. Any sudden splashes on the model come precisely from the dirt accumulated in the nozzle. Never remove the needle with paint in the cup.
- Once the painting phase is finished, carry out a complete cleaning of the airbrush including needle, nozzle and interior. Ultrasonic cleaners are an excellent complement to a thorough cleaning of the airbrush.

It is very important that the airbrush is always completely cleaned and safely stored after use.

4. COMMON PROBLEMS

The problems encountered when using an airbrush are 99% due to incorrect use of the airbrush and for not following the above mentioned instructions. Yes, indeed, the fault lies with the modeller, not with the tool. If you are clear about the type of use you have in mind and use the correct paint dilution and pressure, as well as respect the working distances and cleaning routine, you shouldn't have any problems. Let's take a look at the most frequent problems that occur because of not following the rules of use:

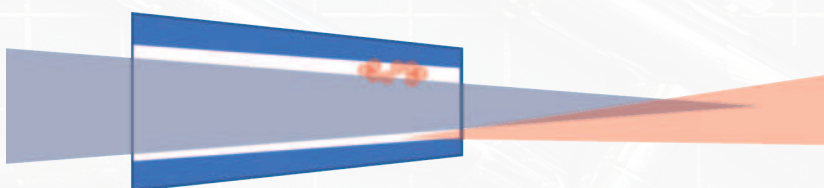
• **The trigger does not move.** The trigger pulls the needle with a spring-loaded mechanism that allows it to return to the rest position. If the trigger does not move, it is because the needle has stuck to the inner chamber due to a build-up of dried paint. Remove the needle, clean it thoroughly and clean the chamber.



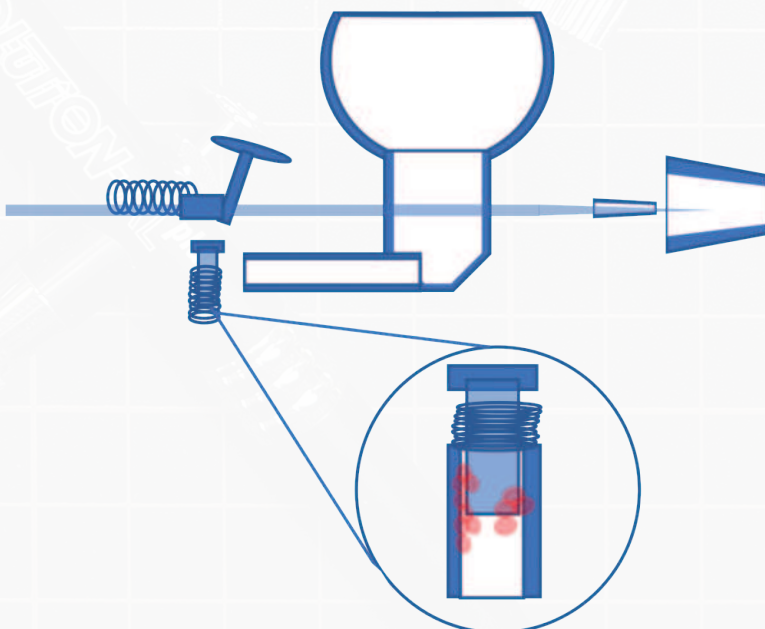
• **The trigger moves,** but the needle does not appear to move or the paint flow is erratic. Be sure that the needle is securely fastened by the rear nut which chucks the needle, making it move as one with the trigger.



• **I didn't move the trigger back and paint comes out of the airbrush when I press it.** That means that, in its return to the closed position, some particle inside the chamber has prevented the needle from being seated properly. Clean the chamber and the needle.

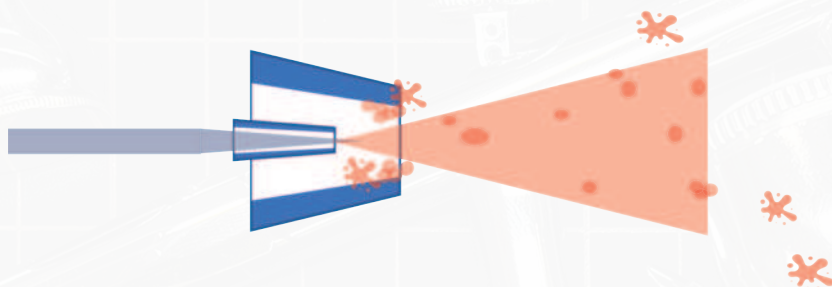


• **I pull the trigger to let the air out and it does not come out,** or I lift my finger off the trigger and the air continues to come out. The air flow is regulated by a plunger which is operated by the vertical movement of the trigger. Removing the needle with paint in the cup, or a problem with the maintenance of the seals can cause the paint to return through the needle chamber and reach the air intake area, where it dries and immobilizes the plunger. Disassemble the airbrush completely and clean it thoroughly. Lubricating the plunger will ensure smooth movement.



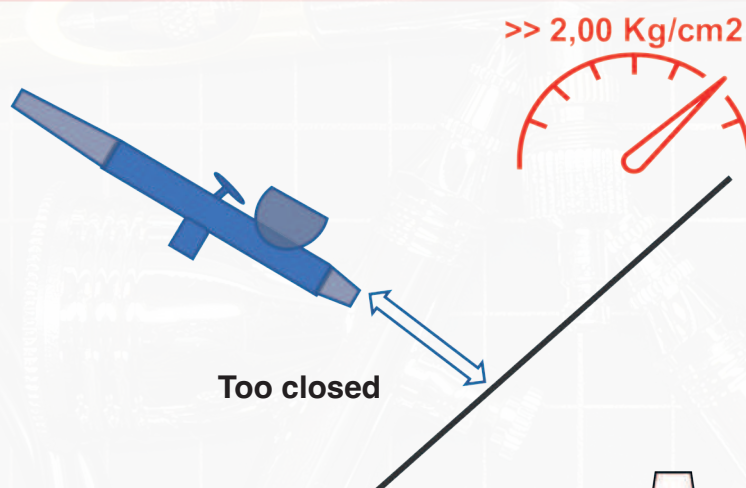
• **When airbrushing, the paint is not homogeneous on the surface,** small bubbles or areas with different sheens appear. This means that the paint in the cup has settled and the mixture is not homogeneous. Empty the cup, clean it, and be sure to shake the paint thoroughly to a homogeneous mixture.

• **Without warning, the airbrush spits out paint.** These splashes come from semi-dry paint that accumulates within the nozzle. Clean this area frequently during the airbrushing process as indicated above.

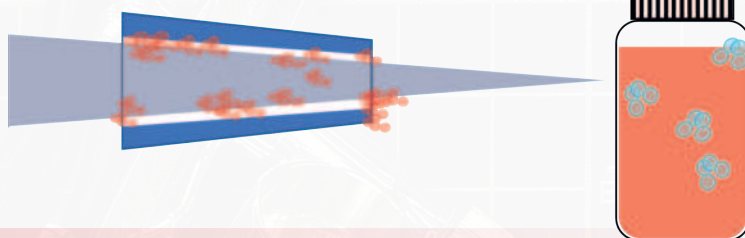


• **I'm painting on a surface and the paint pools.** There are several causes for this issue: the airbrush was held too close while spraying too much paint, or the airbrush was held over the same area for too long. This doesn't allow the initial layer to dry and the paint will pile up on the surface.

• **I get spider legs when airbrushing.** If this happens to you on the models' surface, it means that you have ignored what has been indicated above, and you deserve it! Remember, that when you start painting and after an intermediate cleaning, the first spraying should always be done away from the model and on a piece of scrap paper. The main cause for this is usually pressure that is too high for how thin the paint mixture is or being sprayed too close to the surface. The paint simply bounces and slides off the surface.

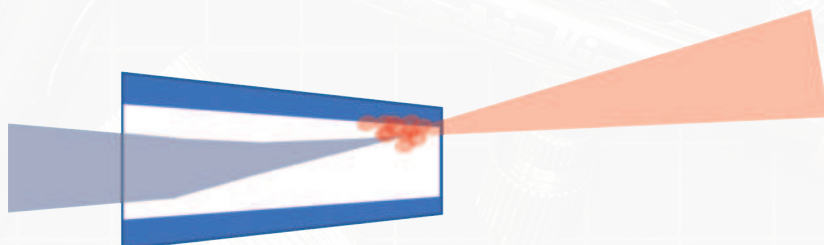


• **The paint does not flow evenly, it comes out in spurts or pulses.** The main reason for this is incorrect paint dilution, leaving your mixture thick. A dirty airbrush body also influences uneven paint flow.

