

DARK BENCH WORKS, LLC

Precision Built. Veteran Made.

TECHNICAL ORDER

T.O. DBW-PNT-001

PAINT SYSTEM STANDARD OPERATING PROCEDURE

GSI Creos Mr. Hobby — Mr. Color · Aqueous · Acrycion · Surfacer · Clear Coats
Thinners · Retarders · Decals · Line Fill · Panel Line Accent · Weathering · Markers

REVISION	REV A
DATE OF ISSUE	26 JULY 2026
APPROVING AUTHORITY	John Driver, Owner — United States Air Force, Retired
DISTRIBUTION	Internal — Dark Bench Works, LLC bench reference.
SUPERSEDES	None — initial issue
REVIEW CYCLE	Annually, and upon any change in product formulation, supplier, or shop environment

**WARNING — SOLVENT-BASED PRODUCTS. READ CHAPTER 1 BEFORE ANY SPRAYING OPERATION.
VENTILATION AND AN ORGANIC VAPOR RESPIRATOR ARE MANDATORY, NOT OPTIONAL.**

FOREWORD AND HOW TO USE THIS T.O.

This Technical Order is the bench companion to the DBW production and job guide suite. It covers everything that happens after a part is printed, cleaned, and cured: preparation, primer, colour, clear, decals, line work, weathering, and the tools that apply them.

It is written in USAF Technical Order convention — numbered chapters, numbered paragraphs, and WARNING / CAUTION / NOTE callouts. Cite paragraph numbers when referencing a procedure on a job traveler or in a revision.

Callout Convention

Callout	Meaning
WARNING	Failure to comply may result in personal injury — respiratory, chemical, or fire.
CAUTION	Failure to comply may damage the part, the finish, or the equipment.
NOTE	Information that improves quality or efficiency.

How To Use It

- Chapter 4 is the master sequence. If you read nothing else, read Chapter 4 — most finish failures are sequence failures, not technique failures.
- Appendix A is the mixing quick card. Print it and keep it at the spray booth.
- Appendix B is the cure and wait schedule. Most of the remaining failures are patience failures.
- Chapter 15 is the troubleshooting matrix. Go there first when something goes wrong, before changing paint or equipment.
- This file is a fully editable Word document using built-in heading styles, so a table of contents may be inserted at any time via References → Table of Contents.
- Ratios, pressures, and distances are validated starting points for this bench, this compressor, and this climate. Record what actually works in the margin and roll it into the next revision.

Contents

Chapter	Title
1	General Information and Safety
2	Product Family Reference
3	Thinners, Retarders, and Additives
4	Standard Finishing Sequence
5	Surface Preparation and Priming
6	Airbrushing Mr. Color Lacquer
7	Aqueous Hobby Color and Acrycion
8	Hand Brushing
9	Metallics and Special Finishes
10	Clear Coats
11	Decals
12	Line Fill, Panel Lines, and Accent

Chapter	Title
13	Weathering
14	Markers
15	Environment, Humidity, and Troubleshooting
16	Airbrush Cleaning and Tool Care
App. A	Mixing Ratio Quick Card
App. B	Cure and Wait Times
App. C	Consumables and Bench Stock
App. D	Record of Changes

CHAPTER 1 — GENERAL INFORMATION AND SAFETY

1.1 Purpose

1.1.1. This Technical Order establishes standard procedures for the use of GSI Creos (Mr. Hobby) paint systems on scale model aircraft and on DBW 3D-printed resin parts: surface preparation, priming, airbrushing, hand brushing, clear coating, decaling, panel line fill and accent, weathering, and marker work.

1.1.2. Controlling application is 1/48 scale USAF aircraft — A-10 primary, F-4 and F-16 secondary — and painted DBW product samples used for photography and pattern approval.

1.2 Scope

1.2.1. Covers the Mr. Color lacquer system, Aqueous Hobby Color, Acrycion, Mr. Surfacer and primer products, Mr. Color GX and Super Clear top coats, Mr. Weathering Color and Weathering Paste, Gundam and Real Touch markers, and the associated thinners, retarders, and additives.

1.2.2. Does not cover resin printing, washing, or curing. Those remain governed by the DBW resin printing procedures and DBW-JG-001.

1.3 Safety

WARNING

Mr. Color, Mr. Surfacer, Mr. Levelling Thinner, Mr. Color Thinner, Mr. Tool Cleaner, and all Mr. Super Clear aerosols are flammable organic solvent products. Vapors are harmful by inhalation, are heavier than air, and can accumulate at bench level. Airbrushing atomizes them into a respirable mist. A dust mask offers no protection whatsoever against solvent vapor.

1.3.1. Required controls before any spraying operation:

Control	Standard
Ventilation	Spray booth exhausting outdoors, or equivalent forced ventilation drawing vapor away from the operator. Do not spray lacquer in an unventilated indoor space.
Respiratory protection	Half-mask respirator with NIOSH-approved organic vapor cartridges, fitted and seal-checked. Replace cartridges on the manufacturer's schedule, not when they stop working.
Skin protection	Nitrile gloves. Lacquer thinner defeats latex and passes readily through skin.
Eye protection	Safety glasses. Mandatory when using Mr. Tool Cleaner or decanting solvent.
Ignition control	No open flame, no soldering iron, no smoking, no space heater with an exposed element in the spray area.
Aerosol handling	Never puncture, incinerate, or heat an aerosol can above lukewarm water temperature.
SDS	Maintain a current Safety Data Sheet for every paint, thinner, and cleaner on hand, per DBW-OPS-001 paragraph 2.4.3.

1.3.2. Aqueous Hobby Color and Acrycion are lower in odor but are not solvent free. Ventilate for them as well.

1.3.3. Solvent-soaked rags and paper towels are a fire hazard. Dry them flat in ventilated air before disposal; never ball them up in a closed trash can.

1.4 Storage and Shelf Life

- Store all paints and solvents upright, capped, out of direct sunlight, at stable room temperature. Heat cycling in a Florida garage will thicken and separate paint faster than anything else.
- Clean the bottle rim and cap threads after every use. Dried paint on the rim is the primary cause of a bottle that will not seal and paint that skins over.
- Add stainless or agate mixing balls to Mr. Color bottles to make remixing reliable.
- Mr. Surfer and primers thicken with age; a bottle that will no longer thin cleanly to a smooth spray is scrap, not a bargain.
- Mr. Weathering Color and Weathering Paste separate hard in the jar. Stir with a stick to the bottom, never shake only.
- Mark the open date on every bottle. Lacquers remain usable for years if sealed; water-based paints have shorter effective life once contaminated.

1.5 Waste and Disposal

1.5.1. Do not pour thinner, cleaner, or paint down a household drain. Collect solvent waste in a labeled, sealed metal or solvent-resistant container and dispose of it through the local household hazardous waste program.

1.5.2. Cured paint on paper towels and used masking may be disposed of as ordinary waste once fully dry and odorless.

1.6 Product Nomenclature Note

NOTE

GSI Creos revises catalogue numbers, formulations, and packaging periodically, and regional availability differs. Product families and behaviors in this T.O. are stable; specific item numbers are not. Verify the current catalogue number before ordering, and verify any newly reformulated product on scrap before committing it to a finished part.

