

Block-Based Motion Engine

Complete Reference Guide

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Installation

Easy Install (Recommended)

The easiest way to install and license PuzzleMotion is by using the [aescripts + aeplugins manager app](#).

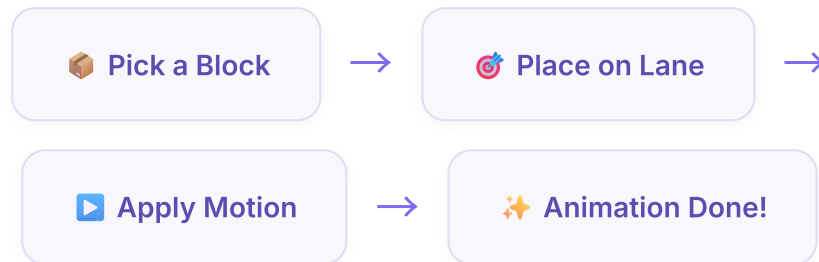
Tip: Log in to your aescripts account and check your product list. If PuzzleMotion does not appear, use **Products → Check for New Products** to refresh.

Alternative Install (ZXP Installer)

STEP	ACTION
1	Download ZXP/UXP Installer from aescripts.com .
2	Open the installer.
3	Drag and drop PuzzleMotion.zxp into the installer window.
4	Restart After Effects.
5	Open Window → Extensions → PuzzleMotion .

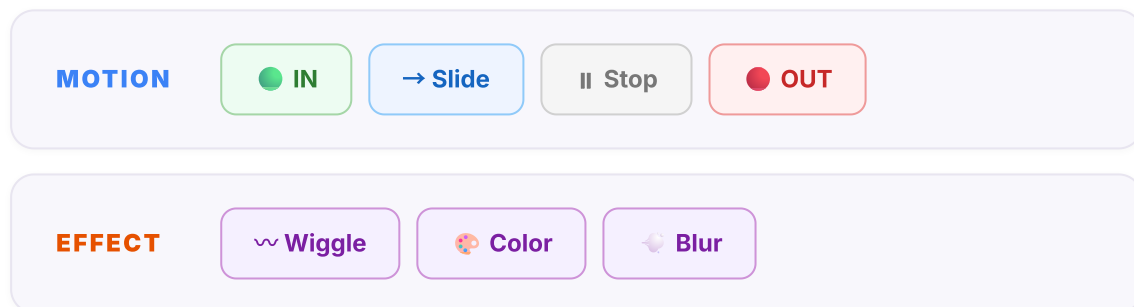
Core Concept & How It Works

PuzzleMotion lets you create complex animations by simply **arranging blocks** on a timeline. No keyframing required. You can achieve beautiful results instantly through trial and error.



Dual-Lane System

Two independent lanes run in parallel without interrupting each other:



Motion Lane: Handles fundamental movements like position, rotation, and scale transitions.

Effect Lane: Handles visual decorations like color changes, blur, shake, and elasticity. Runs simultaneously alongside the motion.

Overlay (stacked timing): Drag a palette block onto the **center 50%** of a timeline block (not the left/right edges) to merge—same start time and duration. Example: Slide + Scale + Rotate together. **Limits:** *Action (motion)* + *Combo* cannot be overlaid (transform conflict). **Custom blocks** cannot be drop-merged. Up to **3 blocks** in one stack for most mixes; additional **combo-on-combo** overlays may be allowed when the target is already part of a combo stack.

The panel is organized top-to-bottom: **header** (split / AUTO / eyedropper on the first row; **Generate Motion** and apply checkboxes on the second row) → **random / pages / stagger** → **motion & effect timelines** → **property inspector** → **resize bar** → **block palette** → preset save/load at the bottom.