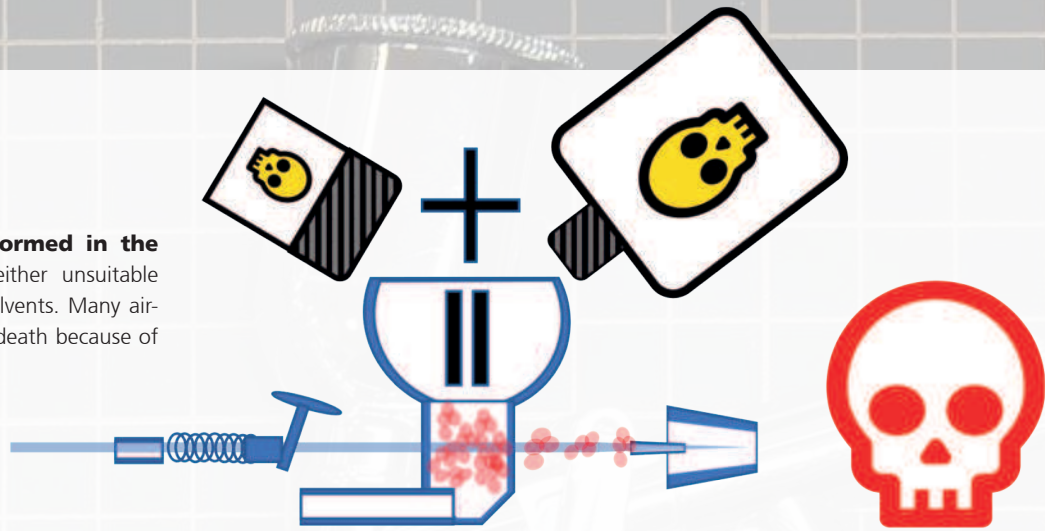


• **The paint appears grainy on the surface.** The main reason is usually a poor choice of thinner or the area you are working in is too warm or dry, which causes the paint to dry before it reaches the surface.

• **The airbrush does not paint in the direction in which I point it.** The cause is unmistakable, and that is that the tip of your needle is bent. Collateral damage is that the spray cone intercepts the nozzle slightly, facilitating paint build-up and splatter.



- **A strange grease has formed in the cup.** Direct effect of using either unsuitable airbrush paints or unsuitable solvents. Many airbrushes have suffered an early death because of this mistake. DEP.



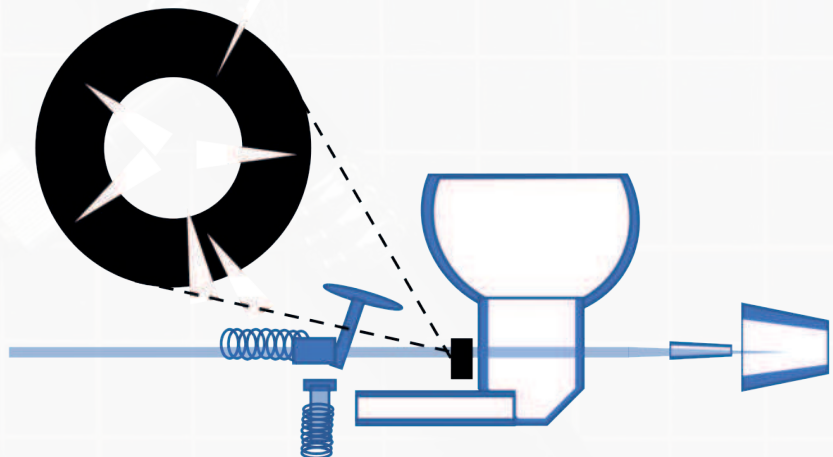
- **I make fine lines, but a dotting appears all around.** This is usually caused by an incorrect and insufficient proportion of thinner and by not having a perfectly clean needle. If you remove the paint from the cup with a brush and the brush is not clean, the residue can be projected as speckles as well.



- **The paint oozes out of the nozzle.** There is so much dry residue between the needle and the nozzle that it comes out by gravity through the airbrush body. Make sure you clean the needle and the nozzle for a perfect seal.

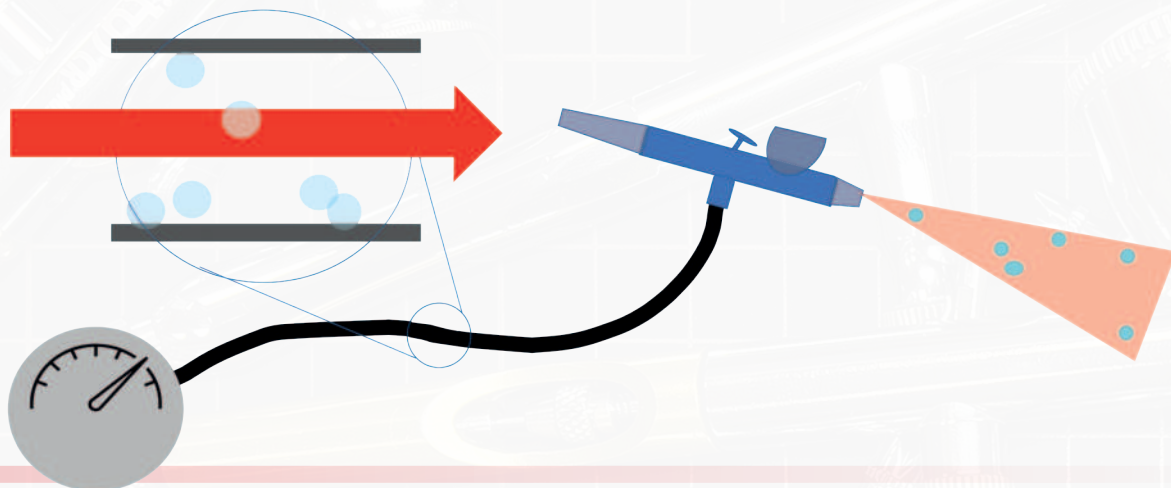
- **Bubbles appear on the sides of the nozzle.** These are due to incorrect adjustment of both the obturator and the nozzle, which are not tightened firmly. Using sealant on the joints improves the airbrush's airtightness.

- **I take all possible precautions when removing the needle, but I always get paint in the air intake area.** The gasket between the cup and the air intake area is probably either loose or damaged.

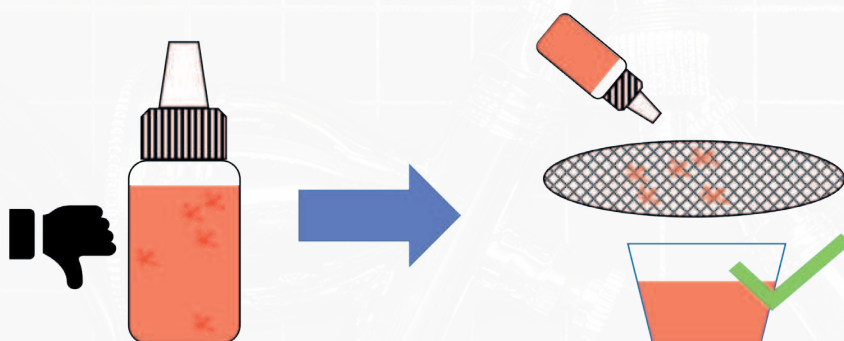


• **The trigger is jumpy, does not move smoothly to the touch.** You have dirt on the needle, which rubs internally making it difficult to move.

• **Despite working with a clean airbrush at the correct pressure and thinning ratio, the airbrush spits out water.** The reason for this is none other than the condensation that is generated within the airbrush's air supply hose. Connecting a moisture trap to the compressor outlet is highly recommended.



• **Despite working with a clean airbrush at the correct pressure and with the correct thinning ratio, the airbrush often clogs.** There are times when the paint, even when vigorously shaken and mixed well with the solvent, has solid particles of dry paint within. This can happen for any number of reasons including paint drying on improperly sealed bottle tops. In this case, you either throw the paint away or you will have to pass it through a very fine sieve to remove these particles.



• **Once the paint has dried, I notice that despite having done everything correctly, there are areas where the paint appears shiny or to have a defective finish.** The problem is not with the airbrush or the paint. It is most likely that you have worked on a surface that has grease or dirt on it, which prevents the paint from adhering evenly in these areas. Always clean the plastic parts with soapy water before painting. If you prime before painting, so much the better.

5. EPILOGUE

The airbrush, despite being a delicate tool that requires constant care and attention when in use and properly maintained, is also an incredibly powerful tool in your modelling arsenal. Much like aeroplanes in which one hour of flight may require 5 hours of maintenance, your airbrush also requires time dedicated to maintenance. This care and attention is why the aeroplane is the safest means of transport. By following the guidelines of correct airbrush use, the correct paints and thinner, as well as being clear about the concepts explained in this issue, an airbrush will bring you decades of excellent results.

I chose not to end this issue dedicated to airbrushes without talking about the importance of airbrush quality. The difference between a 30 euro airbrush and a 100 euro airbrush is not the short term consideration that they both appear to provide the same results. The difference is in the long term, in which the quality of the materials used to machine an inexpensive imitated name brand airbrush will degenerate quickly. The fragile and critical parts will feel loose due to high machining tolerances causing rapid deterioration of the gaskets, which disintegrate after a few uses. The no name budget airbrush is always expensive in the end. A quality airbrush is an investment that can last decades, never failing to bring you new opportunities, hours of joy and outstanding results.



