



STEP-BY-STEP TUTORIAL

PB7

The video paint studio, from the first stroke to the export

Complete user guide to PB7, a software recreation of the Quantel Paintbox: brushes and pressure, colour and the mixing tray, lasso cut & paste, titling, then video — layers, timeline, animation, camera and exports.



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THE ORIGINAL MACHINE

In 1981, the Quantel Paintbox was the first broadcast-quality digital paint system: a pressure stylus driving everything, paint / watercolour / chalk modes, a palette to mix colours, real-time cut & paste and a library browsed twelve images at a time. PB7 keeps its logic and gestures — and adds video, layers and a timeline. The  box marks what comes from the 1981 machine.

On-screen labels

The interface itself is in French; this guide uses English wording. Main labels as they appear on screen:

On screen	In this guide	On screen	In this guide
Peinture · Aquarelle · Craie	Paint · Watercolour · Chalk	Gomme · Pipette · → pot	Eraser · Eyedropper · → pot
Ronde · Plate · Aérographe	Round · Flat · Airbrush	Calligraphique · Lissage	Calligraphic · Smoothing
Mélange · vider · Annuler	Mixing tray · clear · Undo	Calque actif · Dupliquer	Active layer · Duplicate
Effacer · Supprimer · Coller	Clear · Delete · Paste	Découpe · Couper / Copier	Cut & paste · Cut / Copy
Poser le texte · Loupe 2×	Place text · 2× magnifier	Média ·  Direct · Ranger	Media ·  Live · Store

Launching the software

Double-click **PB7.app**. The window has three zones: the **canvas** on the left, the **control panel** on the right (a scrolling column of sections), the **timeline** at the bottom. Drag the divider to resize the panel.

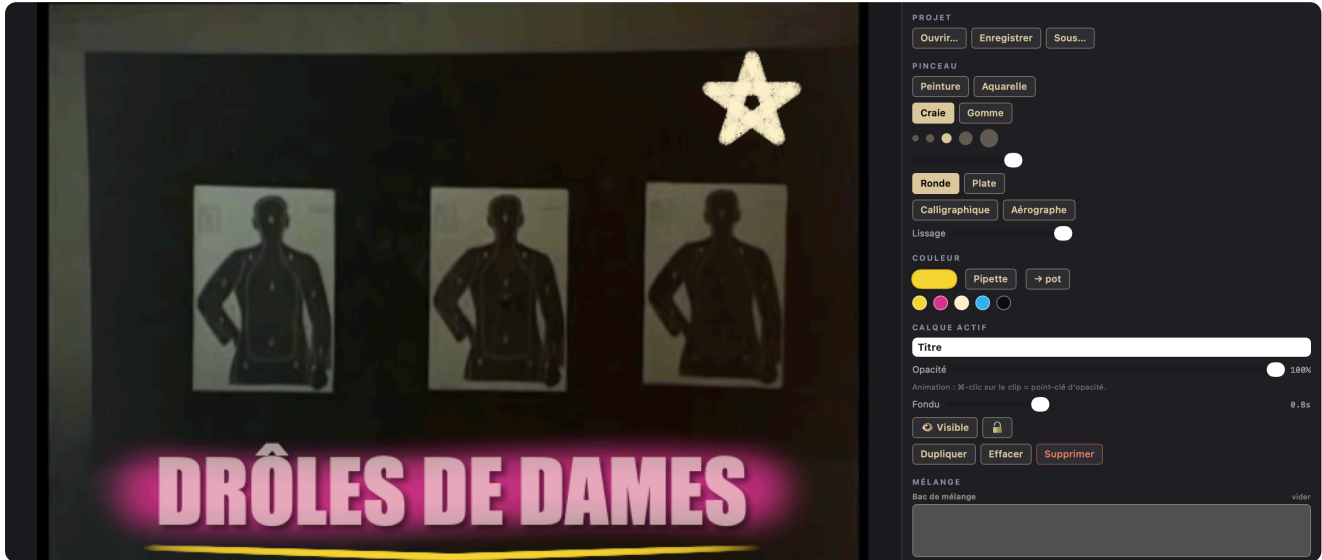


Fig. 1 — The PB7 window: canvas (a dressed video frame), control panel, three-track timeline. Rendered by the app itself.