CHAPTER 2 — PRODUCT FAMILY REFERENCE

2.1 Paint Families

Family	Base	Dedicated Thinner	Character and Use
Mr. Color (C-series)	Lacquer / solvent	Mr. Color Thinner; Mr. Color Levelling Thinner (preferred)	Primary system. Hard, thin, durable film. Fast drying. Best airbrush behavior of the three. Sands and polishes well. Standard for camouflage and all base coats.
Mr. Color GX	Lacquer / solvent	Same as Mr. Color	High-pigment gloss, deep blacks and whites, and the Super Clear III clear coats for airbrush use.
Mr. Metal Color	Lacquer / solvent	Mr. Color Thinner (sparingly)	Buffable metal finishes. Buff with a cotton swab after drying to develop the sheen. Must be sealed or it will mark from handling.
Mr. Color Super Metallic	Lacquer / solvent	Mr. Color Levelling Thinner	Fine-particle metallics for natural metal finishes. Requires a gloss black base for full effect.
Aqueous Hobby Color (H-series)	Water-based acrylic	Mr. Aqueous Hobby Color Thinner	Lower odor. Good for hand brushing and cockpit detail. Softer film than lacquer; mask with care.
Acrycion (N-series)	Water-based, low solvent	Acrycion Thinner ONLY	Lowest odor of the three. Sensitive to thinning and to surface prep; will not tolerate substitute thinners. Use Acrycion Base Color under it for adhesion.

CAUTION

Do not thin Acrycion with Aqueous thinner, Mr. Color thinner, water, or isopropyl alcohol. Acrycion uses a different emulsion chemistry and will curdle, string, or refuse to cure. Aqueous Hobby Color, by contrast, tolerates a range of thinners including Mr. Levelling Thinner — see paragraph 7.3.

2.2 Surfacer, Primers, and Fillers

Product	Grit / Build	Use
Mr. Surfacer 500	Coarsest, highest build	Filling shallow scratches, print layer artifacts, and minor seam gaps. Brush or spatula on, then sand.
Mr. Surfacer 1000	Medium	General primer and light filling. The workhorse. Available in bottle and aerosol.
Mr. Surfacer 1200	Fine	Final primer over well-prepared surfaces; least loss of fine detail.
Mr. Primer Surfacer 1000 / 1500	Medium / fine, stronger bite	Primer with improved adhesion for resin and metal. Preferred for DBW printed parts.
Mr. Base White 1000	Fine, opaque white	White base under yellows, reds, and oranges, which have poor hiding power.
Mr. Surfacer 1500 Black	Fine, black	Pre-shading base, and base for metallics and dark schemes.

Product	Grit / Build	Use
Mr. Dissolved Putty	Brushable putty	Filling fine seams and pinholes without sanding away adjacent detail. Shrinks as solvent flashes — build in layers.
Mr. White Putty / Mr. Surfacer putty types	Heavy fill	Larger gaps and structural filling before priming.

2.3 Clear Coats

Product	Form	Use
Mr. Color GX Super Clear III (gloss)	Bottle — airbrush	Primary gloss coat before decals and before oil or enamel weathering. Levels well, cures hard.
Mr. Color semi-gloss and flat clears	Bottle — airbrush	Final sheen control after weathering.
Mr. Super Clear (gloss / semi-gloss / flat)	Aerosol	Convenient for whole-airframe coats. UV-cut versions resist yellowing. Highly humidity sensitive — see Chapter 15.
Mr. Premium Top Coat	Aerosol	Finer atomization and a smoother lay-down than standard Super Clear.
Aqueous Mr. Top Coat	Aerosol / bottle	Water-based clear. Safer over water-based paints and over some decals; softer film.

2.4 Weathering and Marking Products

Product	Type	Use
Mr. Weathering Color	Solvent-based filtering/wash liquid	Panel line accent, pin washes, filters, streaking, and dust tones. Removable and adjustable long after application with its own thinner.
Mr. Weathering Color Thinner	Mild petroleum solvent	Thinning, blending, feathering, and removal of Weathering Color. Mild enough not to attack a cured lacquer film.
Mr. Weathering Paste	Textured paste	Mud, dust, wet earth, and snow effects on landing gear, wheel wells, and dioramas. Thin and blend with Weathering Color Thinner.
Mr. Mark Setter	Decal adhesive/softener	Applied to the surface before the decal. Improves adhesion and slightly softens the film.
Mr. Mark Softer	Decal softener	Applied over a placed decal to draw it down into detail. Stronger than Setter.
Gundam Marker (paint marker)	Alcohol/lacquer-type marker	Spot detail, hand-applied color, touch-up.
Gundam Marker Pouring Inking Pen	Capillary panel line pen	Fast panel line accent. Flows by capillary action; excess wiped with the matched eraser pen or mild solvent.
Real Touch Marker	Blendable marker	Streaking, shading, and blended weathering; worked with the Real Touch Blender pen.
Mr. Tool Cleaner	Aggressive solvent	Airbrush and tool cleaning only. Never a paint thinner.

CHAPTER 3 — THINNERS, RETARDERS, AND ADDITIVES

3.1 Thinner Selection

Thinner	Behavior	When To Use
Mr. Color Thinner	Standard evaporation rate	General airbrushing in cool, dry conditions. Cleaning between colors.
Mr. Color Levelling Thinner	Slower flash-off; contains a levelling/retarding agent	DEFAULT for airbrushing. Reduces tip dry and orange peel, improves gloss and flow. Preferred in warm or humid conditions.
Mr. Rapid / accelerating thinner	Fast flash-off	Cold conditions, or when a fast tack-free time is needed. Increases tip dry and orange peel risk — avoid in Florida summer.
Mr. Aqueous Hobby Color Thinner	Water-based	Aqueous paints, brush and airbrush.
Acrycion Thinner	Dedicated emulsion thinner	Acrycion only. No substitutes.
Mr. Weathering Color Thinner	Mild petroleum distillate	Weathering Color and Weathering Paste only. Also the safe cleanup solvent over cured lacquer.
Mr. Tool Cleaner	Aggressive	Cleaning only. Will attack cured paint, some plastics, and airbrush seals with prolonged contact.

3.1.1. Standing rule: Mr. Color Levelling Thinner is the default thinner for all Mr. Color airbrush work at this bench. Deviate only for a specific documented reason.

3.2 Retarder

3.2.1. Mr. Retarder Mild slows evaporation further. It is a corrective additive, not a routine ingredient.

3.2.2. Dose: begin at approximately 5% of the thinned mix — roughly one drop per 20 drops of mixed paint. Do not exceed about 10%.

CAUTION

Over-retarding produces a film that stays soft for days, fingerprints under masking tape, sags on vertical surfaces, and traps solvent under a subsequent clear coat. If a coat feels rubbery at 24 hours, retarder was the cause.

3.2.3. Use retarder when: ambient temperature is above roughly 85°F, tip dry recurs within a few seconds of spraying, or a high-gloss coat must flow out over a large surface such as a wing.

3.2.4. Do not use retarder for: fine mottling, pre-shading, thin freehand camouflage demarcations, or any coat that must be masked within 24 hours.