1. Header Controls & Preparation

BUTTON	DESCRIPTION
Split Text	Breaks a text layer into individual character layers (Adds a PM_char_ prefix). Essential for character-by-character animation.
Split Path	Outlines text and breaks it into path strokes for drawing animations.
AUTO	The magic button. Select a text layer and click this to instantly perform: Split Characters → Generate Random Blocks → Apply Motion.
PM_setup	Adds the PM_ prefix to selected layers. Why is this needed? PuzzleMotion strictly uses this prefix to identify which layers it is allowed to control. While 'Split Text' adds this automatically, if you want to animate standard images, solid shapes, or nulls, you must click PM_setup first to mark them. Biggest Advantage: Once marked with PM_, it becomes an "Auto-Target"—meaning you can click "Apply Motion" without having to manually select the layer in After Effects ever again! This allows you to repeatedly smash the Random and Apply buttons to instantly cycle through endless variations like a Gacha machine.
 Eyedropper	Acts as a Visual Preset. Select any previously animated layer in AE and click this to fully restore its timeline blocks, layout, and settings onto the panel. This is often more convenient than saving traditional presets.
 Settings	Open settings dialog (Language, Auto Save, Export/Import presets). Note: Auto-save automatically falls back to your Documents folder if browser quota limits are reached.

1b. Apply Row (Header — Second Line)

CONTROL	DESCRIPTION
Generate Motion	Apply the current timeline blocks to After Effects. Seed +1 increments the scatter seed and applies again.
Seed (apply row)	Scatter seed for IN/OUT random positions when applying (separate from the Random-generation seed above the timeline).
Return to Layout	When checked, motion returns to the layout (design) position at the end of the sequence.
Sync	Align return timing so all layers land together.
Movement smoothing	Connect moves smoothly without stopping between combo segments.
Keep Existing	OFF: clean apply (reset PM expressions + snapshot). ON: skip reset on non-PM_char_ layers. Split character layers always reset.
Marker	Add composition markers at block timings.
Auto Center	Center anchor points automatically (skipped for PM_char_ layers).

2. Random Generation & Pages

CONTROL	DESCRIPTION
M: (min-max)	Number of motion blocks to generate randomly.
E: (min-max)	Number of effect blocks to generate randomly.
Random mode	IN, OUT, IN-OUT (adds a Stop; duration in Stop: field), or ACTION (motion blocks without IN/OUT poses).
Lv1~Lv5	Complexity level. Choosing a level automatically sets recommended M and E values. Lv1 is simple, Lv5 is chaotic.

CONTROL	DESCRIPTION
☒ Combo Only	When checked, random generation excludes Action blocks and uses only connected Combo blocks . Use this when you want smoother, less jumpy motion flows.
Right-click Palette Block	Right-click any block in the block palette to toggle Random Exclude ON/OFF. Excluded blocks are grayed out and will not be selected during Random generation. Right-click again to re-enable.
☒ Keep Pages	When checked, Random keeps your current page count and only re-rolls block contents. Example: with 5 pages prepared, Random will refill those same 5 pages without changing the page structure.
Pages (1, 2, 3...)	Create multiple distinct block patterns (Pages). You can assign Page 1 to the first character, Page 2 to the second, etc.
Per char:	Order in which characters receive each page when multiple pages exist: Normal , Selection (click order in AE), Reverse , or Random . With several pages, the label becomes Lane/page order instead.
Delay	Base stagger step between each layer's animation start (seconds). Combined with the stagger curve on the right.
Stagger curve	How delays spread across layers: Linear , Ease In , Ease Out , Center , Edges , Random , or Simul . (all layers start together). Use Simul . when you want no per-character offset.
Seed	Controls random reproducibility. Using the same Seed with the same settings reproduces the same random pattern; changing Seed gives a new variation.

3. Timeline & Block Editing

CONTROL	DESCRIPTION
MOTION Lane	Drag and drop Action/Combo blocks here.
EFFECT Lane	Drag and drop Effect blocks here.
Time Rnd	Min-max range (seconds) used by the dice/ruler tools below.
 Dice /  Ruler	Randomize or equalize the duration (length) of all blocks on the timeline within Time Rnd .
Random values / All	Randomize parameter values (distance, rotation, color, etc.) for the selected block, or for all blocks on all pages . Durations unchanged.
Bulk Ease	Apply one easing preset to every block at once.
Clear	Remove all blocks from the current page timeline.
Block Properties	Click any timeline block to edit duration, easing, and parameters in the property inspector (panel between the timeline and the block palette). Number fields show separate up/down spin buttons with a 1px gap.
Resize inspector	Drag the thin bar between the property inspector and the block palette (<i>Drag to resize inspector</i>). Drag down to increase inspector height; drag up to shrink.
Right-click block	Right-click a directional slide or combo-move block on the timeline to flip its direction (e.g. slideRight ↔ slideLeft). Does not apply to effects, Stop, or Custom.