The canvas

Without video, the canvas is a dark “paper” of **720 × 576** pixels — the Paintbox's PAL format. Load a video and the canvas takes **its size** (up to 1920 × 1080); the video becomes the background you paint on. The canvas is always shown whole, proportions preserved.

Stylus or mouse

PB7 reads **stylus pressure** natively: it drives the opacity of the stroke (and slightly its radius). With the mouse everything works too — pressure is then always 1, the maximum.

The basic gestures — essential to know

Gesture	Effect
Drag on the canvas	Paints in the <i>active layer</i> with the current brush.
Alt-click	Eyedropper: picks the colour under the cursor.
Right-click	Recentres the 2× magnifier on that point.
Space held (magnified)	Hand: pans the magnified view.
⌘Z	Undoes the last stroke, paste, title... (24 levels per layer).
B A C G	Paint · Watercolour · Chalk · Eraser.
[]	Thinner / wider brush.



TIP

The message line at the bottom of the control panel comments on each action (“Couleur mise en pot.”, “Croquis créé — de 0:00.0 à 0:14.1”...). Keep an eye on it: it tells you what PB7 has just done.

The **Brush** section of the control panel gathers everything: four *materials*, five sizes and a slider, four brush *shapes*, and stroke smoothing.

The four materials

Mode	Key	What it does
 Paint	B	Opaque, crisp edge, loads quickly. Flat fills, lines, underlines.
 Watercolour	A	Translucent wash with a very soft edge; passes build up. Backgrounds, halos, shadows.
 Chalk	C	The paper grain in the stroke. Sketches, textures, roughs.
 Eraser	G	Removes material from the active layer and reveals the background (paper or video).

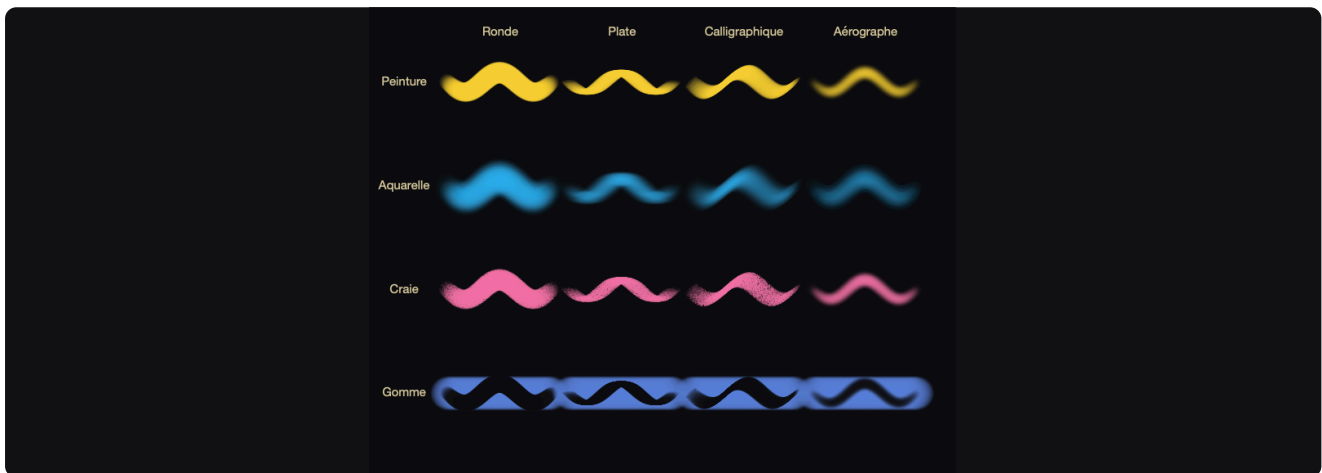


Fig. 2 — The sampler: the four materials (rows) in the four shapes (columns). For the eraser, a band of blue paint was laid down first, then erased.