3.3 Additive Quick Reference

Symptom or Goal	Additive Action
Tip dry every few seconds	Switch to Levelling Thinner; if it persists, add ~5% retarder and drop pressure slightly
Orange peel / pebbled surface	Thin further, move closer, or switch to Levelling Thinner. Paint is drying before it reaches the surface.

Symptom or Goal	Additive Action
Paint spidering / running	Too thin, too close, or too much pressure. Reduce flow, not chemistry.
Need maximum gloss	Levelling Thinner, slightly wetter coat, slightly lower pressure, single deliberate pass
Need fast masking turnaround	Standard thinner, no retarder, thinner coats, full 24-hour cure regardless

CHAPTER 4 — STANDARD FINISHING SEQUENCE

4.1 Master Flow

4.1.1. Deviating from this order is the most common cause of a finish failure. Each step exists to protect the step after it.

Step	Operation	Reference	Cure Before Next Step
1	Clean and de-grease the part; remove all release agent, resin residue, and handling oil	5.2	Dry fully
2	Fill seams, pinholes, and print artifacts; sand and re-scribe as required	5.3 / 12.2	—
3	Prime with Mr. Primer Surfacer or Mr. Surfacer; inspect under raking light; correct and re-prime as needed	5.4	2–4 hours
4	Pre-shade, black-base, or apply a white base under low-hiding colors	6.7	30–60 minutes
5	Apply base color coats in the lightest-to-darkest or scheme-appropriate order	Ch. 6	24 hours before masking
6	Mask and apply subsequent camouflage colors	6.8	24 hours between masked colors
7	Gloss clear coat	10.2	24 hours
8	Decals with Mr. Mark Setter / Softer	Ch. 11	12–24 hours, fully dry
9	Second gloss clear coat to seal decals	10.2	24 hours
10	Panel line accent and pin washes	Ch. 12	1–2 hours before handling
11	Filters, streaking, staining, chipping, and paste effects	Ch. 13	Per product
12	Final sheen coat — flat, semi-gloss, or selective	10.4	24–48 hours
13	Post-flat detail: exhaust soot, dry pigment, gloss-picked details, markers	13.6 / Ch. 14	—

4.2 Non-Negotiables

- Never decal onto a flat or satin surface. Silvering is guaranteed.
- Never apply a solvent wash or Weathering Color directly onto a flat coat. It will stain and will not wipe cleanly.
- Never mask a coat that has cured less than 24 hours, regardless of how dry it feels.
- Never spray a flat coat over anything you intend to wash or streak afterward with solvent-based products.
- Always test a new paint, thinner ratio, or clear coat on scrap or on the underside before committing it to a visible surface.

CHAPTER 5 — SURFACE PREPARATION AND PRIMING

5.1 Why Preparation Dominates the Result

5.1.1. Paint conceals nothing and magnifies everything. A gloss coat over a sanding scratch produces a highlighted sanding scratch. Time spent at this stage returns more visible quality than any other operation in this T.O.

5.2 Cleaning — 3D-Printed Resin Parts

WARNING

Uncured photopolymer resin is a skin sensitizer. Wear nitrile gloves through washing and sanding, and do not dry-sand uncured or partially cured resin. Sanding dust from incompletely cured resin is both an irritant and a respiratory hazard — wet sand, or sand with extraction.

1. Confirm the part is fully cured. Partially cured resin remains slightly tacky, holds solvent, and will reject paint or cause it to remain soft indefinitely.
2. Wash the part in clean isopropyl alcohol or a dedicated resin cleaner to remove all surface resin, then rinse.
3. Follow with a warm water wash using a drop of dish detergent and a soft brush to remove alcohol residue and any mould-release or handling oil. Rinse thoroughly.
4. Dry completely — forced air or 24 hours in still air. Trapped moisture in a fine crevice will lift primer.
5. From this point handle the part by the sprue, a mounting stick, or with gloves. Skin oil is the most common invisible cause of paint adhesion failure.

5.2.1. Injection-moulded styrene parts require the same detergent wash to remove mould release; the alcohol step may be omitted.

5.3 Filling and Sanding

6. Identify defects under raking light from a single low-angle source. Rotate the part; a defect invisible from one angle is obvious from another.
7. For fine layer lines, print stepping, or shallow scratches: brush Mr. Surfacer 500 or 1000 across the defect, allow 30–60 minutes, and sand back.
8. For pinholes and hairline seams: Mr. Dissolved Putty, applied in thin layers. It shrinks as solvent flashes, so two thin applications beat one heavy one.
9. For structural gaps: heavier putty, then Surfacer over the top once cured.
10. Sand progressively — 400, 600, 800, then 1000 grit or finer for surfaces that will carry gloss. Wet sanding produces a better surface and controls dust.
11. Re-scribe any panel line crossed by filling or sanding before priming. A scribing line lost under primer is far harder to locate later.
12. Blow off and wipe down with a lint-free cloth. Do not use a solvent wipe that will attack the filler you just cured.

5.4 Priming

5.4.1. Primer on a DBW resin part is not optional. Resin has no solvent bite for lacquer to key into, and unprimed lacquer on resin can be lifted by masking tape.

Parameter	Setting
Product	Mr. Primer Surfacer 1000 or 1500 for resin; Mr. Surfacer 1000 or 1200 for styrene

Parameter	Setting
Thinning (bottle, airbrush)	Approximately 1 part primer to 1 – 1.5 parts Mr. Color Levelling Thinner
Pressure	15 – 20 psi
Distance	100 – 150 mm (4 – 6 in)
Coats	2 – 3 light coats, 10 minutes apart. Aim for coverage, not colour saturation.
Cure	Handle at 1 hour; sand or paint over at 2 – 4 hours; full hardness at 24 hours

5.4.2. Inspect the primed part under raking light and correct every defect found. Primer exists to show you what is wrong while it is still cheap to fix.

5.4.3. Polish the primer with 2000 grit or a polishing cloth wherever a high-gloss or natural metal finish will follow. Metallic finishes reveal every imperfection in the layer beneath them.

CHAPTER 6 — AIRBRUSHING MR. COLOR LACQUER

6.1 Baseline Settings

Operation	Paint : Thinner	Pressure	Distance	Notes
General base coat	1 : 1.5 – 1 : 2	14 – 18 psi	100 – 150 mm	Consistency of skim milk. Starting point for most work.
Large area / wing surfaces	1 : 2	16 – 20 psi	120 – 180 mm	Slightly wetter coat, overlap each pass by 50%
Fine freehand camouflage	1 : 2.5 – 1 : 3	10 – 14 psi	30 – 60 mm	Very low flow; build the demarcation in multiple passes
Mottling / fine detail	1 : 3	8 – 12 psi	15 – 30 mm	0.2 mm needle or finer; retarder not recommended
Pre-shading	1 : 3	10 – 14 psi	30 – 50 mm	Follow panel lines; less is more
Gloss clear (GX Super Clear III)	1 : 1 – 1 : 2	14 – 18 psi	100 – 150 mm	One deliberate wet-but-not-flooding coat
Flat clear	1 : 1 – 1 : 1.5	14 – 18 psi	120 – 150 mm	Do not over-thin; over-thinned flat goes on sandy
Metallic	1 : 1 – 1 : 1.5	10 – 15 psi	80 – 120 mm	Over gloss black; low pressure to avoid particle mottling

6.1.1. Ratios are volumetric and are starting points, not law. Colour density varies by pigment: whites, yellows, and reds generally need less thinning; blacks and greys tolerate more.