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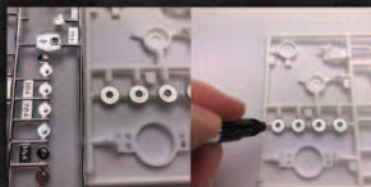
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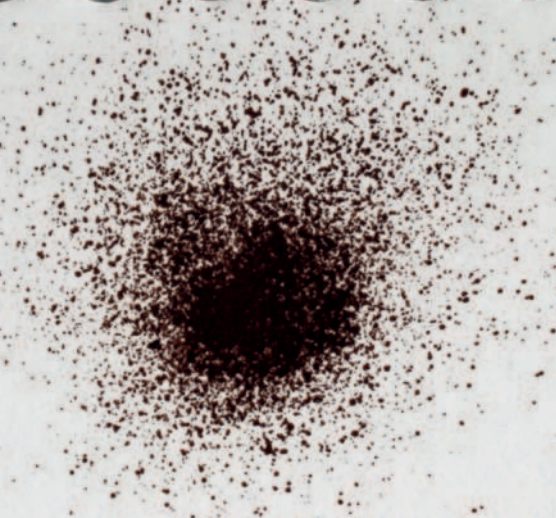
Common Airbrushing Mistakes

As it is common with any learning process, first contact with the airbrush is marked by failures or mistakes that often lead one to feel discouraged with the final result. The first steps with the airbrush are typically exactly the same, serving up some type of new issue while trying to airbrush a model. Here you will be shown some of the most common mistakes that you are likely to encounter as you begin using the airbrush.

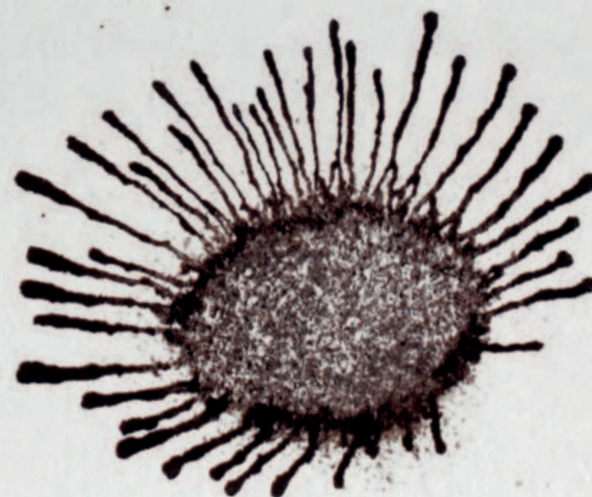


Ricardo Rivas





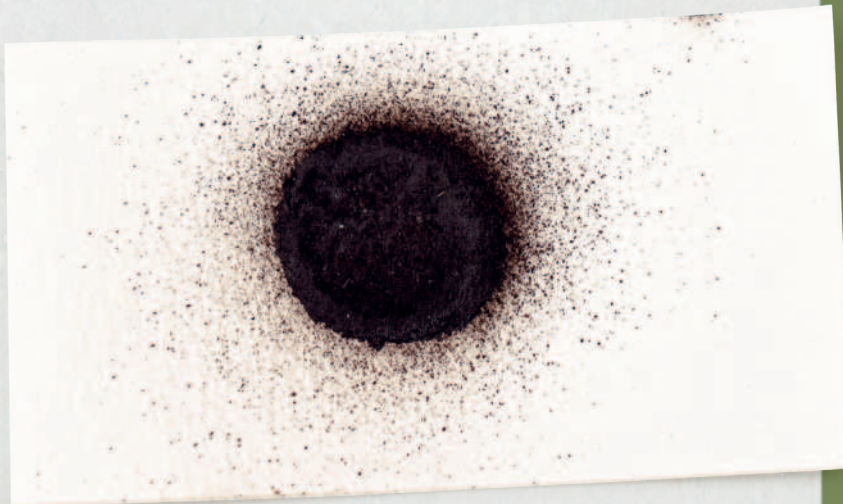
This splattered effect is caused by insufficient pressure. The evidence is many dots surrounding the intended clean line which appears as a larger than desired blurred band.



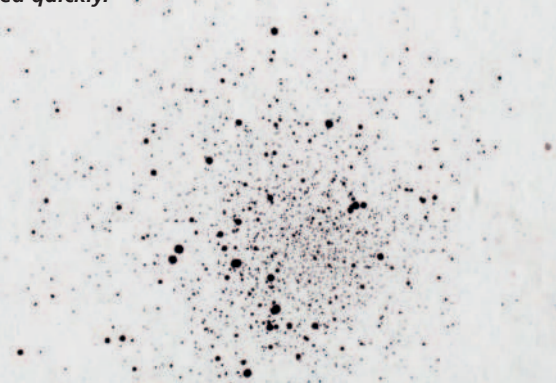
In this case of "spider legs" as shown here, the airbrush is too close to the surface at moderate pressure. This is pooled paint pushed outwards by air pressure.



Keep in mind that with the same dilution and distance, if excessive pressure is used, spider legs and puddling even if the airbrush is moved quickly.



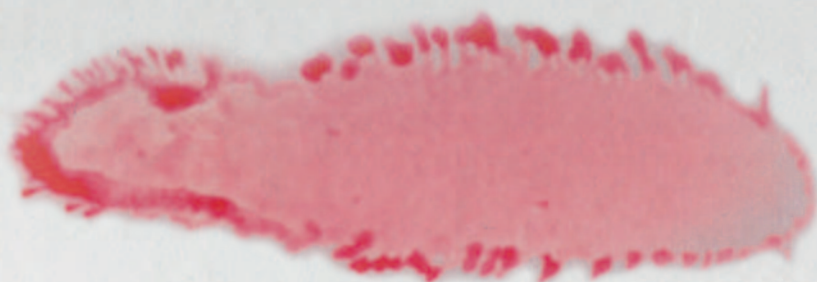
The effect shown here occurs when the paint is too thick, the same circumstances we cause spattering as shown, sputtering and uneven spray patterns.



This paint dispersion is a typical failure of pausing while applying thin strokes. This can lead to a build-up of paint on the edge of the airbrush needle and opening the air flow on the surface under these conditions. The solution is always to open the air and paint flow off of the surface before starting the painting process again.



Because paint has clogged the normal flow of the airbrush; the effect is to create an interrupted line and excessive splattering of paint.



This happens when the paint is too thin and applied from a short distance, the solution is to lower the pressure a little and paint from a little further away.

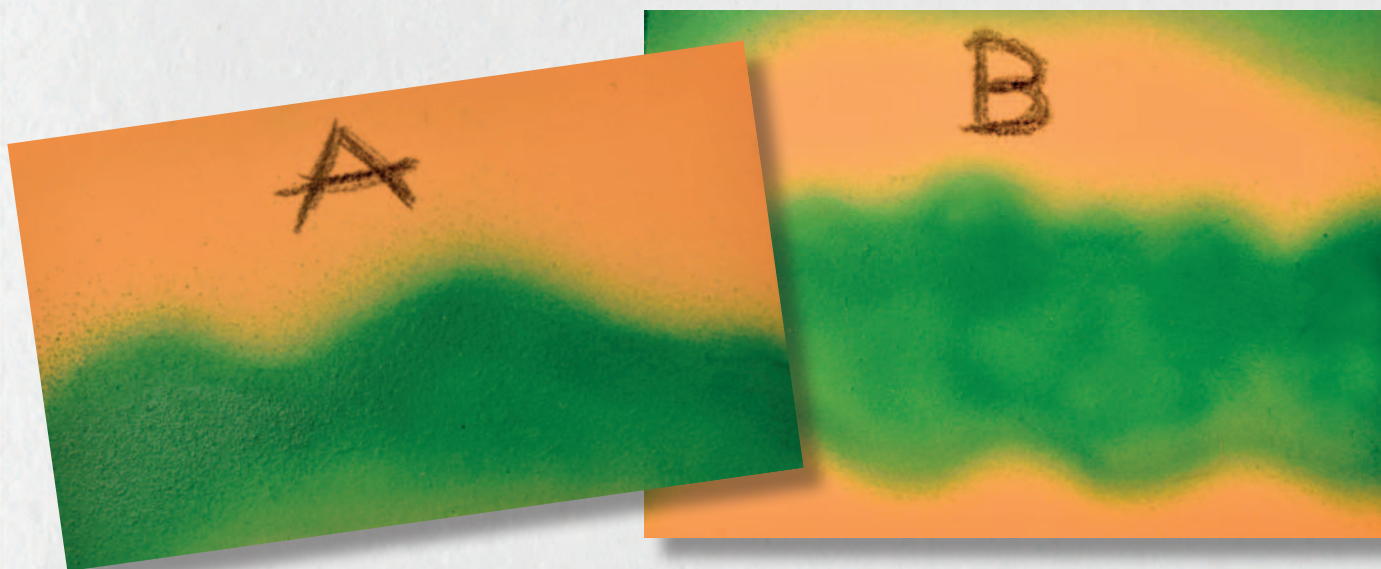


This unfortunate mess is produced when outlining. The paint must be highly thinned and applied with the nozzle two or three millimetres away from the model. To avoid this, the air flow must be controlled and rapid movements must be made with your forearm.



The common error shown here happens when beginning a line without having opened the air flow before moving over the model's surface. The spattering shown outside the line can be caused by insufficient thinning of the paint.

With the unfortunate line shown here, the user's arm did not follow the airbrush in its movement. The wrist has been turned, varying the angle of the paint cone's projection and the distance between the nozzle and the model's surface.



An example of a failure that occurs when applying freehand camouflage is splashes or spattered paint on the edges. Here you can see the correct finish of the freehand camouflage, where the splashes on the edges have subdued to scale or removed completely.