The four brush shapes

- **Round** — the all-purpose brush, the same thickness in every direction;
- **Flat** — thin one way, wide the other: thick and thin strokes depending on the direction of the stroke;
- **Calligraphic** — a flat tilted at 45°, for lettering and flourishes;
- **Airbrush** — a very soft, wide haze, for halos, shadows and vignettes.

Size, pressure and smoothing

- 1 Pick one of the **five size dots**, or fine-tune the **slider** (radius 2 to 60 pixels). **[]** and **[]** change the size on the fly. A **circle** at the brush's actual size follows the cursor on the canvas.
- 2 With the stylus, **press**: the harder the pressure, the more opaque the stroke. A light touch lays a haze, a firm press a solid line — watercolour benefits the most.
- 3 The **Smoothing** slider (0 to 1) runs a softened point behind the stylus: at 0 the stroke follows the hand exactly, towards 1 it irons out tremors. Recommended setting: 0.3.



PRESSURE AND MATERIALS

On the Paintbox, stylus pressure was *the* setting: no opacity slider, the hand decided. The three materials (paint, wash, chalk) are those of 1981. One brush, one pressure, one material.

Choosing a colour

- 1 In the **Colour** section, the **swatch** on the left opens the macOS colour picker (wheel, sliders, pencils, system eyedropper...). The brush colour changes immediately.
- 2 **Eyedropper** (or **Alt-click** on the canvas): the next click on the canvas picks the composite colour under the cursor — video background included. The button stays active until you release it or choose a material.

The pots

- 1 Click → **pot**: the current colour is potted and appears in the row below.
- 2 Click a **pot** to take its colour back; **right-click** removes that pot or empties them all. Up to **12 pots**; beyond that, the oldest is dropped.
- 3 Pots are **kept**: from one session to the next (`pots.json` in the PB7 folder) and in every .pb7 project, which restores them when opened.

The mixing tray

The **Mixing tray** section shows the **tray**: a surface where you rub your colours together as on a palette.

- 1 Choose a colour, then **rub** in the tray: the brush colour is laid down and mixes with what is already there.
- 2 Change colour and rub again in the same spot: the shade forms before your eyes.
- 3 **Release**: the brush takes the shade under the cursor. Paint — or pot it.
- 4 **clear** cleans the tray.



MIX, PICK, KEEP

That was the triptych of the Paintbox palette: a mixing area where you rubbed the stylus, colours picked straight from the picture, and pots to keep your mixes from one image to the next. The three gestures are here, in the same place on the control panel.

Exercise — a title-sequence palette

- 1 Pick a dominant colour of the picture with the eyedropper (Alt-click), pot it.
- 2 In the tray, rub that colour then a little white: you get its light version. Pot it.
- 3 Now rub it with a little black: its dark version. Pot it.
- 4 Your three pots form a palette that matches the picture — the secret of graphics that “hold together”.

Working at pixel level

- 1 Click **2× magnifier** (Media section): the canvas is shown twice as large, centred on the magnifier point.
- 2 **Right-click** on the canvas to recentre the magnifier wherever you want.
- 3 Hold **Space**: the cursor becomes a **hand**. Drag to pan the view (closed fist while moving). Release to paint again.
- 4 Everything works when magnified: brush (the cursor circle grows too), eyedropper, lasso, titling. Click **2× magnifier** again to return to the normal view.



THE “ZOOM” OF 1981

The Paintbox offered exactly this: a 2× enlargement of an area to retouch the edges of a logo or a cut-out pixel by pixel. No continuous zoom — one factor, precise and fast.

