SPEEDRENT GARAGE · HOBBY REFERENCE

Tamiya Mini 4WD Chassis Tuning Playbook

Basic → Intermediate → Pro setup progression for every current chassis, plus a 3-lane vs 5-lane track tactics guide.

MS · MA · ME | VZ · AR · VS | SUPER II · X · XX | FM-A

Prepared for Wei Zien | Compiled July 2026

Sourced from Tamiya official regulations/spec pages and the Japanese & English competitive Mini 4WD community. Uncertain or single-source claims are flagged ⚠️ inline.

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1 · Tuning Fundamentals

1.1 Motors

Tamiya splits motors into two families: **single-shaft** (rear/front-motor chassis: AR, VZ, VS, Super II/X/XX, FM-A) and **double-shaft PRO** (midship chassis: MS, MA, ME). Per the current official regulation, **motor legality is tied to chassis type, not race class** — ME/MA/MS may run the kit normal motor plus any double-shaft PRO motor; every other chassis is restricted to the normal motor plus the single-shaft tuned/dash ladder below.

Motor	Shaft	Current (mA)	RPM range	Torque (g·cm)	Character
Normal (FA-130 / kit motor)	Both	1100	9,900–13,800	10	Baseline — legal everywhere, including Stock Class
Rev-Tuned 2 (+ PRO)	Both	1600–2000 / 1500–1800	13,400–15,200	12–15	Mild all-rounder, cheapest legal upgrade
Torque-Tuned 2 (+ PRO)	Both	1700–2000	12,300–14,700	16–21	Best average speed/consistency in independent bench tests — the default "safe fast" pick
Atomic-Tuned 2 (+ PRO)	Both	1500–2200	12,700–14,900	15–18	Balanced torque/speed
Light-Dash (+ PRO)	Both	1500–3000	14,600–17,800	13–19	Lowest speed-variance of the Dash tier — most consistent
Hyper-Dash 3 (+ PRO)	Both	2400–3000 / 1600–3000	17,200–21,200	14–19	Standard Open/Champions-level power
Mach-Dash (PRO only, double-shaft)	Double	2400–3000	20,000–24,500	13–18	Fastest PRO motor in independent tests — high RPM, straight-heavy tracks
Power-Dash	Single	2500–3300	19,900–23,600	16–20	Single-shaft only — no PRO/double-shaft version exists
Sprint-Dash	Single	2800–3800	20,700–27,200	14–19	Highest RPM ceiling — single-shaft only

⚠️ There is no "Power-Dash PRO" or "Sprint-Dash PRO" double-shaft motor — several online lists reference them, but neither appears in Tamiya's current catalogue. Don't shop for one.

> **Pairing rule of thumb** (Tamiya's own setup guide): pick the **course** first. High-torque motors (Torque/Atomic-Tuned) suit twisting, undulating, technical circuits; high-RPM motors (Mach/Sprint-Dash) suit courses with long straights. Only after that, match gear ratio to the motor (§1.2).

1.2 Gear Ratios

Five ratios exist: **3.5 / 3.7 / 4 / 4.2 / 5 : 1**. Critically, **MS and MA (and ME, by inheritance) officially top out at 4:1** — Tamiya's own gear-matching chart has no official 4.2:1 or 5:1 set for the double-shaft midship family. Single-shaft chassis (FM-A, AR, VZ*, VS, Super II/X/XX) get the full 5-ratio spread.

Ratio	Single-shaft gears	MS/MA/AR gears	Character
3.5:1	light-blue counter / yellow spur	yellow-green counter / pink spur	Top speed, least torque

3.7:1	green counter / yellow spur	yellow counter / pink spur	Balanced default — most-recommended starting ratio
4:1	black counter / light-brown spur	blue counter / orange spur	More torque/control, less top speed
4.2:1	red counter / light-brown spur	not offered	Climbing/technical torque
5:1	blue counter / yellow-green spur	not offered	Max torque, beginner-friendly control

⚠️ VZ postdates Tamiya's last published gear-matching PDF (2017); its compatibility is commonly assumed to follow the AR/single-shaft family but this is inferred, not officially confirmed.