6.2 Mixing Procedure

13. Shake or stir the bottle until no pigment remains on the bottom. A mixing ball and 60 seconds of shaking is the minimum for a settled bottle.
14. Decant the paint into the airbrush cup or a mixing cup by drops or by volume so the ratio is repeatable. "About half" is not a ratio you can reproduce next weekend.
15. Add thinner and mix thoroughly with a stirrer, not by blowing back through the airbrush.
16. Check consistency: the mix should run off the stirrer in a continuous thin stream, like skim milk. If it drips in blobs it is too thick; if it sheets off instantly it is too thin.
17. Strain if the paint is old or has been open a long time.
18. Test on scrap card or the underside of the part before the first pass on a visible surface. Every session, every colour.

6.3 Spray Technique

19. Start the air before the paint and stop the paint before the air. Trigger discipline prevents the blob at the start and end of every pass.
20. Begin and end each pass off the part.
21. Keep the airbrush perpendicular to the surface and move the whole arm, not the wrist — an arced pass varies distance and produces a banded finish.
22. Overlap each pass by approximately 50%.
23. Build colour in multiple light coats. The first coat should look inadequate. Two thin coats always beat one heavy coat.
24. Allow 10 – 15 minutes between coats on a base colour; longer in humid conditions.

25. Rotate the part and cover from multiple angles for full coverage in recesses — wheel wells, intakes, and around raised detail.

6.4 Cure Schedule

State	Mr. Color (lacquer)	Aqueous	Acrycion
Touch dry	15 – 30 minutes	30 – 60 minutes	30 – 60 minutes
Recoat same colour	10 – 15 minutes	30 minutes	30 – 60 minutes
Handle	1 – 2 hours	2 – 4 hours	2 – 4 hours
Safe to mask	24 hours minimum	48 hours	48 – 72 hours
Safe to clear coat	24 hours	24 – 48 hours	48 hours
Full cure	48 – 72 hours	72 hours+	72 hours+

6.4.1. Times assume roughly 70–78°F and moderate humidity. Add 50% to every figure above 75% relative humidity.

6.5 Camouflage — Controlling Application

6.5.1. For the A-10 European I "lizard" scheme using Mr. Color C301, C302, and C303:

26. Prime and correct the surface; allow full cure.
27. Apply the lightest of the three colours overall as the base, thinned 1:2, in light coats. Allow 24 hours.
28. Mark the pattern lightly with a soft pencil or by masking with low-tack tape and putty, working from scale plans.
29. For a hard-edge scheme, mask with low-tack tape burnished at the edge, backed by tape or putty; for the softer factory demarcation, freehand at 10–14 psi and 30–60 mm, or mask with a slightly raised edge.
30. Spray the second colour thinned 1:2.5, building the demarcation in several passes rather than one committed line.
31. Allow 24 hours before masking for the third colour. Remove masking by pulling back over itself at a shallow angle, not upward.
32. Correct any bleed or ragged edge immediately with a fine brush or a light re-spray before the finish is clear coated.

6.5.2. Cockpit interior greens and zinc chromate wear tones (for example C351 and C352) are applied and worn before the fuselage is closed, and are protected from later overspray by masking or by a plug of soft putty.

6.6 Pre-Shading, Post-Shading, and Modulation

- Pre-shade: spray thinned dark grey or black along panel lines and structural shadows over primer, then apply the base colour in light coats until the shading is subdued but visible. Stop before it disappears — the temptation is always one coat too many.
- Post-shade: apply a lightened base colour to panel centres after the base coat for a sun-faded, in-service look. Easier to control than pre-shading and easier to undo.
- Black basing: prime black, then build the base colour in thin coats leaving shadow in recesses. Effective in 1/48 but requires patience and very thin paint.
- At 1/48 scale, effects should be subtle at arm's length. If it reads clearly across the room, it is overdone.

6.7 Low-Hiding Colours

6.7.1. Yellows, reds, and oranges have poor opacity. Apply Mr. Base White 1000 or a gloss white base first, cure, then apply the colour. Attempting to build a red directly over grey primer produces a muddy tone and an unnecessarily thick film.

6.8 Masking

- Use low-tack modelling tape. Standard hardware masking tape will lift lacquer from resin.
- Burnish only the cut edge of the tape, not the whole strip.
- Never mask over a coat cured less than 24 hours.
- Seal the tape edge with a light coat of the underlying colour or clear before spraying the new colour — anything that bleeds will be the same colour as what is already there.
- Remove masking within 24 – 48 hours. Tape left for weeks bonds and lifts paint.
- Pull tape back over itself at a shallow angle, slowly, toward the painted side.
- For canopies, use pre-cut masks or cut from tape over a light pad; frame colour is applied interior colour first, then exterior colour.

CHAPTER 7 — AQUEOUS HOBBY COLOR AND ACRYSION

7.1 When To Use Water-Based Paints

- Interior and cockpit detail where odor and overspray must be controlled.
- Hand-brushed detail painting, where Aqueous levels better than Mr. Color.
- Over a cured lacquer coat, where a water-based layer can be applied and, if necessary, removed without disturbing the lacquer beneath.
- Any time a lacquer-safe workspace is not available.

7.2 Aqueous — Airbrush

Parameter	Setting
Thinning	1 part paint to 1 – 1.5 parts Mr. Aqueous Hobby Color Thinner
Pressure	15 – 20 psi — slightly higher than Mr. Color
Distance	80 – 120 mm
Coats	2 – 4 light coats; Aqueous covers more slowly than lacquer
Between coats	20 – 30 minutes

7.2.1. Aqueous is more prone to tip dry than Mr. Color. Wipe the needle tip frequently and keep the cup covered between passes.

7.3 Aqueous Thinned With Levelling Thinner

7.3.1. Aqueous Hobby Color may be thinned with Mr. Color Levelling Thinner instead of its own thinner. This produces a harder, better-flowing, faster-drying film with markedly better airbrush behaviour, at the cost of the low-odor advantage and with reduced ability to strip the paint later.

CAUTION

This is a hot mix. Test the ratio on scrap first, ventilate as for lacquer, and do not apply it over a water-based coat you wish to preserve. Start at 1 part paint to 1 part Levelling Thinner and adjust.

7.4 Acrycion

7.4.1. Acrycion is the least forgiving of the three families and rewards exact procedure:

33. Prepare and de-grease the surface thoroughly. Acrycion has poor tolerance for contamination.
34. Apply Acrycion Base Color as the foundation coat where adhesion is critical, particularly on resin and bare plastic.
35. Thin only with Acrycion Thinner, and thin lightly — on the order of 10 – 30%. Acrycion is formulated to spray near bottle consistency.
36. Airbrush at 15 – 20 psi, 80 – 120 mm, in light coats.
37. Do not recoat too quickly; the emulsion needs time to coalesce. Allow 30 – 60 minutes.
38. Allow 48 – 72 hours before masking or clear coating. Acrycion reaches handling dryness long before it reaches film strength.
39. Clean the airbrush immediately with Acrycion Tool Cleaner or water while wet. Cured Acrycion in an airbrush is very difficult to remove.