Undo

Command	Effect
⌘Z or Undo (Media section)	Undoes the last stroke, the last cut, the last paste or placed title. Up to 24 levels, <i>per layer</i> .
Clear (Active layer section)	Empties the active layer entirely — undoable.
Esc during a cut	Cancels the floating selection and <i>restores</i> the lifted content (chapter 6).



WARNING

Undo is specific to each layer: ⌘Z undoes on the *active layer*. Switching layer (click its clip in the timeline) then ⌘Z undoes on that layer. Loading a video that changes the canvas size clears the undo stack.

The brush, the eraser and the background

On paper as on video, the **eraser** does not paint “in black”: it removes material from the layer, which becomes transparent again. On a video, the eraser therefore brings the picture back; that is how you *cut out* a painted area. At size 60 in the airbrush shape, it makes very fine edge fades.

Loading media

- 1 **Media** section → **Load media...** and choose a file.
- 2 A **video** (.mp4, .mov...) becomes the **moving background** of the canvas, which takes its size; the timeline takes its duration (chapter 8).
- 3 An **image** (PNG, JPEG...) is **placed on the active layer**, fitted to the canvas, proportions preserved.

Image fusing

The **Fusion** slider (5 to 100%) sets how strongly a grabbed image is drawn: at 100% it covers the layer; below that, it **blends transparently** with the existing content — the Paintbox's *image fusing*. Load two images in a row at 50%: they melt into each other.

The library — twelve at a time

- 1 **Store** files the composite canvas (background + layers) in the library, time-stamped.
- 2 **Library** opens the sheet: a grid of $4 \times 3 = 12$ **thumbnails** per page, ◀ ▶ buttons to turn the pages.
- 3 **Click** a thumbnail: the image is recalled onto the active layer (with the current Fusion). ✕ deletes an image.
- 4 **Archive...** exports the whole library as a .zip file; **Import...** merges an archive into the library — the Paintbox's “8-inch floppy”.



THE PAINTBOX PICTURE LIBRARY

The 335 MB “Eagle” disk held about 160 PAL images, browsed twelve at a time on a sheet of thumbnails; the 8-inch floppy served as the archive. PB7 keeps its PNGs in `~/Library/Application Support/PB7/Bibliotheque/` — and the archive fits in a zip.

The camera

Button	Role
Photo	Grabs a frame from the camera (after a few frames of auto-exposure) and places it on the active layer, with the current Fusion. macOS asks for permission the first time.
Live	The camera <i>becomes the background</i> of the canvas, continuously: paint over the live feed. Click again to return to the video or the paper.
• REC	Records the composite output (background + layers + texts) in real time to an H.264 .mov — see chapter 11.



TIP

“ Live” + a paint layer + “• REC”: that is live performance — the audience watches the camera picture being painted, and the file keeps everything.

Cutting out an area with the stylus, lifting it, moving it, resizing it and setting it down elsewhere, in real time: this is *the* gesture that made the Paintbox's reputation. **Cut & paste** section.

Cutting

- 1 Click **Lasso**, then **circle** the area freehand on the canvas: the outline is drawn dotted and closes by itself on release.
- 2 Choose the operation:
 - **Cut** — the area is *lifted* from the active layer (leaving a hole);
 - **Copy** — the area is lifted as a copy, the layer stays intact;
 - **Crop** — everything *outside* the lasso is erased, the inside stays in place.
- 3 The area becomes a **floating selection**, drawn above everything: **drag it** with the mouse to place it.
- 4 The **Scale** slider (10 to 400%) appears: enlarge or shrink the selection around its centre.
- 5 **Paste** (or **Return**) sets it down, merged into the active layer. **Esc** cancels — and *restores* the content to its original place if the selection came from a Cut.

Transforming a whole layer

Transform layer lifts *all* the content of the active layer as a floating selection: move it, change its **Scale**, then **Paste**. This is the way to reframe a whole drawing, shrink it into a corner, or recentre it on the video.