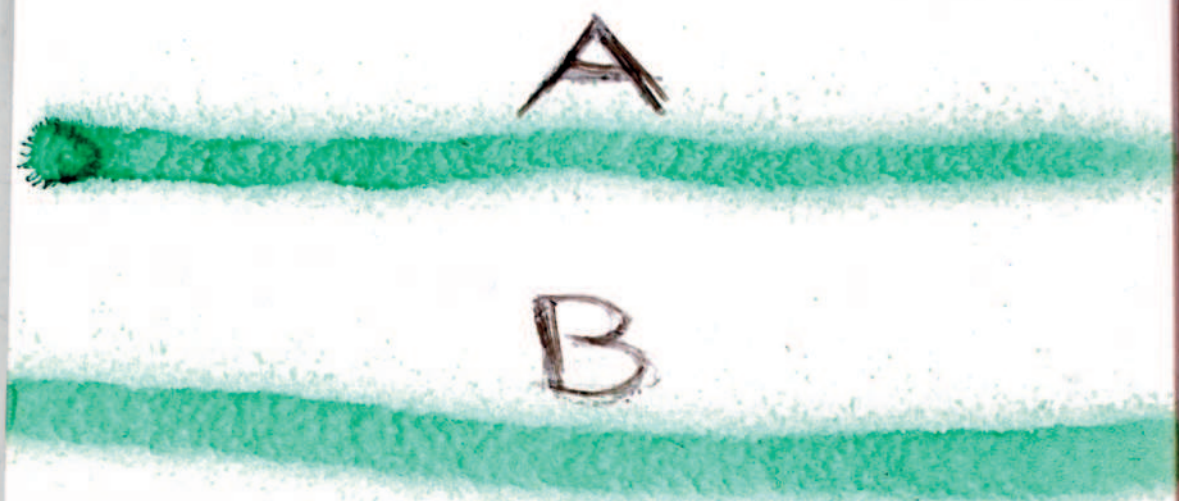
The cause of this common failure is to point the airbrush towards the outside of the painted surface. When painting the edge of the camouflage the airbrush should be pointed towards the inside of the spot, ensuring that the edges of the camouflage will be subtle and free of splashes.



This unfortunate scene often happens, the air flow is open and when paint is introduced, it bubbles up within the paint cup and does not spray. This happens because the airbrush nozzle is not properly adjusted or is obstructed and the air is being pushed back into the paint reservoir.

A: The result of beginning the line inside the area where you want to draw the lines.

B: When applied correctly, the line must be started outside and off of the area to be painted for general coverage.



GENERAL TIPS ON AIRBRUSH USE



José Luis López

Once you are well practised the basics of the use and basic control of the airbrush, the next step is to continue experimenting and learning more advanced techniques that will give you absolute control of the tool. Apart from simplifying use and allowing you to apply a much wider variety of effects and details to your models. In this article you will be shown general tricks and tips used to maximize the air brushes capabilities.

1. Varnishes:

Varnish clearcoats are used for a finish such as matt or satin during a weathering process to protect the lower paint layers and facilitate the application of washes. In the case of AMMO clearcoats in matt, gloss or satin finishes, the clearcoat can be airbrushed directly from the bottle without thinning. In the case of the Armata, the satin varnish protects both the paint underneath, particularly the white camouflage paint applied with the lacquer technique. This will facilitate the subsequent application of the washes



With the Tiran, the application is to create a final matt finish primarily in the areas of dust accumulation. Both were applied from average distances of 10-15 cm at pressures of around 2 Kg/cm².



2. Stencils

Stencils are very often the perfect tool for painting tactical and numerical symbols as well as for applying weathering effects.

When applying tactical and numerical symbols (KT), it is critical that the stencil is perfectly flush with the surface and fixed in place using masking tape. The surrounding areas should also be protected from over spray. The airbrush should be as perpendicular as possible to the surface, applying the paint in several thinned layers at low air pressure, allowing time between each layer.



Other stencils allow for the application of dirt, rain effects, spills, stains, and discolouration. When a sharp edge is not required and you need a soft edge, you can hold the stencil away from the surface with tweezers while airbrushing. Again, low pressure, thinned paint, and fast movements without stopping.

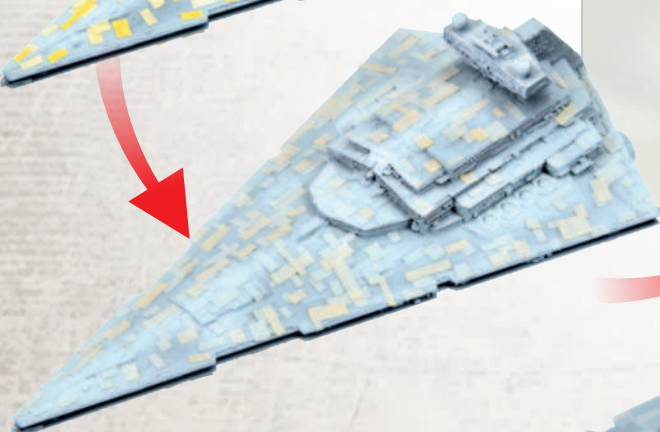
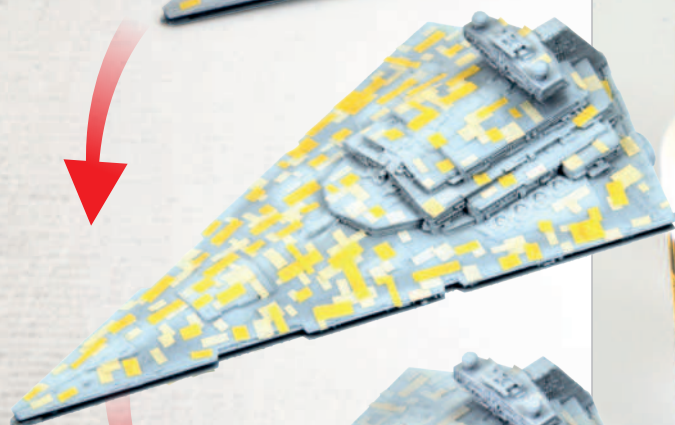
3. Use of masks

The use of masking tape is very useful when isolating and applying effects to specific individual panels. It is also useful for applying complex camouflage patterns, for which pre-cut sheets are already available. In the case of science fiction subjects or very small-scale models where these panels cannot be marked, this technique is very useful.

Always start with the use of your airbrush, always looking for ways to maximum variety within each tone. Once this has been achieved, small pieces of masking tape were cut and stuck to the surface in more or less random patterns.



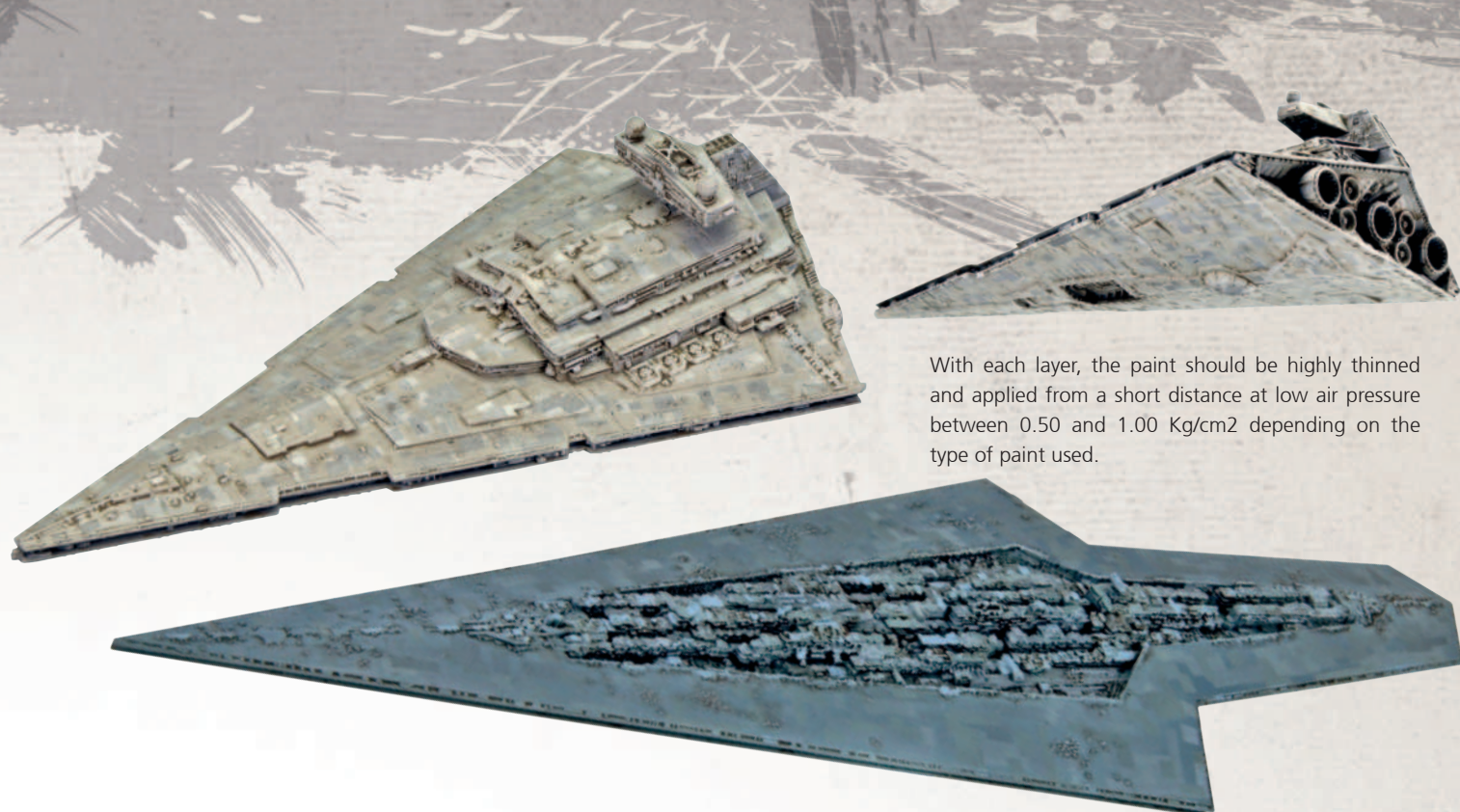
This is an interactive process in which the shades of grey were superimposed, in this case by increasing the surface area covered with each stage by using masking tape. Each one must be carefully stuck to the surface without leaving any gaps. Passing a rubber brush over the pieces to ensure their complete adhesion to the surface works extremely well.