7.4.2. Do not mix Acrycion with Aqueous or Mr. Color paints, and do not layer Acrycion under a lacquer clear coat without testing on scrap. The lacquer solvent can attack an incompletely cured Acrycion film.

7.5 Compatibility Matrix

Over ↓ / Under →	Mr. Color (lacquer)	Aqueous	Acrycion
Mr. Color (lacquer)	Yes — preferred	Test first; can lift or craze an uncured film	Only over a fully cured film; test first
Aqueous	Yes — safe and common	Yes	Test first
Acrycion	Yes, over fully cured lacquer	Test first	Yes
Mr. Weathering Color	Yes — safest substrate	Only over a gloss clear coat	Only over a gloss clear coat
Enamel wash / oils	Yes, over gloss clear	Only over a lacquer gloss clear	Only over a lacquer gloss clear

7.5.1. General rule: harder solvent over softer film is the direction that causes damage. Lacquer over water-based is risky; water-based over cured lacquer is safe.

CHAPTER 8 — HAND BRUSHING

8.1 When To Brush

8.1.1. Brush for small detail, cockpit components, instrument faces, placards, wear touch-up, and areas an airbrush cannot reach cleanly. Do not brush large surfaces that will read as a finished skin.

8.2 Brushing Mr. Color

8.2.1. Mr. Color is a fast-drying lacquer and is unforgiving under a brush. Technique:

- 40. Thin lightly — 10 – 20% with Levelling Thinner. The retarding effect gives working time.
- 41. Load the brush sparingly and lay the paint down in one direction. Do not brush back over a stroke that has begun to set; it will drag and streak.
- 42. Allow full drying between coats and build coverage in two or three thin coats.
- 43. Use a good synthetic or sable brush with a sharp point. A worn brush will not produce a clean edge no matter how good the paint is.

8.3 Brushing Aqueous and Acrycion

8.3.1. Water-based paints have longer working time and level better under a brush. Thin 10 – 20% with the matched thinner. Two thin coats, allowing 30 minutes between, will give even coverage without brush marks.

8.4 Detail Work

- Instrument bezels and raised detail: dry-brush a lightened tone across the raised surface with a nearly dry flat brush.
- Recessed detail: flow thinned paint into the recess and let capillary action carry it; clean any overflow with a damp swab before it sets.
- Placards and stencils: a fine brush and a steadied hand, or a decal where one is available. At 1/48 a decal is almost always cleaner.
- Touch-up after masking: match the original mix and feather the edge; a hard-edged touch-up is more visible than the flaw it corrects.

CHAPTER 9 — METALLICS AND SPECIAL FINISHES

9.1 Principle

9.1.1. A metallic finish is a suspension of fine metal particles in a thin binder. It has almost no hiding power and no ability to level a rough surface. The quality of a metallic finish is determined almost entirely by the surface underneath it.

9.2 Natural Metal Finish Procedure

44. Prepare the surface to a higher standard than any other finish — fill, sand progressively to 1500 – 2000 grit, and remove every scratch.
45. Prime with Mr. Surfacers 1200 or Mr. Surfacers 1500 Black.
46. Polish the primer smooth. Any texture remaining here will be visible and cannot be corrected later.
47. Apply a gloss black base coat — GX gloss black is ideal — thinned 1:1.5, and allow it to cure hard for 24 hours. The black base is what produces depth in the metal.
48. Apply the metallic thinned 1:1 to 1:1.5 at 10 – 15 psi in light coats. Do not flood it; excess binder dulls the effect.
49. Do not touch the surface. Fingerprints in fresh metallic cannot be repaired without redoing the panel.
50. For panel variation, mask individual panels after full cure and apply a different metallic shade or a slightly altered mix.
51. Seal only if necessary. Any clear coat reduces metallic brilliance; a very light gloss coat is the least damaging.

9.3 Mr. Metal Color (Buffable)

52. Apply over a smooth, dark, cured base, thinned minimally.
53. Allow to dry approximately 30 – 60 minutes.
54. Buff with a clean cotton swab, soft cloth, or a soft brush until the metallic sheen develops. Buffing pressure and duration control the intensity.
55. Do not handle after buffing — an unsealed buffed finish marks from skin contact.
56. Seal with a light clear coat where handling is unavoidable, accepting the reduction in sheen.

9.4 Common Aircraft Special Finishes

Finish	Approach
Exhaust and burner cans	Base with a dark metallic or steel; layer thinned browns, blues, and soot tones by airbrush at low pressure; finish with dry pigment or Weathering Color for heat staining
Anti-glare panel	Flat black over the finished base colour, masked; a genuine flat, not a semi-gloss
Radome / dielectric panels	Distinct semi-gloss or flat tone differing slightly from the surrounding colour; a common accuracy detail on the A-10 and F-16
Walkway and non-slip areas	Flat black or dark grey with a very fine texture; can be suggested with a lightly textured flat coat
Canopy framing	Interior colour first, cured, then exterior colour; mask with pre-cut masks or tape cut over a light pad
Vinyl / fabric covers	Flat base colour, then a satin clear to reproduce the sheen difference of the material
Remove Before Flight and	High-visibility red or orange over a white base for saturation

Finish	Approach
warning items	

CHAPTER 10 — CLEAR COATS

10.1 Function of Each Coat

Coat	When	Why
Gloss #1	After base colours are cured, before decals	Decals require a gloss surface. A flat surface traps air under the film and produces silvering.
Gloss #2	After decals are dry	Seals and levels the decal edges, and provides a solvent-resistant barrier for washes
Final sheen	After all weathering	Unifies sheen across paint, decals, and weathering, and protects the finish

10.2 Airbrushed Gloss Coat

57. Confirm the base colours have cured a minimum of 24 hours.

58. Remove all dust with a soft brush and compressed air. Dust trapped under gloss is permanent.

59. Thin GX Super Clear III 1:1 to 1:2 with Levelling Thinner.

60. Spray at 14 – 18 psi, 100 – 150 mm, in one deliberate coat that is wet enough to flow but not so wet that it pools in panel lines.

61. If a second coat is needed for depth, wait 30 – 60 minutes.

62. Cure 24 hours before decaling. A gloss coat that is dry to the touch is not yet solvent resistant.

10.2.1. Gloss coats pool in engraved detail if applied too heavily and will soften panel line definition. Multiple light coats, not one flooding coat.

10.3 Aerosol Clear Coats

63. Verify conditions: temperature 65 – 85°F and relative humidity below approximately 65%. See Chapter 15 — this is the single most weather-sensitive operation at the bench.