TIPS

- Paste onto *another* layer: after Cut, click the destination layer's clip in the timeline, then Paste. The cut-out changes layer — and so its duration and fade.
- Cut then Paste in the same place with a Scale of 105%: a slight “pop” for an inset.
- Everything is undoable: ⌘Z before the cut, ⌘Z after the paste.



CUT & PASTE THROUGH A MASK

In 1981, the cut was made through a mask drawn with the stylus, and the piece moved on screen in real time, with soft edges — on a machine with no “layers”. PB7 adds scale, restore on Esc and changing layer.

The Paintbox's character generator: titles with a **drop shadow**, placed with the stylus anywhere on the picture. **Text** section.

Placing a text

- 1 Type your text in the **Ton titre...** ("Your title...") field.
- 2 Choose the **font** from the menu (Helvetica Neue, Futura, Avenir Next, Georgia, American Typewriter, Impact, Arial Black, Courier New), the **Size** (12 to 220) and the **Shadow** (0 = none, 1 = wide, diffuse shadow).
- 3 The text colour is **the brush colour**: set it beforehand.
- 4 Click **Place text** — the button turns into "Clique sur la toile..." (click on the canvas) — then **click** on the canvas: the text is placed there, centred on the click, in the **active layer**.

Editing a placed text

- 1 Turn on **Select / move**, then **click** the text on the canvas: it is selected (upper layers first).
- 2 The Text panel switches to **direct editing**: content, font, size and shadow change the selected text in real time.
- 3 **Drag** the text to move it; **Couleur** ← **pinceau** (colour ← brush) gives it the current colour; **Delete** removes it.
- 4 Turn off **Select / move** to paint again.



THE TEXT LIVES IN THE LAYER

A text belongs to its layer: it follows the clip in the timeline, its fades, its opacity and its keyframes (chapters 8 and 9). It is saved in the .pb7 project, exported with the alpha layers, copied when the layer is duplicated — and stays editable as long as it has not been flattened.



Recipe — the title-sequence title

"Title" layer · **Impact** font, size $\approx 13\%$ of the picture height, shadow 0.85, cream colour · before placing the text, a pass of magenta **airbrush** where the title will go (halo), then an **underline** with the yellow flat brush just below · 0.8 s fade on the clip. This is the cover of this guide.

What 1981 did not have: PB7 paints **on moving video**, in transparent **layers** that each have a **duration** on the timeline.

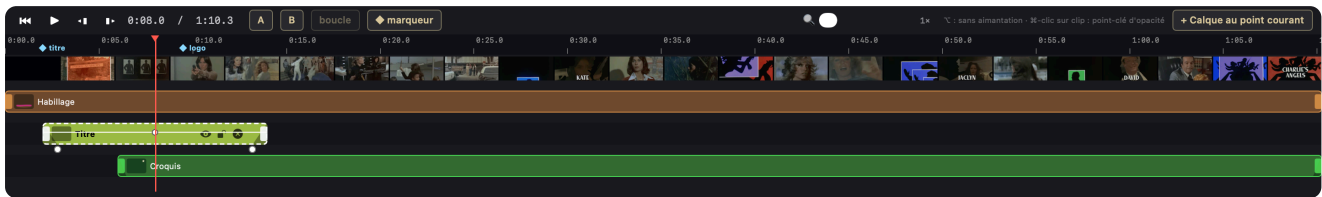


Fig. 3 — The timeline: transport, ruler with video thumbnails and ♦ markers, three tracks. The “Titre” (title) clip is selected (dotted border): stretch handles at the ends, fade handles below.

The background video

- 1 **Load media...** → a video. The canvas takes its size, the timeline its duration, the ruler fills with thumbnails.
- 2 ▶ starts playback (looping), ⏮ returns to the start, ◀▶ (or ⏪ ⏩) step one frame and pause. **Click on the ruler** places the playhead.
- 3 **Paint**: the stroke lands on the video, in the active layer.