4. Property Inspector — IN / OUT Blocks

When a **Basic IN**, **Vortex IN**, **Basic OUT**, or **Vortex OUT** block is selected, the inspector uses a **two-column layout**: direction pad on the left, all other fields on the right.

CONTROL	DESCRIPTION
Direction pad (3×3)	Pick the direction the layer moves during the IN/OUT block (8 arrows + center • for fade-only, no position offset). Arrows show <i>motion direction</i> : e.g. → = moves to the right , ↓ = moves down , ← = moves to the left .

CONTROL	DESCRIPTION
Distance	Slider + number (px) on the right column. How far to offset along the chosen direction.
Position random	Random start/end position within Radius . When on, direction pad and distance are disabled.
Radius	Scatter radius per block (independent of global default; Reset restores block default).
Scale / Rotation / Opacity	Start or end transform values during the IN/OUT block window (not only during return-to-layout). Random Rotation ($\pm \text{rot}$) varies rotation within $\pm$ the set amount.
Manual X/Y	Shows Offset X/Y fields for direct numeric entry; stays synced with direction + distance.
Type	Switch Basic IN ↔ Vortex IN (or Basic OUT ↔ Vortex OUT).

ACTION Action Blocks (Single Motions)

Blocks that complete a motion independently. When placed, they execute a standalone movement (e.g., slide in from the right).

BLOCK	DESCRIPTION	PARAMETERS
Slide (8-dir)	Slide from 8 directions (→←↑↓↗↖↘↙).	distance, easing, fade
Slide Random	Slide from a random direction	distance, easing, fade
Scale Up / Scale Down	Interpolate between start and end scale (%). Defaults: Up 0→100%, Down 300→0%.	scaleStart, scaleEnd, easing, fade
Rotate	Rotate by a specified angle during the block (single block; clockwise angle in params).	angle, easing, fade, randomRotation

COMBO Combo Blocks (Linked Motions)

Blocks designed to link together seamlessly. Used for continuous, flowing animations.

BLOCK	DESCRIPTION	PARAMETERS
IN	Entrance pose. Sub-type: Basic IN or Vortex IN . Inspector: direction pad + distance , scale, rotation, opacity, position random, radius.	poseDirection, poseDistance, offsetX/Y (manual), scale, rotation, opacity, randomInOut, scatterRadius
OUT	Exit pose. Sub-type: Basic OUT or Vortex OUT . If used alone,	Same as IN (direction pad, distance, scale, rotation, opacity,

BLOCK	DESCRIPTION	PARAMETERS
	timing syncs with the layer Out Point.	randomInOut, scatterRadius)
Stop	Hold at the layout position. Optional drift (wiggle while waiting) and return to layout before the stop window ends.	drift, returnToLayout, returnTime, returnMode, returnAdvance, sync
Combo Move (8-dir + Random)	Continuous move from the current position.	distance, easing
Combo Scale	Continuous scale change. Scale-down default -50 ($\approx 100\% \rightarrow 50\%$); -100 reaches 0%.	scaleAmount, easing
Combo Rotate	Continuous rotation by specified angle.	angle, easing, randomRotation
Circle Move	Draws a circular arc and returns.	radius, autoOrient

EFFECT Effect Blocks (Decorations)

Visual effects that run parallel to the Motion Lane.