64. Warm the can in lukewarm (not hot) water for a few minutes to raise internal pressure and improve atomization.

65. Shake for a full 60 seconds after the mixing ball is heard, then a further 30 seconds.

66. Test the spray on scrap card. A sputtering or spitting can will ruin a finish in one pass.

67. Spray at 150 – 250 mm in steady passes, beginning and ending off the model.

68. Apply light coats. An aerosol delivers far more material per pass than an airbrush, and one heavy coat will run.

69. Invert and clear the nozzle after use.

CAUTION

Never spray a flat aerosol clear in high humidity. Moisture trapped in the drying film produces a white, frosted, or milky surface — blushing. On a finished model this is a catastrophic and frequently unrecoverable failure. In a Florida summer, spray in conditioned air or do not spray.

10.4 Final Sheen

- Aircraft in service are rarely uniformly flat. A dead-flat finish reads as toy-like at 1/48.
- A practical default is a flat or matte coat overall, followed by selective satin or gloss on panels that would be waxed, oily, or freshly repainted.

- Do not over-thin flat clear. An over-thinned flat coat lays down sandy and dusty because the flattening agent is unevenly carried.
- Stir flat clear thoroughly; the flattening agent settles hard and an unstirred bottle sprays semi-gloss and then flat as the bottle empties.
- Apply flat coats in light passes. Building sheen down gradually is controllable; taking it back up is not.

10.5 Clear Over Weathering

10.5.1. A solvent-based clear coat sprayed over solvent-based weathering can reactivate and move the weathering. Apply the first pass as a very light dust coat from a greater distance, let it flash for 10 minutes to lock the surface, then build normally.

CHAPTER 11 — DECALS

11.1 Preparation

11.1.1. Decals go onto a fully cured gloss surface, dust free, at least 24 hours after the gloss coat. Trim each decal close to the printed area to minimize visible carrier film.

11.2 Application Procedure

70. Cut the decal from the sheet and trim the carrier film close.
71. Dip in clean water for 5 – 15 seconds and set aside on a paper towel until the decal slides freely on its backing. Do not soak until it floats off.
72. Brush Mr. Mark Setter onto the model surface where the decal will sit. Setter improves adhesion and begins softening the film.
73. Slide the decal into position with a brush or cotton swab, using the Setter as a lubricant.
74. Position precisely, then draw off excess fluid with a cotton swab, working from the centre outward to expel trapped air and prevent silvering.
75. For decals over raised or recessed detail, apply Mr. Mark Softer over the top and leave it undisturbed. The film will wrinkle — this is normal and it will settle as it dries.
76. Do not touch, poke, or reposition a decal while Softer is working. Wrinkled film that is disturbed will tear.
77. If the decal has not fully conformed after drying, apply a second application of Softer.
78. Once dry, blot away residue with a barely damp swab and inspect under raking light for air pockets. Pierce any remaining bubble with a fresh scalpel point and re-apply Softer.
79. Allow 12 – 24 hours to dry fully, then seal with gloss clear before any weathering.

11.3 Silvering

11.3.1. Silvering is air trapped between the carrier film and the surface. Causes, in order of frequency: applying to a flat or satin surface; insufficient setting solution; not expelling fluid from under the decal; a rough or dusty surface. Prevention is procedural — there is no reliable cure after the fact short of pricking and re-applying softener.

CHAPTER 12 — LINE FILL, PANEL LINES, AND ACCENT

12.1 Two Distinct Operations

12.1.1. "Line fill" describes two different tasks that must not be confused. Both are covered here:

- FILLING an unwanted line, seam, gap, or print artifact so it disappears (paragraph 12.2).
- FILLING an engraved panel line with a contrasting medium so it reads as a shadow — panel line accent (paragraph 12.4).

12.2 Filling Unwanted Lines and Seams

80. Clean the seam of any loose material and de-grease.
81. For a hairline seam: flow Mr. Dissolved Putty along the line with a fine brush. Allow 30 – 60 minutes; it will shrink slightly. Apply a second pass if the line remains visible.
82. For a wider gap: fill with a heavier putty, allow full cure, sand back, then skim with Mr. Surfacer 500 to catch remaining pinholes.
83. Sand flush progressively, finishing at 800 – 1000 grit. Work along the seam, not across it.
84. Prime the area and inspect under raking light. Primer will reveal a seam that looked closed on bare plastic or resin.
85. Repeat fill and sand until the seam is invisible under primer. This is normally two cycles and occasionally three.
86. Re-scribe any panel line that crossed the repair, using a scribing tool guided by tape, cutting in several light passes rather than one deep one.

12.3 Re-Scribing

- Guide with flexible tape or a scribing template; never freehand a straight line.
- Draw the tool toward you in light passes, deepening gradually. A line cut too deep cannot be made shallower.
- Clean the resulting burr with a soft brush and a polishing stick.
- Test-fill the new line with a pencil or a wash to check depth and consistency before priming.

12.4 Panel Line Accent — Mr. Weathering Color

12.4.1. Preferred method. Requires a cured gloss coat beneath it.

87. Confirm a gloss clear coat is applied and cured 24 hours. Weathering Color applied directly onto flat paint will stain and cannot be wiped cleanly.
88. Stir the Weathering Color thoroughly to the bottom of the jar.
89. Select tone by base colour: Multi Black or Grayish Brown for grey and green camouflage; Stain Brown for lighter or sand tones; softer tones on lighter aircraft. Pure black is almost always too stark at 1/48.
90. Thin slightly with Mr. Weathering Color Thinner if it does not flow freely.
91. Touch a loaded fine brush to the panel line and allow capillary action to draw the fluid along it. Do not paint the line — feed it.
92. Work a section at a time — one wing, one fuselage side — so cleanup timing stays consistent.
93. Allow 15 – 30 minutes to set. Too soon and the line itself lifts; too long and cleanup takes more solvent and more effort.
94. Dampen a cotton swab or a piece of lint-free cloth with Weathering Color Thinner, squeeze out the excess, and wipe the surrounding surface in the direction of airflow — fore to aft. Directional cleanup leaves a faint streak that reads as service staining.

- 95. Change swabs frequently. A loaded swab redeposits pigment across the surface.
- 96. Inspect under raking light and re-run any line that came out too light.
- 97. Seal with the final sheen coat once fully dry, applying the first pass as a light dust coat per paragraph 10.5.

NOTE

Mr. Weathering Color remains workable long after application. Excessive accent can be softened or removed days later with its own thinner. This is its principal advantage over a marker or an ink-based accent, which are effectively permanent once set.

12.5 Panel Line Accent — Pouring Pen and Markers

- 98. Prime the pen per its instructions and test on scrap; flow varies between pens and with age.
- 99. Ensure a gloss or at least a satin surface. A pouring pen on flat paint will bleed into the surrounding finish.
- 100. Touch the tip into the panel line and let capillary action carry the ink. Work in short sections.
- 101. Allow to set briefly, then remove the excess with the matched eraser pen or a swab lightly dampened with a mild solvent appropriate to the pen.
- 102. Work quickly and in small areas; these products become progressively harder to remove as they cure.

12.5.1. Marker-based accent is faster and well suited to small parts, test pieces, and DBW product samples photographed quickly. Weathering Color remains the better method on a finished display model because of its reversibility.

12.6 Scale Discipline

12.6.1. At 1/48, a panel line accent should suggest a shadow, not draw a grid. Common errors: too dark a tone, too wide a line, and every panel line treated with equal emphasis. Vary tone and intensity across the airframe, and leave some lines almost untreated.