Bench testing on a Hyper-Dash PRO motor found roughly: 3.5:1 → highest top speed; 3.7:1 → balanced; 4:1 → highest acceleration but lowest top speed. Break gears in gently under load with fresh grease before a race — most "grinding" complaints trace back to skipped break-in rather than a bad part.

1.3 Tires, Wheels & Rollers

TIRES

- **Diameter classes:** large (~31mm) for top speed → medium → small (~26mm) → low-profile → super-low-profile for technical/3D control. Smaller diameter = lower centre of gravity + quicker direction change, at some cost to straight-line speed.
- **Compound:** soft < hard < super-hard < low-friction. **Low-friction tyres now dominate winning setups** at official 2025–26 Japan Cup events almost universally — they trade cornering grip for reduced rolling resistance, which pays off on courses that are more about surviving 3D sections than gripping through flat corners.
- True (sand/file) tyres for roundness before a race; an out-of-round tyre reads as unexplained vibration or pulling to one side.

ROLLERS & BEARINGS

- Sizes: 9 / 11 / 13 / 17 / 19mm, in plastic, aluminium, or ball-race.
- **Roller setup is the single biggest handling lever** — more so than motor choice for most club racers. Smaller rollers (9–13mm) suit tight, technical 3-lane courses; larger (17–19mm aluminium-bearing) suit wide 5-lane courses with rigid section-joint steps.
- Two-tier (2段) roller stacks spread wall-impact load across two contact heights instead of concentrating it at one point — standard on serious jump-capable builds.
- Mount low where the course wall is flexible ABS resin (3-lane shop tracks); mounting height matters less on rigid 5-lane material.

1.4 Mass Dampers, Chochin/Hikuo & Brakes

Mass dampers absorb landing energy Newton's-cradle style: a loosely-mounted weight either strikes the chassis on rebound (cancelling the bounce that would otherwise relaunch the car) or itself absorbs the impulse. Mounting the mass further out on a lever arm gives stronger damping for the same weight — hence "hanging" the weight off an extended arm rather than bolting it flush to the chassis.

提灯 CHOCHIN (LANTERN)

An arm (usually FRP/carbon) pivots off the front or rear bumper, carrying a mass damper (often under a small body-panel "roof," hence "lantern"). On a jump, the lighter arm+damper assembly floats relative to the heavier main chassis; on landing the arm swings down and strikes the chassis, cancelling

ヒクオ HIKUO

Same physics, mounted as low as possible via a stepped/zig-zag arm under the chassis instead of an elevated overhead arm. Lowers CG and can strike the track directly behind the front tyres. Trade-off: pin-mounted hikuo rigs are more fragile in crashes

rebound. Standard build: 4× metal shaft bearings, 2× AO-parts springs, brake sponge, FRP arm stock. Use smooth (non-threaded) pins as the pivot — a threaded screw adds friction and kills the free movement that makes it work.

than a standard chochin; for casual/3-lane racing, chochin's simplicity is usually judged good enough.

BRAKE SPONGES

Grade	Relative strength	Use
Gray	Strongest	Big drops / steep slopes, 5-lane jump sections
Black	Medium	General-purpose
Green	Weakest (despite being thickest)	Light scrubbing, technical 3-lane corners
White (replaced discontinued Red, 2023) / Blue	Selectable 1/2/3mm, strong / mild	Precision thickness stacking

Front brakes are more effective than rear (they engage before momentum builds, rather than fighting existing momentum). On banked corners, cut/angle the brake plate so the sponge *doesn't* touch the bank surface itself (that just scrubs speed you don't need to lose) but *does* touch flat or downslope sections — called "bank-through" tuning.

1.5 Chassis Flex Philosophy

Modern competition courses have real 3D sections — banks, jumps, lane changers — where a perfectly rigid chassis just transmits every impact straight into the wheels and bounces the car off-line. Japanese racers deliberately cut the chassis to create a crude pseudo-suspension:

- **MSフレキ (MS-Flex)** — MS's chassis is cut at the front and rear joints of the center unit, separating it into three pieces. Material is relieved from the gearbox areas so the pieces can pivot; they're rejoined through enlarged mounting holes fitted with a slide-damper spring, so the front and rear units compress/extend independently against spring resistance. This is **the dominant setup at official 5-lane Japan Cup/GP racing** — it won roughly 90%+ of class titles across 2025–26 events (see §3.5). MS is uniquely suited to this because it's already built from three separate bolted units; other chassis need much more invasive cutting to flex meaningfully.
- **ATバンパー (AT / auto-track bumper)** — a pivot/spring-mounted bumper that gives when it strikes a wall instead of staying rigid, preventing "スラスト抜け" (thrust loss): on a rigid bumper, a hard wall hit can lift the front roller off the wall entirely, and the car rides up and off-course at the very next corner.
- **スラダン (slide damper)** — the bumper (and its rollers) slides horizontally against a spring on wall impact instead of transmitting the hit rigidly into the chassis. Spring hardness and grease viscosity trade absorption for cornering speed.

> **Regulation nuance:** chassis cutting is legal in normal Open/Junior/Family/Trial/Champions classes provided the "original form" stays recognisable. It is **explicitly banned** in Tamiya's official Stock Class and in B-MAX GP (unified rulesets, effective June 2026) — no chassis lightening, cutting, or custom chassis at all. This is the core reason Stock Class exists as a separate, 3-lane-oriented discipline (see §3.5).

1.6 Beginner → Competitive Upgrade Order

The consistent philosophy across every source: **Finish → Stability → Speed.** Don't chase motor power before the car can reliably complete a lap.

1. **Free:** deburr the kit as supplied. Don't touch the motor yet — the stock motor is genuinely fine to learn on.
2. **First parts to buy:** rechargeable battery (more test runs per charge) → shaft bearings on the axles (~1.2× speed over stock bushings) → counter-gear bearing set → 19mm front bearing rollers (aluminium) → 19mm rear rollers ×2 → front/rear carbon or FRP stays (to legally mount the extra rollers) → front/rear mass dampers.
3. **Only after the car is stable:** upgrade the motor and match a gear ratio to it and the track.
4. **Once fast and mostly stable:** layer on jump/landing control — mass damper tuning → chochin/hikuo → AT bumper/slide damper → chassis flex.
5. **Fine-tuning:** brake grade/placement, gear ratio micro-adjustment, motor break-in, symmetry checks. Change **one variable at a time** and re-test — altering brakes and rollers together makes failures impossible to diagnose.

1.7 Common Mistakes

Mistake	Why it bites
Over-motoring for the track/class	A car that's too fast for its rollers/brakes just course-outs more, not laps faster
Ignoring front/rear weight balance	Bad weight split makes jump attitude and cornering unpredictable regardless of parts fitted
Cheap or poorly-fitted bearings	A ball bearing forced into an unreamed socket can add *more* friction than the stock bushing it replaced
Too much brake	Kills straight-line speed and can stall the car on climbs — brake only where the course needs it
Asymmetric left/right setup	Uneven roller height, spring tension, or damper mass causes wobble and unpredictable lane changes
Skipping motor break-in (ならし)	A motor run hot straight out of the pack loses magnet strength faster than one broken in with cooling breaks on alkaline power

2 · Per-Chassis Tuning Progression

For each chassis: what a stock build looks like, what breaks first, what a hobbyist adds next, and what a genuinely competitive build does differently — plus the one problem you'll hear about more than any other for that chassis.

MS — Midship

DOUBLE-SHAFT · MIDSHIP · 2005

Layout: 3-piece modular (front/center/rear units) **Wheelbase:** 80mm **Weight:** ~125g

Meta status: Dominant — won ~90%+ of Japan Cup/GP class titles 2025–26

BASIC

Stock modular build is the most GUP-compatible, most customisable chassis in the line-up. First problem under a strong motor: the snap-fit gear cover pops off on hard landings — under sudden deceleration the counter gear is forced upward against its shaft. Cheapest fix is Tamiya's official reinforced screw-down gear cover (item 15363).

INTERMEDIATE

Front chochin-style bumpers, AT slide dampers, rear anchors. Watch out for MS's own part variants: "normal" vs "lightweight" center units, and N1/N2 front-unit and T1 rear-unit mould variants aren't fully interchangeable in feel/clearance — a common intermediate mistake is mixing parts assuming they're all the same MS.