BLOCK	DESCRIPTION	PARAMETERS
Wait (effectStop)	No effect. Adds spacing/timing on the effect lane.	keep
Squash / Jump	Elastic squash & stretch, or jumping bounce.	axis, strength, height
Wiggle / Shake	Continuous vibration or intense shaking.	frequency, amount, strength

BLOCK	DESCRIPTION	PARAMETERS
Rotate Wobble / Scale Wobble	Pulsating rotation or scale sway.	frequency, amount
Spring Move / Wave / Glitch	Spring overshoot, wave motion, digital glitch.	strength, frequency, amplitude
Fade / Blink	Fade opacity or rapid flashing.	fadeMode, frequency, keep
Blur	Fast Box Blur effect.	radius, keep
Fill Color (Random)	Random fill color changes. Can toggle visibility only during block.	amount, opacity, frequency, fillOn, keep
Fill Color (Solid)	Set fill to a specific color (default white). On image/footage layers uses the Fill effect with your chosen color, not After Effects' red default. Can toggle visibility only during block.	color, opacity, fillOn, keep
Stroke Color (Random)	Random stroke color changes. Can toggle visibility only during block.	amount, opacity, frequency, strokeOn
Stroke Color (Solid)	Set stroke to a specific color. Can toggle visibility only during block.	color, opacity, strokeOn, keep
Outline Only	Show stroke only (hide fill). Optional trim-based draw animation.	strokeWidth, trim

BLOCK	DESCRIPTION	PARAMETERS
Repeater	Duplicate shape elements for geometric patterns. Shape layers only (not split text).	copies, x, y, offset, rotation, startOpacity, endOpacity, scale, keep

Note: Palette counts: **12** action (motion), **16** combo, **19** effect = **47** built-in types, plus unlimited **Custom** blocks. Legacy types such as Round Corners / Trim Paths are not in the current palette.

CUSTOM Custom Blocks (User Motion)

Custom blocks let you **reuse keyframed motion from any After Effects layer** as a single timeline block—like a personal preset you built by hand in AE.

Workflow (step by step)

1. **Prepare a source layer in AE.** Animate it with keyframes on Transform (and optional effects). The layer must be **2D** (3D layers are not supported for capture).
2. **Select that layer** in the timeline or comp viewer (exactly one layer).
3. In PuzzleMotion, click  next to the **Custom** palette strip to open **Create Custom Block**.
4. Click **Capture** (or the full-width capture button). If it succeeds, a short summary appears (layer name, duration, captured properties).
5. Enter a **name**, pick an **icon**, then click **Register**. The block appears in the custom palette.
6. **Drag** your custom block onto the **Motion** lane. Effect parameters that were captured on the same layer are applied together when you run **Apply Motion** (you normally do not need a separate Effect-lane block for that).
7. Adjust the block **duration** on the timeline if needed, then select target layers and click **Apply Motion**.

Limitations & rules

- **2D only** for capture. Enable 3D on a layer → capture may fail or be blocked.
- **Custom + overlay groups:** You **cannot drop-merge** (center drop) a block onto a Custom block, or drop-merge a Custom onto another block—the panel blocks this. For predictable results, treat Custom as a *single* motion segment (see section 2 for what “overlay” means).

- If a property uses an **expression** and it is enabled, that expression is captured as part of the custom motion logic.

What gets captured (overview)

Typically: Transform **Position** (including separated dimensions when used), **Scale**, **Rotation** (Z / 2D rotation), **Opacity**, **Anchor Point**, and relevant **effect** parameters. **Text animators are not captured or reapplied** (selector logic and expressions do not round-trip reliably). The time range is taken from the **earliest to the latest keyframe** on scanned properties (including animator keys only for timing extent, not for export).

Duration on the timeline

The block length you set in PuzzleMotion is the time window used when applying the motion. The captured animation is **mapped into that duration** (easing and “Return to Layout” still apply according to your Apply options). For a result closest to what you keyed in AE, start by setting the custom block duration close to the **captured duration** shown after Capture.

Palette reference

CONTROL	DESCRIPTION
 (next to Custom)	Opens the custom creation dialog.
Capture	Reads keyframes from the currently selected AE layer into the dialog (does not register until you click Register).
Register	Saves the captured data as a named custom block with the chosen icon.
Delete	Remove a custom block from the palette (confirm dialog).

Backing up custom blocks

Registered customs are included when you use **Save** (named preset) and **Export** in Settings. A copy may also be written under your user **Documents** folder for recovery—use Export for a portable backup when moving to another machine.