CHAPTER 13 — WEATHERING

13.1 Sequence and Restraint

13.1.1. Weathering is applied in layers from subtle to specific: filters, then washes and accents, then streaking and staining, then chipping, then dust and exhaust deposits, then localized gloss or wet effects.

13.1.2. Reference photographs of the actual airframe, in the actual period, govern. An A-10 on a European deployment does not weather like one in a desert environment, and USAF airframes are washed more often than most models suggest.

13.2 Filters

- 103. Purpose: shift the overall tone slightly, tie separate camouflage colours together, and break up factory-flat colour.
- 104. Thin Mr. Weathering Color heavily with its thinner — a very dilute mix.
- 105. Apply over a cured gloss coat with a broad soft brush in even, overlapping strokes across a whole panel or section.
- 106. Allow to dry and assess. Build the effect in two or three dilute passes rather than one strong one.
- 107. Blend any hard edge with a clean brush dampened in thinner.

13.3 Pin Washes

13.3.1. A pin wash is a targeted deposit around raised detail — fasteners, hinges, access panels, and around the base of protruding structures — rather than a general application. Apply with a fine brush directly to the shadow line, allow to set, and clean the surroundings as in paragraph 12.4.

13.4 Streaking and Staining

- 108. Apply short vertical (or airflow-direction) strokes of Weathering Color on the surface where a stain would originate — below a vent, a fuel port, a gun port, or a maintenance panel.
- 109. Allow to set for a few minutes.
- 110. Draw a clean brush lightly dampened with thinner downward, or aft, through the stroke to feather it into the surface.
- 111. Repeat rather than overload. A streak that is visible as a painted line has failed.
- 112. For A-10 subjects, the gun gas staining aft of the muzzle, exhaust staining aft of the nacelles, and hydraulic and fuel staining around servicing points are the characteristic effects.

13.5 Mr. Weathering Paste

- 113. Stir thoroughly; the paste separates in the jar.
- 114. Apply with a stiff brush, a spatula, or an old brush stippled onto landing gear, wheel wells, tyres, and lower surfaces.
- 115. Thin and blend the edges with Weathering Color Thinner so the effect fades into the surface rather than stopping abruptly.
- 116. Vary texture: heavier and coarser near the source, thinner and more dispersed away from it.
- 117. For a wet look, apply a gloss or wet-effect medium over selected areas once the paste is dry.
- 118. Allow full drying — paste is thicker than paint and takes considerably longer.

13.6 Chipping and Wear

- Chip where crews actually walk, grip, and service the aircraft: wing roots, walkways, access panel edges, boarding steps, and around latches. Random chipping across a wing reads as damage, not wear.
- Sponge chipping: dab a torn piece of foam sparingly into thinned paint, offload most of it onto card, and stipple lightly.
- Brush chipping: a fine brush and a very light hand produce more convincing results at 1/48 than sponge work.
- For the underlying colour, use the correct primer tone — zinc chromate or a period-appropriate primer — rather than bare metal, which is rarely correct on a modern combat aircraft.
- Cockpit floor and console wear is applied before closing the fuselage. C351/C352 zinc chromate tones are the reference colours for that wear.

13.7 Exhaust and Soot

13.7.1. Apply after the final flat coat. Airbrush heavily thinned black, dark grey, or brown at very low pressure (8 – 10 psi) from a distance in light passes, or apply dry pigment with a soft brush and set it with pigment fixer. Working after the flat coat allows the deposit to sit on top of the finish the way soot actually does.

13.8 Assessment

13.8.1. Stop and assess at arm's length under normal room light after every stage. Weathering is judged at viewing distance, not under a magnifier. Photograph the model — a photograph reveals overdone weathering that the eye has adapted to.

CHAPTER 14 — MARKERS

14.1 Gundam Markers (Paint Type)

- Solvent or alcohol based. Shake well and prime the tip on scrap before first use.
- Best for small parts, edge detail, hand-applied colour, and quick touch-up on test pieces.
- The marker tip deposits more paint than a brush; expect to work back into the edge with a brush for a clean line.
- Some marker inks can be dissolved by lacquer thinner — useful for correction, dangerous under a lacquer clear coat. Test before clear coating over marker work.
- Store horizontally or tip-down as directed to keep the tip charged.

14.2 Pouring Inking Pens

14.2.1. Covered under paragraph 12.5. Fast, effective on a gloss surface, and largely irreversible once set. Preferred for DBW product samples that must be photographed the same day.

14.3 Real Touch Markers

- 119.** Apply the marker directly to the surface where a stain, streak, or shade is wanted.
- 120.** Work the deposit immediately with the Real Touch Blender pen or a brush dampened with the appropriate solvent, drawing it in the direction of airflow.
- 121.** Build in layers; the blender will lift and move colour as long as it remains workable.
- 122.** Effective for streaking on flat surfaces where a solvent wash would be difficult to control.
- 123.** Seal once complete, testing first — a clear coat can reactivate and smear marker work.

14.4 Marker Limitations

14.4.1. Markers are a convenience tool. They do not match airbrushed colour exactly, cannot produce a scale-thickness film over a large area, and are difficult to correct. Use them for detail, touch-up, and quick sample work — not as a substitute for the airbrush on a finished model.

CHAPTER 15 — ENVIRONMENT, HUMIDITY, AND TROUBLESHOOTING

15.1 Bench Environment

Parameter	Target	Consequence Outside Range
Temperature	65 – 80°F (18 – 27°C)	Below: slow cure, poor flow. Above: rapid flash-off, tip dry, orange peel, dry spray.
Relative humidity	Below 60 – 65%	Above: blushing in clear coats, extended cure times, moisture in the air line, poor adhesion.
Air supply	Dry, regulated, moisture trap fitted and drained	Water spitting into the paint at the worst possible moment.
Dust	Controlled — booth filter clean, no fan blowing across the work	Permanent inclusions under gloss coats.
Light	Strong, colour-neutral, plus one low-angle raking source	Defects invisible until after the finish is complete.

15.1.1. In this climate, humidity is the dominant variable for most of the year. Paint in conditioned air, run a dehumidifier in the shop space, drain the compressor tank and moisture trap before every session, and do not spray clear coats on a humid afternoon because the schedule says so. Reschedule the coat.