PRO

MSフレキ is the build. Center chassis cut into three pieces, gearbox protrusions trimmed, front/rear units re-attached via a spring-centred pivot (screw + spring, ~3mm spacer controlling travel). Stiffness tuned via damper grease at the contact faces (aim for slow, controlled return, not a snap-back) and by filing surfaces to cut friction without introducing rattle. Two build styles exist: 支柱残し (pillar-retained, easier/beginner path into flex) vs full pillar-removed (harder, more travel). At the sharp end, racers pre-emptively cut off the flex tabs (ツメ) that otherwise crack in racing, since testing shows removing them doesn't cost meaningful speed.

Signature headache: gear cover popping off under hard landings with a strong motor — fixed with the reinforced screw-down cover, but it's the most repeated MS complaint across every source consulted.

MA — Midship Aero

DOUBLE-SHAFT · MIDSHIP · 2013

Layout: one-piece ABS monocoque **Wheelbase:** 80mm **Weight:** ~126g (heaviest current chassis)

Meta status: Solid mid-pack — occasional Stock Class wins, rarely tops open 5-lane events

BASIC

Fuses MS's midship drivetrain with AR-style aero underbody; low CG, rear skid bar for slope braking, motor-cooling duct. Being a rigid monocoque (not modular), setup errors show up immediately as bouncing on landings and unstable cornering — MA punishes a bad setup harder than MS does. Common beginner mistake: buying MS GUP parts assuming midship compatibility — most MS-specific parts don't fit MA despite the shared layout.

INTERMEDIATE

Bearing/shaft swaps to cut rotational resistance, shaft-straightness checks (a bent shaft silently brakes the car), tyre diameter choice traded against gear ratio for the course's straight length. Mistake to avoid: upgrading the motor before the drivetrain/roller/brake basics are dialled in, and over-weighting mass dampers instead of tuning their *position* first.

PRO

Because MA's monocoque doesn't lend itself to a flex conversion the way MS does, pro builds lean on precision instead: brake tuning, careful mass-damper placement, and drivetrain efficiency work — degreasing new bearings (factory grease is itself a drag source), gold-plated terminals, disciplined motor break-in. There's no widely-documented "MA-flex" community meta comparable to MSフレキ.

Signature headache: MS-parts incompatibility despite sharing the midship label, plus a rigidity-driven bounce/instability tendency on landings that's less forgiving of setup mistakes than MS.

ME — Midship Evolution

DOUBLE-SHAFT · MIDSHIP · JAN 2026

Layout: 1-piece frame, split front/rear bumpers **Wheelbase:** 80mm (asymmetric tread: 60mm front / 66mm rear)

Weight: 117g (~8g lighter than MA) **Meta status:** Emerging — thin data, <6 months old as of this report

BASIC

Newest midship chassis, deliberately light and "supple" per Tamiya's own description, with a bumperless-friendly design that allows brake mounting closer to the wheels than MA permits. Reported competitive close to MA even before drivetrain tuning. The front bumper area is reported as relatively fragile — several builders report cracking there.

INTERMEDIATE

Reinforcing the front bumper mount is the main early theme; the bumperless design drops the screw-hole count in that area from 4 to 2 in places, concentrating stress. Some builders report a persistent unexplained running noise not resolved by simple drivetrain repositioning — treat as an open issue, not a solved one.

PRO

Too new for a settled competitive meta. One Japan Cup 2026 build-log source described MSフレキ and ME as offering "broader tuning options and stronger track records" than VZ — implying ME is being taken seriously at a competitive level, but it has not displaced MS at the top as of mid-2026; its one big result (multiple wins at a March 2026 Tokyo event) came in an **ME-only restricted class**, not open competition.

Signature headache: fragile front bumper / reduced mounting-hole count at the bumperless front, concentrating stress right where landings load the chassis hardest. ⚠️ Treat all ME pro-tier guidance as provisional — expect it to change fast.

VZ — rear-motor

SINGLE-SHAFT · REAR-MOTOR · ~2020

Layout: tool-free bumperless conversion **Wheelbase:** 80mm **Weight:** ~108g (lightest current chassis)

Meta status: Occasional 5-lane class wins; second-tier behind MS

BASIC

Newest rear-motor platform, lightest in the current line-up, designed for bumperless conversion without cutting and generous GUP mounting points — genuinely beginner-accessible. Its signature weakness shows immediately: **side stays crack under repeated impacts**, worse once the bumper is removed, because the rear section loses its main reinforcement.