Layers and clips

Notion	Detail
Layer	A transparent sheet the size of the canvas. Up to 8 . The first covers the whole duration.
Clip	The layer's bar on the timeline: the layer is visible only between its <i>start</i> and its <i>end</i> .
Active layer	The one you paint in: click its clip. Its name, opacity and fade are in the Active layer section.
Track	A row of the timeline. Several clips can follow one another on a track; stacking order = track (bottom to top), then start.

- 1 **+ Layer at current point** creates a layer starting at the playhead, on a new track. Rename it in the field of the Active layer section.
- 2 **Drag the clip** by its middle to move it in time; drag it **vertically** to put it on another track (the stacking changes).
- 3 Pull the **handles** at the ends to stretch or shorten the clip.
- 4 **Fade**: the slider in the Active layer section (0 to 3 s) or the **lower handles** of the selected clip draw the in and out ramps. No fade at the timeline bounds.
- 5 **Opacity**: the slider dims the whole layer.

Eye, lock, duplicate, delete

On the selected clip and in the Active layer section: 👁 hides the layer without deleting it, 🔒 blocks painting and moving, **Duplicate** copies the layer (paint, texts, curves) right after it, **Delete** (or ⌘ⓧ, or the clip's X, or right-click) removes it. **Right-click** on a clip gathers all of this.

Opacity keyframes

- 1 Select a clip. -click on it places a **keyframe**: its height within the clip = the layer's opacity at that moment. Without releasing, drag it to adjust.
- 2 Place more: PB7 draws the **curve** (white polyline) and interpolates between the points. The curve multiplies with the fades and the global opacity.
- 3 A point can then be **dragged** with the mouse; **right-click** on a point = “Supprimer le point-clé” (delete keyframe).

Markers, loop and zoom

Tool	Use
◆ marker	Places a named cue at the playhead. Click on ◆ = go; right-click = rename / delete. Markers are snapping targets.
A · B · loop	Sets points A and B at the playhead; “loop” replays the A→B excerpt (tinted zone on the ruler). Ideal for working on a passage.
	Timeline zoom from 1 to 20x; the content scrolls horizontally, the graduations adapt.
Snapping	While dragging a clip, it snaps to the playhead, to the bounds of other clips, to whole seconds, to markers. Holding  disables it.

Frame by frame and onion skin

- 1 Pause playback.  /  (or   ) step one frame, at the video's actual frame rate.
- 2 Turn on **Onion skin** (Media section): the *previous* frame appears as a ghost on the canvas, only while paused.
- 3 Create a short layer per frame (or per group of frames), paint the outline, step one frame, repeat: that is **rotoscoping**.

Recipe — following a character

Timeline zoom 8x · A/B loop on the 2 seconds of the movement · a 4-frame layer (handles snapped to seconds) · onion skin · thin white chalk, smoothing 0.5 ·   between each stroke. Duplicate the layer for the next sequence, and move the clip along the track.



THE DURING ROTOSCOPING

Lock the finished layers: no painting on them by mistake, no moving their clip. The  eye hides them to check a single layer at a time.

Saving and reopening

- 1 **Project** section → **Save as...**: choose a name. PB7 creates a **.pb7 folder**.
- 2 **Save** (or `%S`) rewrites the current project; its name is shown below the buttons.
- 3 **Open...** reloads a project: the video is reopened (the canvas takes its size back), then the layers, texts, curves, markers and pots.

What a project contains

File	Content
<code>projet.json</code>	The video path, the duration, the layers (name, start, end, fade, track, opacity, keyframes, visible, lock, texts), the markers, the colour pots.
<code>calque-N.png</code>	Each layer's paint, as a PNG with transparency, at the canvas size.



THE VIDEO IS NOT COPIED

The project *references* the video by its path: if you move or rename the video file, the project opens on paper, layers intact — then reload the video with “Load media...”. To carry a project around, take the video with it.