Once all of the masking had been removed, the effect on each panel was clearly visible.



If you were to find this contrast excessive, a highly diluted layer of the colour can be applied to homogenise the tones.



With each layer, the paint should be highly thinned and applied from a short distance at low air pressure between 0.50 and 1.00 Kg/cm2 depending on the type of paint used.

4. Other types of paint

There will be occasions when you use paints from other brands. In these cases, it is very important to follow the instructions of each manufacturer. Remember: each brand requires its own brand of thinner to ensure maximum performance.

In the case of Mission Models paints, these require not only the use of their thinner, a third component which gives the paint a more satin and luminous appearance should also be used. Although these paints are acrylic, they cannot be mixed with other acrylic paints. Always remember that the acrylic concept is generic and does not imply that the paint can be mixed with water.





However, other types of products such as Chipping Fluid, work well with these paints.

Enamel paints have been widely used in modelling and are also airbrushable, requiring the solvent from the corresponding brand. For the M60 shown in the photos, enamels have been used to powder the tank. To do so, the paint is dissolved by 30-40% with the correct thinner and applied using air pressure between 1.00 and 1.50 Kg/cm². For this application, the enamel colour was airbrushed at a short distance and applied to the places most prone to the accumulation of dust. It is left to dry for 10-15 minutes and then partially removed with a brush soaked in solvent.



When enamel paints are used for base coats or camouflage, it is very important to respect the drying times which are recommended not to be less than 48-72 hours. The model must be sheltered from dust, as their slow drying time enables that the dust in suspension adheres to the surfaces. For more general applications, use an air pressure between 2.00 and 2.50 Kg/cm².



5. Chipping

What has become known as the chipping techniques was developed for the creation of large chips and scratches on any surface. Due to its increasing use and the quality of its results, we consider it necessary to provide you with the correct information for the application of this product.

Chipping Fluid is a product which requires certain precautions to ensure a good result. When airbrushed, this product tends to concentrate by capillary action on the surface, with droplets close to each other that tend to stick together. The aerodynamics of the atomized chipping fluid spray is not perfect, so it tends to be deposited unevenly on surfaces. For the best results, apply from a distance to ensure that the chipping fluid covers the surface evenly without collecting in droplets. If the airbrush is held still over a surface, not only will the surface become flooded, the chipping fluid tends to accumulate in areas and become uncontrollable. Use a medium pressure range of 1.50 - 2.00 kg/cm² and applied from distances of no less than 10 cm. This product should be applied in very light layers separated in time to avoid puddling. The more coats applied, the easier it will be to remove the paint applied over top to be chipped and scratched.





In this example, the use of Heavy Chipping Effects allowed for deeper chipping, which results in more extreme effects.



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AIRBRUSH CLEANING



**Sergiusz
Pęczek**

Cleaning the airbrush quickly after each use and thoroughly on a regular basis are crucial to ensure flawless paint application, controlled effects and comfort when using the airbrush. Some users neglect proper cleaning or are convinced that rinsing with cleaner or running tap water is sufficient, unfortunately this is not the case. Any paint, even the most finely pigmented, will cause residue to build up on the inside walls of the nozzle. All paints also leave deposits on the needle, cover, and nozzle cap which will impede airflow and optimal atomisation of the paint, ultimately making the job impossible.

In this article you will be shown the differences between the cleaning process of an airbrush with a floating nozzle, such as the **AirCobra** and **AirViper** from **AMMO**, and the Iwata airbrushes with a screw-on nozzle which are more complex to clean.

1. AIRBRUSH WITH THE FLOATING NOZZLE

A. Quick cleaning



After using the airbrush, the cleaning process begins by pouring the remaining paint from the paint cup. You can use a glass or plastic container lined with aluminium foil and a paper towel. When finished, simply discard the foil and towel leaving the container clean.



Fill the airbrush cup with a cleaning liquid, for this example A.MIG-2001 Cleaner was suitable for the type of paint. The remaining paint can then be removed from inside the cup with cotton buds.



3

The dirty Cleaner was then poured into the used paint container.



4

Fill the cup again with a small amount of pure Cleaner. Using a paper towel, firmly squeeze the tip of the nozzle which blocks flow, causing the compressed air to back flow into the cup cleaning the paint residue from the nozzle. This procedure is especially useful when changing colours while painting.



5

You can also use a brush to clean the section of the needle that passes through the cup.



6

The dirty Cleaner can be sprayed into an airbrush cleaning container. This tool is worth having as it makes cleaning much easier and protects our environment from paint residue. Repeat the procedure until the cleaner comes out of the airbrush nozzle free of paint.



7 8

At the end of this step, clean the inside of the colour cup with a paper towel moistened with Cleaner.



9

These simple steps quickly prepare your airbrush for another painting session. ▶





the airbrush for modelers

Airbrush





B. Disassembly of the airbrush and deep cleaning

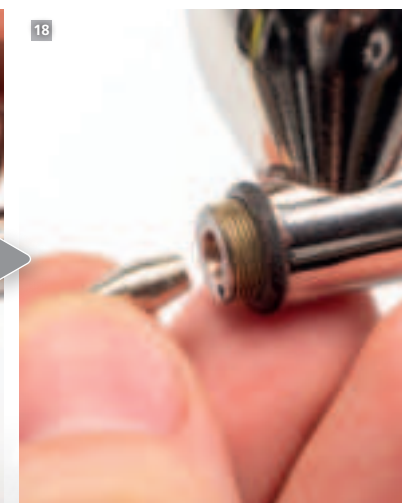


10 11 12 13

Thorough cleaning of the airbrush begins with disassembling the components necessary for the deep cleaning by unscrewing the handle and unscrewing the needle locking nut before gently removing the needle.

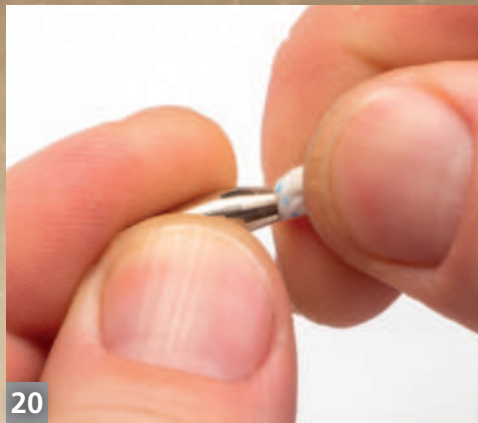
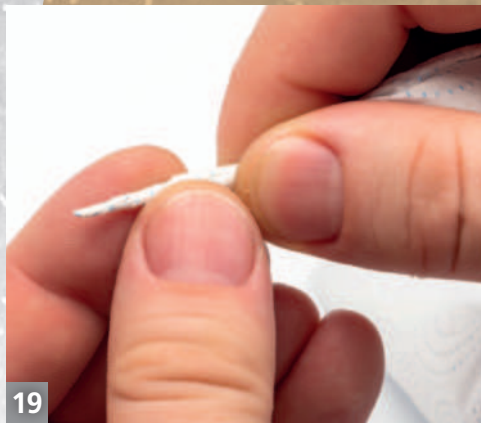


Simply clean the needle by pulling it through a paper towel soaked in Cleaner.



16 17 18

Using the spanner wrench supplied with the airbrush, unscrew the nozzle base and remove the nozzle from the body. If the needle nozzle is dirty, it must be cleaned.



To clean the inside of the nozzle, a very effective technique is to first twist the tip of a kitchen towel.

Soak the paper tip in Cleaner and insert it into the nozzle, turning the paper several times. Simply change the tips for new ones and repeat the procedure until the nozzle is completely clean. This process is very important as it prevents the dirt build up that reduces paint flow.



To clean the inlet channel of the body, simply make a thicker paper tip and repeat the steps used to clean the nozzle.

A special brush dampened with Cleaner can also be used to clean the inside of the airbrush body.