Applying Animation & Marker System

Once your lanes are set, select the target layers and click [► **Apply Motion**].

Apply Options

These controls sit on the same row as **Generate Motion**. They define *how* PuzzleMotion writes to layers (reset, return, markers, etc.) — not which blocks are on the panel timeline.

OPTION	DEFAULT	DESCRIPTION
Seed / Seed +1	(empty or last used)	Controls repeatability of random scatter (random start/end positions). Same number → same random layout; change it or click Seed +1 to try another variation without editing blocks.
Return to Layout	☒ ON	After the last page, each layer returns to its layout position (post-split reference). Essential after Combo motion so characters do not stay offset.
Sync	OFF	With Return to Layout: aligns the return phase so every layer lands together even when stagger delays differ.
Motion Smoothing	OFF	Smooths Position between blocks (time-based spline). Useful for nulls/cameras. Not the same as shape-only effect blocks (trim, blur, etc.).
Keep Existing	OFF	OFF: Before apply, restores from snapshot and removes old PM expressions — clean pass. ON: Skips that reset on non-split layers so existing keyframes/expressions can remain; PM stacks on top. Split text layers (PM_char_) always reset regardless — see note below.
Marker	☒ ON	Places markers (e.g. PM: IN / PM: END) for timing; drag END to retime the whole stack.
Auto Center	☒ ON	Auto-centers anchor on non-split layers before apply. Split text uses the split pipeline layout.

Keep Existing — read this if results confuse you

PuzzleMotion normally “owns” the motion: it clears previous PM expressions and resets transforms from its snapshot (default **OFF**). If you turn **Keep Existing ON**, logos, solids, shapes, and precomps can keep prior keyframes while PM adds more — but **every PM_char_* layer is still fully reset every time**, because the per-character workflow requires a clean transform stack. This option never means “don’t touch my split letters.”

Restoring Data (Eyedropper & PM_Config)

PuzzleMotion stores all of your animation data directly inside the After Effects project, so you never lose your settings!

FEATURE	DESCRIPTION
PuzzleMotion Config	When you apply motion, a hidden Pseudo Effect named PuzzleMotion Config is added to the first layer of your group. This effect stores the entire block configuration as invisible text data. Do not delete this effect! Other layers in the group use a lightweight [PM_LINK] comment to point to this master layer to save memory.
 Eyedropper	This is a critical workflow feature. If you close the panel or want to reuse an old animation, select ANY layer from that animation group in AE and click  Eyedropper . It automatically finds PuzzleMotion Config and fully restores blocks, pages, and settings exactly as they were. This is the fastest and safest way to continue work without rebuilding timelines manually.

Important: Keep PuzzleMotion Config on the master layer. Deleting it prevents Eyedropper restore.

Internal effects on split text / shapes (do not remove)

After **Split Text** or converting text to outlines, you may see extra **Effect Parade** items on PM_char_* layers (often grayed out or disabled in the Effect Controls panel). They are **not** stray plug-ins — PuzzleMotion uses them as metadata.

EFFECT / PROPERTY GROUP	WHAT IT IS
PM_Orig_Text_StrokeOn	A hidden Slider recording whether the source text had a stroke ON (≈ 1) or OFF (≈ 0) <i>before</i> outlines / split. The engine uses this so outline-related blocks and stroke expressions do not add an unwanted stroke when the original text had no stroke. Do not delete it — removing it can make strokes appear or behave incorrectly until you re-split or re-apply from a clean text layer.
PM_Orig_State_Saved and PM_Orig_*	Hidden sliders / point controls that store a transform snapshot of the layer (anchor, position, scale, rotation, opacity) for reset and restore inside the split pipeline. Leave them in place unless you are intentionally stripping PuzzleMotion from the layer.

The Marker System (Real-Time Scaling)

When animation is applied, two markers are placed on the layer:

MARKER	DESCRIPTION
PM: IN	Entrance animation start point.
PM: END	Animation end point.