READABLE AND REUSABLE

The .pb7 folder is readable: the layer PNGs open in any software, the JSON can be edited if needed. A library of graphics “templates” is just a folder of .pb7 files.

11 Recording and exporting

Four outputs, all in the **Media** section:

Output	What it produces	When to use it
Export PNG...	The composite picture (background + layers + texts) <i>at the current moment</i> , at the canvas size.	A still, a thumbnail, a dressed frame.
Export video...	An H.264 .mov: the video frame by frame with the layers composited, fades and keyframes included, the original sound copied over . Without video: paper + layers at 25 fps.	The final result, ready to edit or broadcast.
Export layers (alpha)...	A ProRes 4444 .mov with an alpha channel : the layers and texts <i>alone</i> , transparent background, no video or sound, aligned on the source frames.	Laying the graphics over another picture in an editing application.
• REC	Records the composite output in real time to an H.264 .mov while you paint, play the video or shoot live. ■ Stop finalizes.	Performance: the painting gesture itself becomes the video.

Exporting the video, step by step

- 1 Check the clips: durations, fades, hidden layers (👁) — what you see during playback is what will be rendered.
- 2 **Export video...** → choose the .mov name.
- 3 The **progress bar** advances in the Media section; ✕ cancels. The final message names the file written.



EXPORT OR REC?

Export is computed offline, frame by frame, at the exact times of the source video: a deterministic result, faithful to the timeline. **REC** captures what happens on screen, live, at the machine's pace: it keeps the gesture, including strokes as they are being made. For finished graphics: export. For a performance or a live camera: REC.



VIDEO OUTPUT

The Paintbox was wired to the control room: its picture went out as a video signal, live, ready for air. “• REC” and “📹 Live” are the 2026 version of that real-time output.

12 Complete exercise — dressing a title sequence

Let's reproduce the cover picture: a title sequence whose title appears at 2 seconds, with a sketch that appears at 6 seconds.

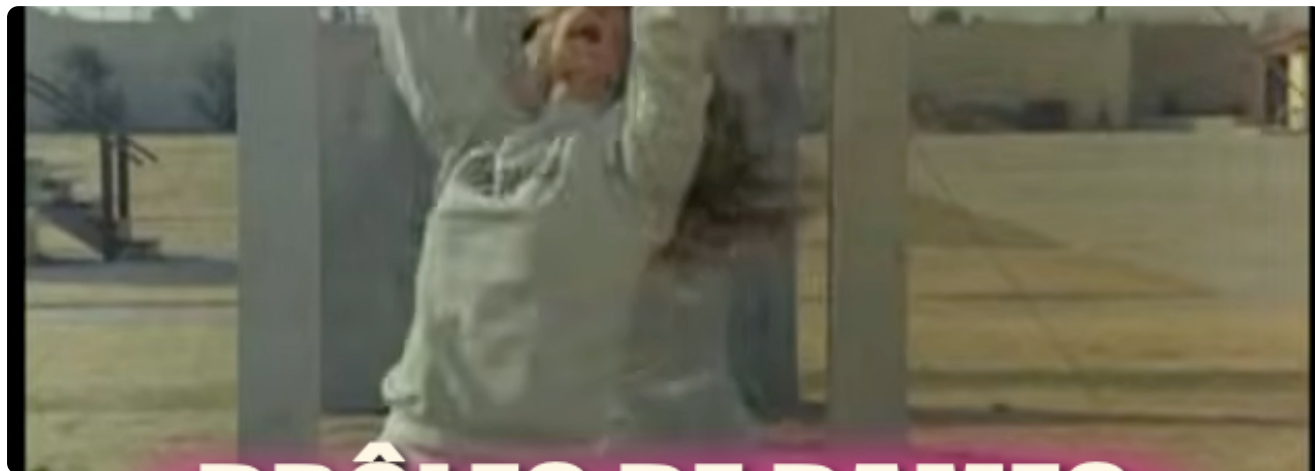


Fig. 4 — The result: magenta airbrush, Impact title with shadow, flat-brush underline, chalk star.