24 ►



To clean and lubricate the internal parts of the airbrush, the needle adjustment and regulation assembly together with the tension spring adjustment screw and the trigger must be disassembled.

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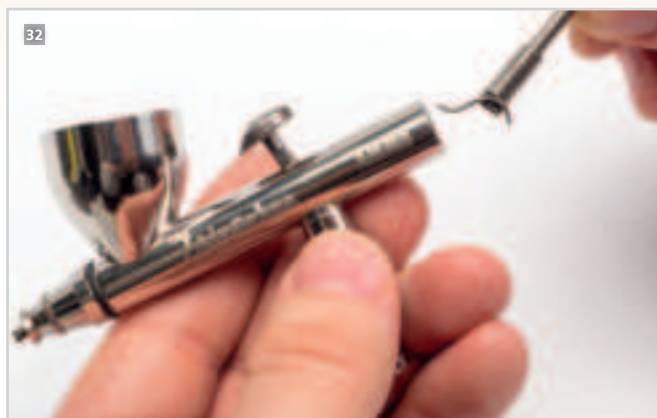
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28 29 30

Use a cotton swab to clean the inside of the airbrush body which over time can become soiled with paint. Repeat the process until the cotton swab comes out completely clean.

Assemble the airbrush by reversing the order of operations.



31 32 33

Assemble the trigger and insert the needle alignment and adjustment assembly together with the trigger tension arm.





Align and place the spring tension adjustment screw.



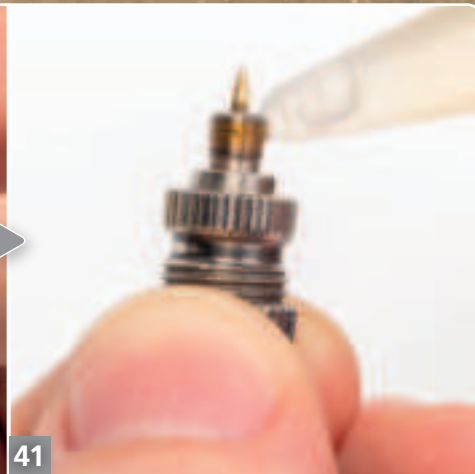
Gently insert the needle and tighten it with the needle locking nut.



38 39

Simply screw the handle with the trigger stop adjustment screw in place.





To lubricate seals, simply remove the threaded piece and apply the proper lubricant.



42

The area where the needle meets the inner seal should occasionally be lubricated, this prevents the flow of highly thinned paints into the chamber and preserves the smooth action of the airbrush.



43

By using these simple maintenance steps, your airbrush will last longer and provide peak performance.

2. AIRBRUSH WITH SCREW NOZZLE

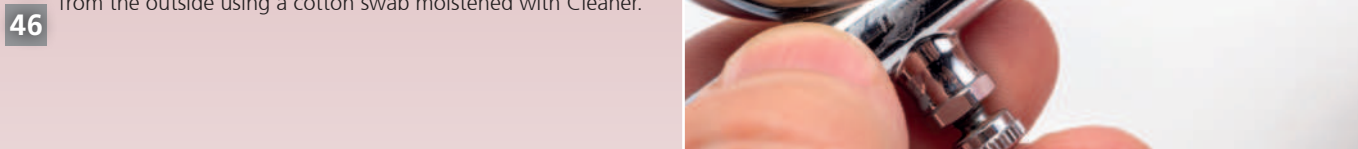
Here you will be shown the differences in the disassembly and cleaning methods used for the Iwata airbrush with screw nozzle.



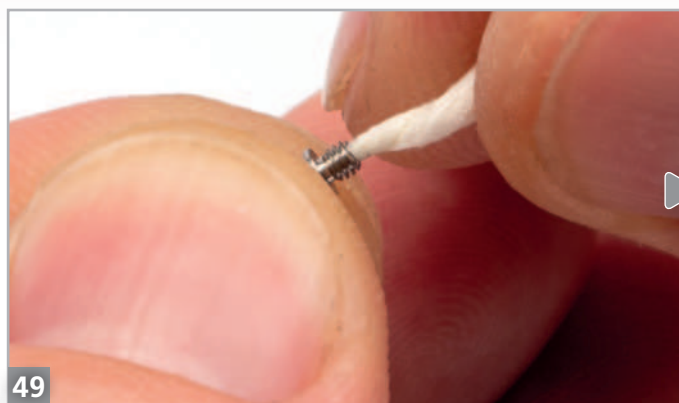
44 After removing the needle, clean the needle cap with a cotton swab moistened with A.MIG-2001 Cleaner. This element can also be cleaned after unscrewing it from the body.



45 Unscrew the nozzle and the needle guard and clean the nozzle from the outside using a cotton swab moistened with Cleaner.



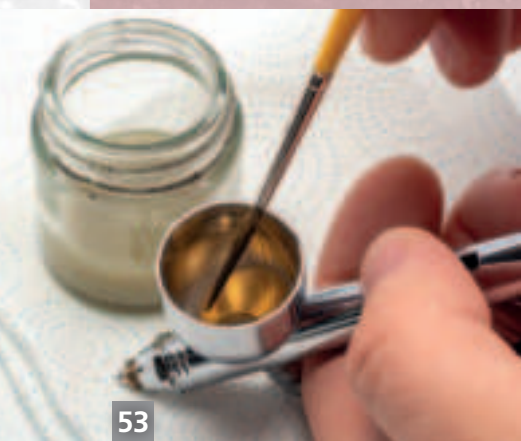
Using the key, unscrew and gently remove the nozzle. Please note that the nozzle of this system is very small and must be handled carefully!



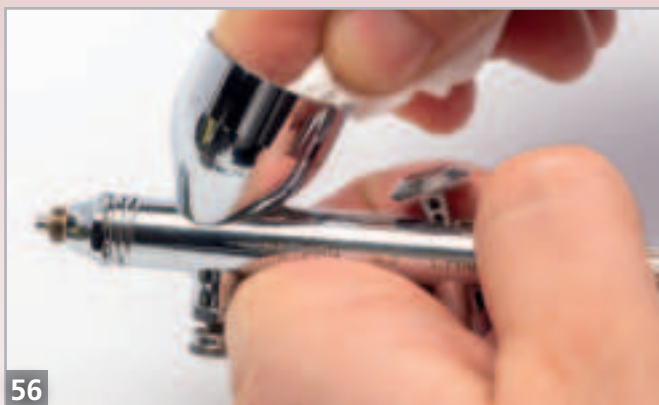
Twist the tip of a kitchen towel and dampen it with Cleaner and wipe the inside of the nozzle until it is clean.



– By using the tip of a slightly larger tissue, you clean the nozzle thread on the body as well as the paint inlet channel from the front.



.- A brush with long bristles was used to clean the paint inlet channel from the inside of the paint cup. As you can see, the amount of dried paint accumulated is considerable and has to be removed completely.



The colour cup can simply be wiped clean with a paper towel dampened with Cleaner. Once the cleaning process is finished, assemble your airbrush and remember that you must gently press the nozzle against the body. Tightening it too much can deform the nozzle and damage the body.



By using these simple steps, your airbrush will perform as if new.

3. CLEANING AIRBRUSH COMPONENTS WITH AN ULTRASONIC CLEANER

An ultrasonic cleaner can be a very useful tool for deep cleaning airbrush components, even the most difficult parts and paint remnants. This cleaning method helps to avoid mechanical damage to the objects being cleaned, while ensuring a completely thorough cleaning. They are particularly useful for cleaning small parts such as nozzles, needle guards, and paint cups with lids. The entire airbrush should not be placed in the ultrasonic cleaner, doing so prevents cleaning all of the recesses and small internal components. You will obtain a much better result by cleaning your airbrush piece by piece. In addition, the lubricant in the pressure valve can be removed. Do not use an excessively strong cleaner, doing so runs the risk of dissolving the ultrasonic cleaner's plastic components. Instead, pour the cleaner into a glass container and fill the ultrasonic cleaner with water. The ultrasonic waves will penetrate the glass and clean the airbrush parts safely.



The airbrush cup lid shown was covered in paint and used as an example. There is water in the container of the ultrasonic cleaner and airbrush cleaner in a glass container. The lid was placed inside the glass jar which was sealed and placed into the ultrasonic cleaner.



The lid of the ultrasonic cleaner was then closed and the cleaning time set to 180 seconds. This amount of time is sufficient to remove fresh paint. When cleaning heavier paint residue, it may be necessary to increase the running time of the cleaner or to repeat the process.

64 65

After 3 minutes the process is finished. As you can see, the cleaner is completely dirty with dissolved red paint while the ultrasonic cleaner is not.

66

Remove the washed lid from the jar and simply wipe it clean with a paper towel. This method provides excellent results, simply follow the steps as shown.





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Sergiusz
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Sources of Compressed Air

If a modeller owns and wants to use an airbrush, an indispensable tool in every modelling workshop is a source of compressed air, typically from a compressor. If only small parts are to be painted, compressed air bottles available in model shops can also be used. Although there are several types of compressors, only the 3 most popular types used in modelling will be discussed here: the oil-free piston compressors, the diaphragm compressors, and the most complete: the piston compressors with oil which is silent but expensive and somewhat heavy.