INTERMEDIATE

Full FRP plating with pivoting AT bumpers/anchors; FRP sub-plates bolted to the sides specifically to reinforce the fragile panels. One documented setup mistake specific to VZ: mismatched or single-roller front setups proved unreliable — double 13mm aluminium-bearing rollers up front are the fix that stuck. Recommended baseline parts: AR-family gearing set (full 3.5–5:1 range), one-lock reinforced gear cover, fluorine grease, and a choice between hollow shafts (lighter, bends easier in crashes) or reinforced shafts (heavier, crash-resistant).

PRO

Tune-class lightweight builds or B-MAX/Stock-legal builds that lean on VZ's low base weight. Advanced front-end work includes a stepped-down AT slide-damper mount (段下げATスラダン) to fix front geometry issues that plain AT bumpers don't fully solve. Racers commonly cite VZ's motor swap as fiddlier than FM-A's bottom-access design — a practical annoyance at race meetings, not a speed issue.

Signature headache: side-stay cracking under repeated collisions, worst once bumperless — the single most repeated VZ complaint across independent sources.

AR

SINGLE-SHAFT · REAR-MOTOR · RIGID

Layout: integrated front-to-rear stays, one-piece rigidity **Wheelbase:** 82mm **Weight:** ~123g

Meta status: Occasional wins; valued for ease of adjustment

BASIC

Stiff, heavy, low-ground-clearance, very high built-in rigidity, drivetrain accessible from underneath without disassembling the body. Weight is on the heavy side versus contemporaries. The main basic-tier issue: **motor "sag"** — under load the stock motor mount can droop out of true alignment, bleeding torque.

INTERMEDIATE

Rear anchor-style dampers, mixed front/rear tyre diameters (watch for side-stay geometry needing minor trimming to clear). Drivetrain-efficiency work matters more on AR than most: gold-plated terminals + sponge-secured battery contacts (prevents disconnection on impact), 1.5mm spacers to remove gear play, and setting motor position by ear — the quietest gear mesh is the lowest-friction one.

PRO

Custom carbon motor-cover claws replacing the factory snap claws, bonded and countersunk-reinforced from underneath, plus a fabricated carbon brace bracing the motor from below to eliminate sag entirely — this is what unlocks small-diameter forward-rotation tyre setups that are otherwise considered unworkable on AR. A distinct "AR flex" technique also exists among top racers, separate from MSフレキ.

Signature headache: motor sag/droop under load, fixed with a custom carbon motor brace. ⚠️ Note: the commonly-assumed "AR gear cover pops off" complaint is not well-documented — that specific failure mode is actually best-documented on **MS**, not AR. Don't conflate the two.

VS

SINGLE-SHAFT · REAR-MOTOR · 1999

Layout: short wheelbase, fixed counter gear **Wheelbase:** 80mm **Weight:** ~113g

Meta status: Largely superseded by VZ for serious 3D-course racing

BASIC

A fixed counter-gear design delivers stable power with minimal drivetrain fiddling — reportedly competitive "straight out of the manual," unusually forgiving for a stock build. Downsides show fast: notably fragile with real flex you didn't ask for, weak side stays that limit which reinforcement parts fit, and gear covers prone to detachment.

INTERMEDIATE

A front chochin while keeping the lightweight philosophy that's VS's whole appeal — piling on reinforcement defeats the point of choosing this chassis.

PRO

Strategic 3-point rear stays, selective (not heavy) damper placement, precision drivetrain work. The honest consensus across sources: VS is now considered outclassed at the top level — VZ offers more strength and damping capacity for similar weight, and modern jump-heavy courses favour higher-damping chassis over VS's fragile flex.

Signature headache: weak side stays limiting reinforcement-part compatibility, compounded by increasing difficulty sourcing kits since it's a legacy (1999) chassis.

Super II (S2)

SINGLE-SHAFT · REAR-MOTOR · LEGACY

Wheelbase: 80mm **Weight:** ~115g **Meta status:** Legacy/nostalgia — rarely competitive today, undeservedly maligned

BASIC

Tamiya's own description: "excellent acceleration and cornering with a straightforward upgrade path." Widely perceived online as slow — but a detailed community Q&A concludes this reputation is really about it being *harder to tune well* rather than hardware-inferior; racers who don't adapt their approach to S2 default to blaming the chassis. A rumoured "which mould number is faster" urban legend is explicitly debunked as folklore, not worth chasing.