- 1 **Load media...** → the title-sequence video. The first layer covers the whole duration: rename it “Graphics”.
- 2 **Airbrush**, maximum size, magenta (pot it): one horizontal pass across the lower third of the picture — the title's halo.
- 3 **Paint**, **Flat** shape, size 11, yellow: a slightly curved stroke under the halo — the underline.
- 4 Put the playhead at **2 s** (click on the ruler, or ← → to be precise). + **Layer at current point** → “Title”. Stretch its clip to 14 s. Fade 0.8 s.
- 5 **Text** section: “DRÔLES DE DAMES” (or your own title), Impact, size ≈ 65 for a 480-pixel-high video, shadow 0.85, cream colour via the brush. **Place text**, click at the centre of the halo.
- 6 Playhead at **6 s**, + **Layer at current point** → “Sketch”, stretched to the end. **Chalk**, size 6, cream: a five-stroke star at top right.
- 7 On the “Title” clip, -click in the middle and drag the point to 60%: the title “breathes” midway through its appearance.
- 8 ♦ **marker** at 2 s (“title”) and at 9.5 s (“logo”) to find your way around. ► to check.
- 9 **Save as...** → “generique.pb7”. Then **Export video....**



VARIANTS

Same video, another episode? **Open...** the project, **Select / move** then click the title: change the text, keep everything else. Another video in the same format? Reload it with “Load media...”: the layers stay.

All the shortcuts

Key	Effect	Key	Effect
B A C G	Paint · Watercolour · Chalk · Eraser	⌘Z	Undo (active layer)
[]	Brush – / +	⌘S	Save the project
← →	Previous / next frame	⌘⌘	Delete the active layer
Space (magnifier)	Hand: pan the view	Return	Paste the floating selection
Alt-click	Eyedropper	Esc	Cancel the cut and restore
Right-click (canvas)	Magnifier centre	⌘ -click (clip)	Opacity keyframe
⌘ (dragging a clip)	No snapping	Right-click (clip, point, ♦)	Context menu

Files on disk

What	Where
Picture library image	<code>~/Library/Application Support/PB7/Bibliotheque/</code> — one time-stamped PNG per “stored” image
Colour pots	<code>~/Library/Application Support/PB7/pots.json</code> — read back at launch
Projects	<code>.pb7</code> folders wherever you save them: <code>projet.json</code> + one alpha PNG per layer
Library archives	<code>.zip</code> files (Archive... / Import...)

Command line

The executable `PB7.app/Contents/MacOS/PB7` accepts headless modes:

Command	Effect
<code>PB7 --paint-test sortie.png</code>	Draws the four materials on paper and exports.
<code>PB7 --export-video-test in.mp4 out.mov</code>	Paints two layers on a video and exports the composite.
<code>PB7 --export-alpha-test in.mp4 out.mov</code>	Exports a single layer as ProRes 4444 alpha.
<code>PB7 --project-test in.mp4 dossier.pb7</code>	Saves then reloads a project and checks it.
<code>PB7 --doc-shots dossier vidéo...</code>	Renders the visuals of this documentation.
<code>PB7 --demo vidéo</code>	Launches the interface with a prepared scene.

Troubleshooting

Symptom	Likely cause → fix
I paint and nothing appears	The active layer is locked  , hidden  , or the playhead is outside its clip → unlock, show, or move the playhead into the clip. Or Lasso / Select mode is on → turn it off.
The stroke is barely visible	Very light stylus pressure, or Watercolour (that's normal: build up the passes), or low layer opacity.
A new layer is invisible at its start	It has a fade-in: at its very beginning, opacity is 0. Step a few frames forward, or set the fade to 0.
The video does not appear when opening a project	The video file has moved → “Load media...” to reattach it.
The camera does not respond	Permission denied → System Settings › Privacy › Camera › PB7.