1 OIL-FREE PISTON COMPRESSORS

This is the best known type of compressor. It works on the basis of the movement of a piston placed in a special cylinder, usually an oil-free single or double piston design. Due to the simplicity of construction and the purchase price, this compressor model is the most popular among modellers. It is divided into two sub-types:

a) With a compressed air tank

Advantages: Light weight. Maintenance-free with no oil changes required. This compressor can run non-stop and there are many models available at an affordable price.

Disadvantages: Quite noisy at 50-60 dBA even some models in DIY shops have noise levels above 90 dBA, which excludes their use at home.



b) Without compressed air tank

Advantages: Lightweight, small, mobile and maintenance-free with no oil changes required. Less expensive than tank models.

Disadvantages: Shorter service life due to lack of reservoir and continuous operation resulting in long periods of time exposed to heat. Frequent breaks are necessary during operation. They are quite noisy (50-60 dBA).



2 DIAPHRAGM COMPRESSORS

Compared to other compressors, these compressors are quieter, less expensive, and most importantly, have no moving parts in the air stream. Therefore, they can be used without additional lubrication which guarantees the purity of the compressed air produced. Select models are available with compressed air reservoirs.

Advantages: Lightweight, small, mobile and maintenance-free. Relatively quiet and does not pollute the air.

Disadvantages: Relatively short service life, requires breaks in operation.



3 OIL-PISTON COMPRESSORS

The oil-lubricated piston compressors offer demanding users the highest levels of performance and reliability. All units are equipped with air reservoirs with a pressure of up to 8 bar with 1.5l to 24l capacity. The larger the reservoir, the more airbrushes can be fed simultaneously, and the less frequently the motor runs.

Due to their high intake capacity, these compressors are ideal for prolonged use and for simultaneous operation of several airbrushes. Because of their quiet operation (38-43 dBA), they are suitable for use at home or at events where low noise is required. Their reliability, performance and quiet operation make them the best compressor to buy, although they are the most expensive.

Advantages: They are very quiet and allow intensive and continuous operation for many hours without risk of breakdowns while delivering air pressure at a constant and stable level. With regular maintenance, their service life can be very long.

Disadvantages: They are very heavy (between 16kgs (the most compact) to 30kgs. They require maintenance - regular draining of water and oil condensate from the compressed air tank. The oil level also needs to be checked and topped up if it falls below the minimum level.



- Compact oil compressor, with a small 1.5 l air tank.



- Compressor with a 9-litre air tank and two compressed air outlets, allowing 2 airbrushes to be fed at the same time.

4 OIL COMPRESSOR MAINTENANCE

To ensure long and trouble-free operation of the oil compressor and satisfactory working results, the oil level must be checked and topped up regularly and the oil/water mixture must be removed from the compressed air tank. During operation, the oil used to lubricate the piston, cylinder and other compressor mechanisms enters the tank and mixes with the water accumulated in the tank from moisture in the air, which is a normal but undesirable occurrence.



It is sufficient to check the oil level once a month. If it is not used much, you should only top up the oil once a year. The same applies to condensed water in the air receiver; in dry climates it may not even exist. In the case of a large compressor feeding 4 airbrushes simultaneously and working regularly for several hours a day, the mixture should be removed every 2-4 weeks, depending on the humidity of the air. The mixture is removed through a drain valve located in the air reservoir.



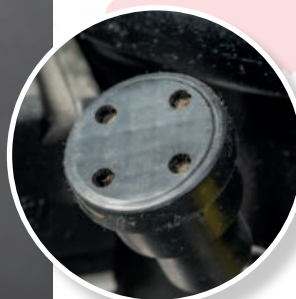
Attach a flexible hose to the valve and insert it into a plastic bottle, into which the oil-water mixture will flow. Then slowly unscrew the drain valve. Normally, the amount of compressed air contained in the tank is sufficient to remove the oil-water mixture. If necessary, close the valve, start the compressor and repeat the operation after filling the tank with compressed air.

5 ELEMENTS OF A TYPICAL OIL COMPRESSOR



a) Pressure regulator with moisture trap. Two quick couplings for connecting the pressure hoses. Safety valve and pressure gauge for filling the compressed air tank showing the current compressor pressure.

b) On/off switch and pressure switch: an automatic pressure switch that cuts off the power supply when the maximum pressure in the tank is reached and restarts the compressor when the amount of compressed air drops by approximately 20%. In this case, the compressor is filled up to 8 bar and refilled when the value drops to 6 bar.



c) Air filter, this should be replaced every 6-12 months based on usage.

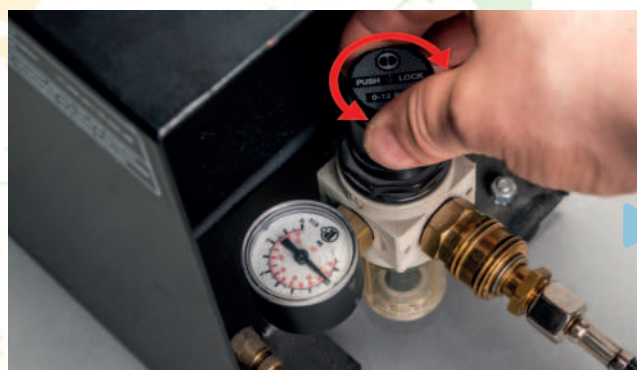
6 BASIC OPERATION OF THE COMPRESSOR



a) Connect the pressure hoses to the compressor using the male quick connector.



b) If you have a compressor with only one compressed air outlet and you want to connect two airbrushes, you can use a manifold. This example is equipped with two different diameters of 5mm and 7.2mm quick release couplings with 1/4" thread.



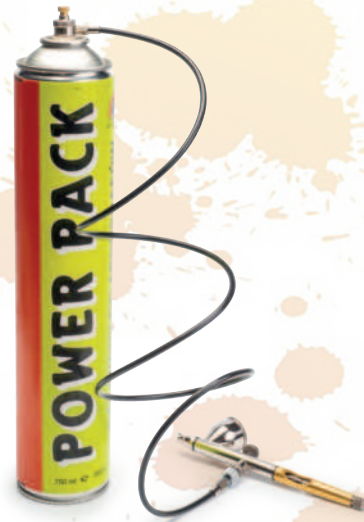
c) The air pressure is adjusted by means of the regulator. It should be noted that the actual working pressure can only be seen on the pressure gauge when the trigger of the air valve of the airbrush is pulled.



7 POWER THE AIRBRUSH FROM A GAS CYLINDER

If the airbrush is used only occasionally for small priming tasks or painting small parts, the use of small, compressed gas canisters may be of interest.

To use the bottle for airbrushing, you must buy a special valve that is screwed into the mouth of the canister. This valve is equipped with a wheel which opens the valve of the canister to feed gas to the airbrush. Remember that in addition to painting, some of the gas will be used for the airbrush cleaning process. Gas canisters are also useful for travel and events where you don't have the option of bringing a compressor.



Airbrush accessories complete



Jorge Porto



Accessories and Elements

In this issue completely dedicated to the airbrush, we have explained both its basic exploded view and its virtues and functionality. Examples demonstrate that learning to use this tool allows you to quickly and easily achieve an excellent finish on any model type. In this article you will be shown the other components necessary for the effective use of an airbrush, simplifying the process of painting and finishing models.



1

The compressor

As previously explained, the compressor is a necessary to operate an airbrush. There are membrane compressors and compressors with a refrigerator motor and pressure level gauge as shown. The latter is the ideal air source, but also the most expensive.



2

The hose

The element that connects the compressor and the airbrush, through which the compressed air flows. There are both threaded and quick release connections available.



3

Moisture Trap

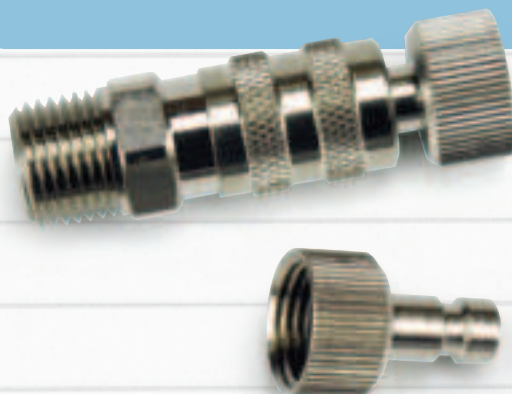
The moisture trap is placed between the airbrush and the compressor, removing condensation produced inside the compressor to ensure that the air comes out clean.



4

Quick disconnect connection

Allows us to disconnect the airbrush from the hose or compressor, without emptying the air inside the compressor.



5

T-connection

Allows several hoses to be connected to a single compressor, serving multiple airbrushes at the same time with a single compressor.



6

Adapter

These pneumatic fittings adapt different types of thread pitch, for both airbrushes and compressors.



7

Paint extraction booth

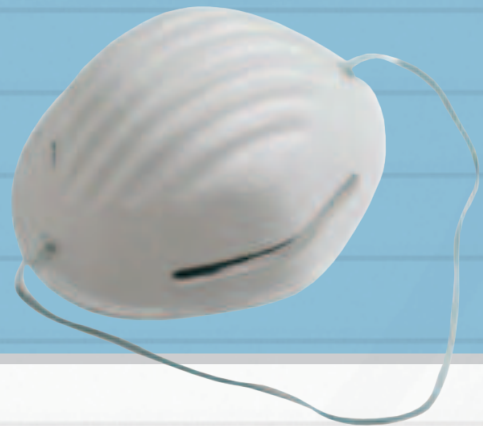
Fan based paint booth used to remove toxic vapours given off by atomized solvent-based paints which is then vented outdoors.