INTERMEDIATE

Historically the body-catch mechanism was a known early failure point; a reinforced one-lock gear cover is the standard durability fix once basics are sorted.

PRO

No well-documented dedicated "S2 meta" comparable to MSフレキ or AR-flex exists in current sources — it has largely receded from serious 5-lane competition in favour of newer chassis, which is itself the finding: S2 today is a legacy/collector pick, not a competitive one.

Signature headache: an undeserved "it's just slow" reputation that community consensus attributes to tuning skill, not hardware.

Super X / Super XX

SINGLE-SHAFT · REAR-MOTOR · LEGACY, WIDE-TREAD

Layout: wide tread, long wheelbase (84mm) **Weight:** Super XX ~119g

Meta status: Niche/open-class pick, not mainstream competitive

BASIC

Marketed for stability via wide tread and long wheelbase; a nose guard permits varied roller settings. One detailed community source is blunt about not recommending this pair for new builds: fewer mounting/screw holes than modern chassis, especially at the front, and — the standout problem — **the rear section snaps/breaks off (もげやすい) without added reinforcement**.

INTERMEDIATE

Tamiya's own official FRP multi-reinforcement plate for the Super X chassis directly addresses the rear-breakage issue. Drivetrain alignment across motor shaft, counter shaft, wheel axles and propeller shaft needs careful attention; forward-rotation builds should support the switch-side propeller shaft via battery-area screws, reverse-rotation builds need stronger reinforcement at both propeller-shaft mounts since the upward load is continuous rather than intermittent. Note: Super X/XX are the only chassis that support forward rotation with the orange (non-helical) crown gear, which is a deliberate reason some racers still pick them.

PRO

No strong evidence of an active, well-documented top-tier competitive meta. Today this pair is best understood as a niche/open-class choice valued for its orange-crown-gear compatibility and bottom-access motor removal, not a mainstream competitive pick.

Signature headache: the rear section snapping off without reinforcement — the single most explicit, repeated warning found for this chassis pair.

FM-A — Front-Motor Aero

SINGLE-SHAFT · FRONT-MOTOR · 2017

Wheelbase: 83mm **Weight:** 117g (kit spec), built weight often heaviest in practice

Meta status: Near-zero wins in open 5-lane competition; strong in restricted classes (B-MAX/Stock)

BASIC

Motor sits immediately behind the front axle, needing reversed rotation from every other family — don't reuse a rear-motor-broken-in motor here without re-running break-in in the FM direction. Motor removes from the underside without touching the body — genuinely the easiest chassis to service trackside. Front-weighted layout gives flat, nose-controlled jump attitude, but the well-documented failure pattern is **front-wheel digging in after a landing → bounce → course-out** (前刺さり).

INTERMEDIATE

A sound three-stage approach: (1) drivetrain efficiency first — gear/shaft/bearing work establishes baseline speed without touching stability; (2) suspension geometry — two-stage rollers to spread wall impact, brake position tuned specifically to reduce front digging; (3) attitude control via mass dampers once brakes alone can't fix residual post-landing pitch. Change one variable per test session — FM-A's failure mode has enough overlapping causes that mixing changes makes diagnosis nearly impossible.

PRO

The chassis's signature engineering problem: the motor sits exactly where a standard front chochin arm wants to live, leaving almost no clearance. Off-the-shelf lantern arms don't fit — competitive builders hand-fabricate a joinery-cut carbon arm (carbon over FRP for strength at the thin tapered tip), positioned to strike the chassis side edge rather than the battery cover, with eyelet-reinforced screw points. Alternative: skip the top-mounted lantern and run a **ヒクオ (hikuo)** low-mounted damper instead, which several analysts argue suits FM-A's front-heavy geometry better anyway.

Signature headache: front motor placement blocks front-chochin clearance, forcing custom hand-built arms instead of bolt-on parts — the best-corroborated chassis-specific problem in this entire report, confirmed independently by multiple builders.