15.2 Troubleshooting Matrix

Symptom	Probable Cause	Correction
Orange peel / pebbled texture	Paint too thick, pressure too low, or spraying from too far — paint is drying in flight	Thin further, move closer, use Levelling Thinner, raise pressure slightly
Tip dry — needle clogs constantly	Fast thinner, high temperature, low humidity, paint too thick	Levelling Thinner, ~5% retarder, lower pressure, wipe the tip
Runs and sags	Too much paint in one pass, too close, or over-thinned	Let it cure fully, sand back, re-spray in lighter coats. Never wipe a wet run.
Spidering / spider webs	Over-thinned paint at high pressure	Thicken the mix and reduce pressure
White, milky, frosted clear coat (blushing)	Humidity — moisture trapped in the drying film	Prevent it. Sometimes recoverable with a light coat of levelling thinner or gloss in dry conditions; often not.
Sandy, dusty flat coat	Flat clear over-thinned, sprayed too far away, or unstirred	Stir thoroughly, thin less, move closer
Paint lifts with masking tape	Insufficient cure, no primer, contaminated surface, or tape too aggressive	Prime properly, cure 24 hours, use low-tack tape, de-tack tape on cloth first
Decal silvering	Applied over a non-gloss surface or fluid not expelled	Prick and re-apply softener; prevent by gloss coating first
Crazing / crackled surface	Hot solvent over an uncured or incompatible film	Full cure before recoating; test compatibility on scrap
Metallic looks blotchy	Base not smooth, too much binder, or pressure too high	Polish the base, thin less, lower pressure

Symptom	Probable Cause	Correction
Finish stays soft after 48 hours	Too much retarder, coats too heavy, or high humidity	Wait. If still soft at a week, strip and redo.
Wash stains the surface and will not wipe	Applied over flat paint with no gloss barrier	Gloss coat first, always
Water spits from the airbrush	No moisture trap, or trap full	Fit and drain a moisture trap; drain the compressor tank
Colour looks wrong after flat coat	Flat coats lighten and dull colour	Account for it — assess colour after a test flat coat on scrap, not before

CHAPTER 16 — AIRBRUSH CLEANING AND TOOL CARE

16.1 Between Colours

124. Empty the cup and wipe it out with a paper towel.
125. Flush with Mr. Color Thinner until it sprays clear into a cleaning pot.
126. Back-flush briefly by restricting the nozzle, taking care not to blow paint back into the cup with the cup uncovered.
127. Wipe the needle tip with a thinner-dampened towel, drawing the towel from the body toward the tip — never toward the body, which bends the tip.

16.2 End of Session

128. Flush until clear as above.
129. Remove the needle, wipe from body to tip, and inspect the tip under magnification for a bend or hook. A bent needle is the cause of most inexplicable spray patterns.
130. Remove and clean the nozzle and nozzle cap. Handle nozzle parts carefully; they are the most easily damaged and most expensive small parts of the airbrush.
131. Clean the cup and paint passage with an interdental brush or cleaning needle.
132. Reassemble carefully. Do not over-tighten the nozzle — a cracked nozzle sprays erratically and is not repairable.
133. Lubricate the needle packing and trigger with a trace of airbrush lubricant on schedule.

CAUTION

Mr. Tool Cleaner is aggressive. Use it for periodic deep cleaning or to recover a neglected airbrush, not as a routine flush, and do not soak an assembled airbrush in it — prolonged contact can attack seals and O-rings. Rinse with standard thinner afterward.

16.3 Compressor and Air Line

- Drain the tank at the end of every session. Water accumulates faster than expected in humid conditions.
- Fit a moisture trap at the airbrush end of the line, not only at the compressor, and drain it before each session.
- Check the regulator setting against a gauge rather than by feel.
- Replace cracked or hardened hose. A pinhole leak destabilizes pressure and produces inconsistent coats.

16.4 Brushes and Consumables

- Clean brushes immediately after use with the appropriate thinner, then wash with soap and water and reshape the tip.
- Never leave a brush standing in solvent. It bends the tip permanently and dissolves the ferrule adhesive.
- Segregate brushes by paint type — lacquer brushes, water-based brushes, weathering brushes.
- Retire a brush when it will no longer hold a point. A worn brush cannot produce a clean line at any skill level.

APPENDIX A — MIXING RATIO QUICK CARD

Bench reference. Ratios are paint : thinner by volume, using Mr. Color Levelling Thinner unless otherwise stated.

Operation	Ratio	PSI	Distance
Primer / Mr. Surfacer 1000 (bottle)	1 : 1 – 1 : 1.5	15 – 20	100 – 150 mm
Base colour, general	1 : 1.5 – 1 : 2	14 – 18	100 – 150 mm
Large surfaces	1 : 2	16 – 20	120 – 180 mm
Freehand camouflage edge	1 : 2.5 – 1 : 3	10 – 14	30 – 60 mm
Mottling / fine detail	1 : 3	8 – 12	15 – 30 mm
Pre-shading	1 : 3	10 – 14	30 – 50 mm
Gloss clear (GX Super Clear III)	1 : 1 – 1 : 2	14 – 18	100 – 150 mm
Flat / semi-gloss clear	1 : 1 – 1 : 1.5	14 – 18	120 – 150 mm
Metallic over gloss black	1 : 1 – 1 : 1.5	10 – 15	80 – 120 mm
Exhaust soot (post-flat)	1 : 4 or more	8 – 10	80 – 150 mm
Aqueous (own thinner)	1 : 1 – 1 : 1.5	15 – 20	80 – 120 mm
Aqueous (Levelling Thinner)	1 : 1	15 – 18	80 – 120 mm
Acrycion (Acrycion Thinner only)	10 – 30% thinner added	15 – 20	80 – 120 mm
Retarder dose	~5% of mix, 10% maximum	—	—

APPENDIX B — CURE AND WAIT TIMES

Operation	Minimum Wait Before Next Step
Between coats of the same colour (lacquer)	10 – 15 minutes
Primer before sanding or painting	2 – 4 hours
Base colour before masking	24 hours
Base colour before gloss coat	24 hours
Gloss coat before decals	24 hours
Decals before sealing coat	12 – 24 hours
Gloss coat before solvent wash	24 hours
Panel line accent before handling	1 – 2 hours
Weathering before final flat coat	24 hours
Final flat coat before handling and assembly	24 – 48 hours
Aqueous before masking	48 hours
Acrycion before masking or clear coat	48 – 72 hours

Add 50% to every figure above 75% relative humidity or below 65°F.

APPENDIX C — CONSUMABLES AND BENCH STOCK

Category	Items to Keep On Hand
Thinners	Mr. Color Levelling Thinner (primary, largest size), Mr. Color Thinner, Aqueous thinner, Weathering Color Thinner, Mr. Tool Cleaner
Additives	Mr. Retarder Mild
Surfacers	Mr. Primer Surfacers 1000/1500, Mr. Surfacers 500/1000/1200, Mr. Base White 1000, Mr. Surfacers 1500 Black, Mr. Dissolved Putty
Clears	GX Super Clear III gloss (bottle), flat and semi-gloss clear (bottle), Mr. Super Clear aerosol (gloss and flat)
Decal	Mr. Mark Setter, Mr. Mark Softer
Weathering	Mr. Weathering Color assorted tones, Weathering Paste, pigments and fixer
Markers	Pouring inking pen plus eraser pen, Real Touch markers and blender
Abrasives	Wet/dry paper 400 – 2000, sanding sticks, polishing cloths
Masking	Low-tack modelling tape in several widths, masking putty, pre-cut canopy masks
Tools	Fine brushes, cotton swabs, lint-free cloth, scribing tool, spare airbrush needle and nozzle, moisture trap element
PPE	Organic vapor respirator cartridges, nitrile gloves, safety glasses

Set reorder points for thinners and PPE cartridges. Running out of Levelling Thinner mid-session ends the session.

APPENDIX D — RECORD OF CHANGES

Rev	Date	Summary of Change	By
A	26 Jul 2026	Initial issue.	J. Driver

END OF T.O. DBW-PNT-001