8

Masks

Respiratory masks are recommended as they filter suspended atomized particles of paint from the air. The particulate rating may vary depending on the type of paint used, be sure to use a model that is approved for paints and solvents.



9

Painting station

This type allows you to clean an airbrush while keeping the particulates and odours trapped inside.



10

Airbrush table stand

Perfect for storing your airbrushes when not in use, and can be used while airbrushing to avoid damage and paint spillage.



11

Set of cleaning tools

Ideal for cleaning the cup and the body of all types of airbrushes.



12

Ultrasonic cleaner

Ensures absolute thorough cleaning of the inside of the airbrush by generating ultrasonic vibration frequencies between 15 and 450 Hz.



13

Cleaning liquids

Depending on the type of paint used, the thinners of each brand of paint and the specific cleaners are always recommended. In the case of acetone, care must be taken because of its aggressiveness. This product can damage the seals of your airbrush, which ensure airtight smooth operation.



14

Thinners

The type of paint used will determine the specific thinner used, each mixed with your paint to facilitate paint flow and atomization. There are three main types: Acrylics, Lacquers and Enamels.



15

Old brushes

Due to their splayed and misshapen bristles, old used brushes are perfect for mixing paints and thinners inside the cup of the airbrush.



16

Masking products

Whether in putty, liquid, or tape form, masking products can both protect previously painted areas and enable you to paint multicoloured camouflage schemes with hard or semi-hard edges.



17

Photo- Etched Stencils

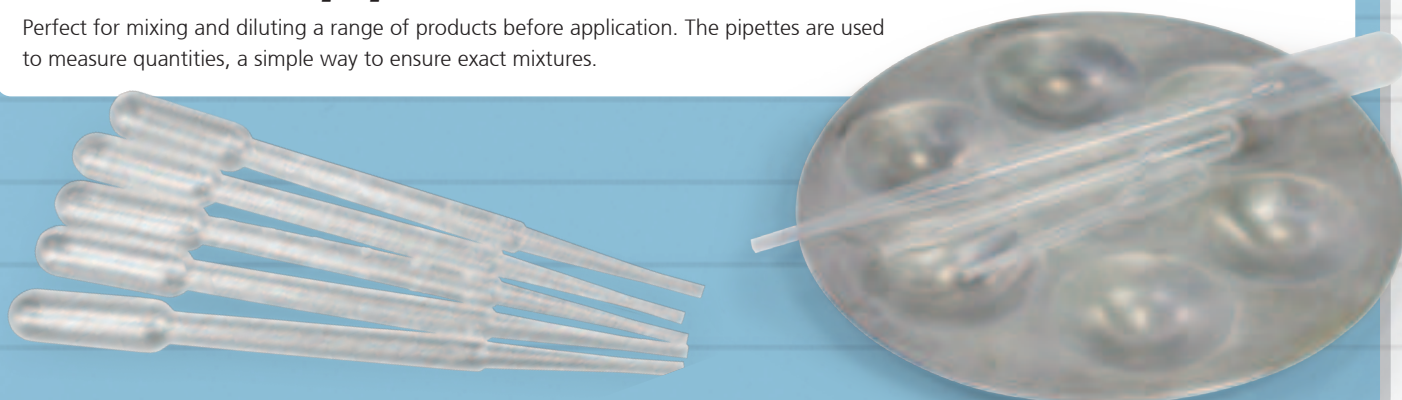
These simple and versatile tools can be used to create discolouration and fading effects and to imitate repainted areas. Several designs make it possible to draw mottled camouflage patterns, even with spots and blurred edges.



18

Palette and pipettes

Perfect for mixing and diluting a range of products before application. The pipettes are used to measure quantities, a simple way to ensure exact mixtures.



19

Turntable for paint booths

The ideal turntable allows the modeller to move and turn a small model throughout all painting processes.



20

Latex gloves

Perfect for handling the model during the painting process, these gloves prevent fingerprints from ruining the painted surface.



21

Mixing pots and containers

Although the market offers a wide range of colours, modellers create new colours by mixing according to their needs. Stainless steel paint mixers are also a perfect complement, as they help to thoroughly mix the colours quickly and efficiently.



22

Paint stirrer/mixer

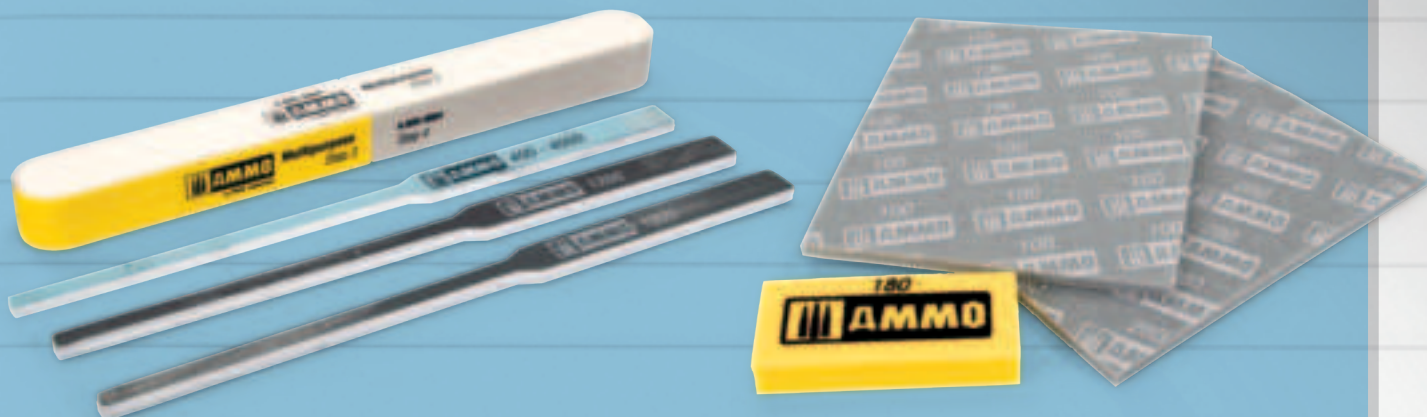
Stirs and mixes all paints including acrylic, lacquer or enamel to ensure the correct dilution and viscosity of the paint. Through mixing often extends the life of the paint.



23

Semi-rigid and sponge sandpaper

Perfect for jobs where you need to remove grainy texture or defects after priming, to obtain a perfectly smooth and soft finish, or to polish to a high gloss. The flexibility allows the abrasive to adapt to any shape, including rounded surfaces.



24

Chromatic circle

This valuable tool shows the primary colours as well as those derived from mixtures of each, organised in a circle according to their shades. This tool is highly useful for every model painted, as it will help you generate colour mixtures and evaluate the appropriate shades for the subsequent painting process.



IN THE NEXT ISSUE...

Jorge Porto del Corral



AIRBRUSH 2.0

Dedicating a second issue to the airbrush shows the importance of this tool when entering the world of modelling or advancing your skills. And it will be in this issue where, Having overcome the doubts and having learned the basics, it is within the follow up we will show you the most practical and fun part about the use of the airbrush. In the next issue of your favourite painting and weathering resource, **the AMMO team will teach you a range of techniques** used to face painting of any kind of model. We will cover basic painting approaches, playing with the opacity of the paint, and the use of more advanced techniques such as pre-shading and post-shading and modulation.

Who hasn't thought about painting a camouflage with hard edges, semi-hard edges or geometric patterns, only to be turned off by the fear of how to tackle the painting process? Have you considered painting a vehicle that requires a bare metal finish? How about dusting and weathering a vehicle with an airbrush? Yes these are all now well within your abilities and not as difficult as they may have once seemed! And that's what the AMMO team of collaborators will take care of. Throughout each article, the modeller will show you steps, guidelines and patterns of proper airbrush use with **simple and easy to follow**, techniques that you can put it into practice. We are confident that **the final result will surprise** even you, your goal of gaining confidence is more than covered.

And that is what is most important! We at AMMO are sure that once you have overcome the transitions of the beginner, which is the reason for these two issues dedicated to airbrushing, your possibilities, ambitions and your creative side will open up explosively. **You will be convinced that there is no end to your expertise and you will be correct! Always looking for new challenges to crush with your airbrush.**





by MIG Jimenez

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KV-1 Model 1942 Simplified Turret

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Panzerbefehlswagen Panther Ausf.G

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TR85049
King Tiger Tracks Common
Type

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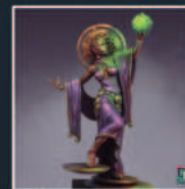
TR85050
King Tiger Tracks Initial
Type Pattern

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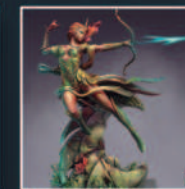


TR85052
Jagdtiger Tracks for
Porsche Suspension

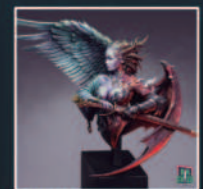
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