💡 The Greatest Feature: Real-Time Speed Adjustment

You never need to re-keyframe. Simply grab the **PM: END** marker and drag it left or right on the After Effects timeline. The duration of all blocks will proportionally stretch and compress instantly! This makes PuzzleMotion incredibly powerful for quick client revisions.

PM Mode (PuzzleMotion Mode)

PM Mode (short for **PuzzleMotion Mode**) connects PuzzleMotion with our AI assistant **mirAI** (sold separately on aescripts). You start PM Mode from the **mirAI** panel, describe the motion in chat, and mirAI arranges blocks on PuzzleMotion's **Motion** and **Effect** lanes. Switch to the PuzzleMotion panel to review the result — blocks appear in the same order mirAI designed — then fine-tune timing, parameters, or individual blocks before you apply to After Effects.

How it feels in practice: Create the motion in mirAI's **PM Mode**, then look at the PuzzleMotion panel. The timeline is filled with matching blocks, ready for manual tweaks — just like building by hand, but with a head start.

Requirements

- PuzzleMotion and mirAI both installed and licensed.
- **Window → Extensions → PuzzleMotion** and **Window → Extensions → mirAI** open at the same time.
- A comp open with the layer(s) you want to animate selected (or ready to select).

Step-by-step workflow

STEP	ACTION
1	Open both the PuzzleMotion and mirAI panels in After Effects.
2	Prepare your layer(s). For per-character text motion, select the text layer and use Split Text in PuzzleMotion first. For shape, logo, or footage layers, select the target layer(s) — splitting is not required.
3	In the mirAI panel, click the PM button to enter PM Mode (PuzzleMotion Mode) . (The PM button appears when PuzzleMotion is also open.)
4	In mirAI's chat, describe the motion in timeline order (e.g. <i>"Enter from the left with a bounce, hold, then exit to the right"</i>). mirAI sends the block design to PuzzleMotion.
5	Open the PuzzleMotion panel. Confirm blocks on the Motion and Effect lanes match what you asked for, then adjust blocks, stagger, or pages as needed.

STEP	ACTION
6	Select target layers and click Generate Motion to write expressions to After Effects.

Starting PM Mode (mirAI only)

PM Mode is started from **mirAI**, not from PuzzleMotion. There is no PM Mode button on the PuzzleMotion panel.

PANEL	WHAT TO CLICK	WHAT HAPPENS NEXT
mirAI	PM button (visible when PuzzleMotion is open)	Enters PM Mode. Select your layer in AE, describe the motion in chat, and mirAI builds the block layout.
PuzzleMotion	(no PM Mode button)	Blocks from mirAI appear on the timeline automatically. Use PuzzleMotion to review, edit, and apply with Generate Motion .

Important: PM Mode fills the **block timeline only**. It does **not** apply animation to layers by itself unless mirAI is configured to run a full apply step. In the standard workflow, always finish with **Generate Motion** after you are happy with the lanes.

Tips for chat prompts

- Describe motions in the order they should play — first thing you say should be the first block on the timeline.
- Mention entrance / hold / exit explicitly when you need IN-OUT structure (e.g. slide in → stop → vortex out).
- For scattered or staggered text, say so (e.g. *"characters appear one by one from random directions"*).
- Follow-up messages can tweak the end of the timeline; you do not need to rebuild from scratch each time.

Troubleshooting

ISSUE	WHAT TO TRY
PM button missing in mirAI	Open both panels (PuzzleMotion and mirAI). If it still does not appear, use mirAI's Reload Panel (or restart After Effects). PuzzleMotion's Reload Panel can help too if blocks do not update.
Blocks never appear in PuzzleMotion	Confirm the PM button is active in mirAI. Wait a few seconds, then try mirAI's Reload Panel . Keep the PuzzleMotion panel open while you chat.
Something looks wrong or out of sync	Reload Panel on mirAI first (recommended). If needed, reload PuzzleMotion as well, then enter PM Mode again and resend your prompt.
Design looks wrong	Edit blocks manually on the timeline, use Random for variations, or send a shorter follow-up prompt in mirAI.
Nothing moves in the comp	PM Mode only places blocks. Select target layers and click Generate Motion .