2.10 Signature-Headache Summary

Chassis	Signature headache	Standard fix
MS	Gear cover pops off on hard landings	Reinforced screw-down gear cover (item 15363)
MA	MS parts don't fit; unforgiving of setup errors	Buy MA-specific GUP; nail rollers/brakes before speed
ME	Fragile front bumper, low hole count	Reinforce mounting area (still evolving)
VZ	Side stays crack, esp. bumperless	FRP side sub-plates
AR	Motor sag under load	Custom carbon motor brace
VS	Weak side stays, hard to source	Keep it light; don't over-reinforce
Super II	Undeserved "slow" reputation	Adapt tuning approach, not chassis
Super X/XX	Rear section snaps off	Official FRP multi-reinforcement plate
FM-A	No clearance for a front chochin	Hand-built carbon arm, or switch to hikuo

3 · 3-Lane vs 5-Lane Playbook

3.1 Physical Track Differences

Officially, lane width (115mm) and fence height (50mm) are the **same regulation figures** for both 3- and 5-lane courses — there's no separate dimensional spec per lane count. The real differences are material, joint precision, and section complexity:

	3-Lane (shop / Stock Class / B-MAX GP)	5-Lane (official Japan Cup / GP)
Material	ABS resin — flexes slightly on impact, cushions corners	Hard plastic/wood/polycarbonate — rigid, impact returns straight to the car
Section joints	Interlocking claws, tight tolerances	Often taped, noticeable step-gaps that worsen through an event
Length	~20–180m, tight-radius corners	~150–190m, sweeping large-radius turns
Sections	Mostly flat/rolling, minimal jumps	Banked turns, dragon-backs, digital corners, lane changers

⚠️ No source gives a genuinely different lane-width/fence-height spec between the two — treat any claim otherwise as unverified.

3.2 Roller Setup

3-LANE

Smaller rollers (9–13mm) for sharper turning on frequent tight corners. Mount low, since the softer ABS wall flexes more toward the top under impact.

5-LANE

Larger rollers (17–19mm aluminium-bearing) absorb the step-gaps at rigid section joints and reduce snagging via a wider contact arc. Mounting height matters less since the wall doesn't flex.

A practical "compromise" setup many racers actually run for both: 19mm rollers, mounted low at the front, on medium-or-smaller tyres — flexible enough for either environment when a dual-purpose car is unavoidable.

3.3 Mass Damper Needs

3-lane: light damping only (roughly 1.5–3g) just to control micro-bounce; heavier chochin rigs are often skipped entirely — the weight cost isn't worth it when there's little vertical impact to manage, and the extra mass hurts acceleration/precision that matters more on tight technical layouts.

5-lane: damper systems are close to mandatory, scaled to section severity — 4–8g for step-downs/curved slopes, 10–12g or dual systems for major drops. Front dampers cut nose-lift on short jumps; rear dampers stabilise landings after long jumps/slopes; side dampers manage lateral instability from lane-changers.

3.4 Gear Ratio & Motor Choice

3-lane: lean torquier/more controllable — tight corners force frequent brake/re-accelerate cycles, so raw top speed matters less than repeatable cornering.

5-lane: longer straights and climb/bank sections reward higher-speed gearing, but several official Japan Cup sections specifically reward strong acceleration out of slow entries rather than pure top-end. Over a

~190m course, motor/voltage *stability* across the whole run matters more than peak power — favour efficient, consistent motors over raw peak specs.

3.5 Chassis Choice: Stock Class/B-MAX (3-lane) vs MS-Flex (5-lane)

This is the sharpest, best-documented divide in the whole hobby right now.

> **Stock Class / B-MAX GP** — Tamiya's official no-machining ruleset (unified with fan-run B-MAX GP, effective June 2026): no chassis lightening, cutting, or custom chassis; only narrow tolerances like countersinking or minor screw-hole widening. Runs mainly on 3-lane shop-style courses. Tamiya's stated rationale: lower the entry barrier (no fabrication skill needed) and — importantly — keep technical inspection simple, since an unmodified part is trivially checkable at a glance.

> **MS-Flex** — dominant at official 5-lane Japan Cup/GP events, both because the courses genuinely reward it (real elevation change, rigid-joint step-gaps) and because, per community analysis, judging "how much flex is too much" is inherently subjective at large multi-heat events with many different inspectors. Restricting to no-machining sidesteps that judgment call entirely — which is arguably why Stock Class exists as a parallel discipline rather than a replacement for open competition.

⚠️ The "Stock Class exists specifically to dodge flex-inspection difficulty" framing is community inference from independent Japanese blogs, not Tamiya's own stated rationale (which frames it around beginner accessibility) — both are likely true simultaneously, but only the accessibility framing is official.

3.6 Brake Setup

3-lane: precision over quantity — corners are close together and the ABS wall already absorbs some shock, so avoid over-braking that kills momentum between frequent corners.

5-lane: more section-specific. Textured/higher-grip 5-lane surfaces increase both acceleration and braking demand, but on banked turns specifically, **avoid braking through the bank itself** — reserve brakes for flat/entry sections, since braking mid-bank causes large unwanted deceleration exactly where you don't want it. "Bank-through" plate angling lets brakes engage on slopes/jumps but disengage through banked corners.

3.7 Practical Checklists

RACING MOSTLY LOCAL 3-LANE

- ☐ Small-diameter rollers (9–13mm), mounted low
- ☐ Keep the car light — skip mass dampers unless the course has real jump-to-corner combos
- ☐ Gear toward torque/acceleration out of corners
- ☐ If it's Stock Class/B-MAX: win on GUP selection and assembly precision, not fabrication
- ☐ Light, precise braking tuned to corner frequency

PREPPING FOR JAPAN CUP / OFFICIAL 5-LANE

- ☐ Build (or convert to) MS-Flex if the class allows it — it's the competitive default
- ☐ 19mm aluminium-bearing rollers; slide dampers/AT bumpers on rough sections
- ☐ Mass-damper system scaled to that year's course jump/drop severity — treat as mandatory
- ☐ Study the specific year's official course layout in advance; tune per-section (don't brake through banks)
- ☐ Build a dedicated 5-lane machine rather than dual-purposing a 3-lane car — the tuning directions genuinely conflict
- ☐ Prioritise motor/voltage consistency over the full ~150–190m run, not just peak speed

4 · Regulation Quick Notes & Sources

4.1 Current Official Regulation Highlights (as of Jan 2026 revision)

- **Dimensions:** max width 105mm · max length 165mm · max height 70mm · min ground clearance 1mm.
- **Weight:** minimum 90g fully equipped (incl. battery and motor).
- **Tyres:** diameter 22–35mm, width 8–26mm; must be fitted; four-wheel drive only.
- **Roller count & rotating mass-damper position:** both restrictions removed (special rule, reconfirmed for 2026).
- **Motors:** ME/MA/MS → kit motor + any double-shaft PRO motor. All other chassis → kit motor + Torque/Rev/Atomic-Tuned 2, Light-Dash, Hyper-Dash 3, Power-Dash, Sprint-Dash (older Tuned/Hyper-Mini/Hyper-Dash 2 also legal).
- **Batteries:** Tamiya AA cells only, 2 cells, as-sold condition — no third-party batteries, no torn labels.
- **Track:** lane width 115mm, fence height 50mm.
- **Modification:** drilling/cutting allowed if the original form stays recognisable; carbon/FRP/metal parts may not be reshaped beyond their outline; no soldering or doubling battery terminals.
- **Stock Class** (separate ruleset, effective June 2026): no chassis lightening/cutting/custom chassis, no new screw holes, bolt-on GUP only — the "no-machining" division.

> Regulations change — always check `tamiya.com/japan/mini4wd/regulation.html` and the Stock Class page directly before an event; this playbook reflects the January–May 2026 revisions in force at time of writing.

4.2 Notes on Sourcing & Confidence

This document synthesises Tamiya's own regulation and product pages together with the Japanese and English competitive Mini 4WD community (mini4wd.tech, miniyonfan.com, maskichi.com, kold-yonku.com, secondgreenivywallsmini4wd.com, note.com build logs, mini4wdracing.com, TEA-League, and others). Claims resting on a single blog rather than broad consensus are marked ⚠️ inline. Two items to flag explicitly:

- The ME chassis is only months old at time of writing — its pro-tier meta is described by sources as still forming and should be expected to shift.
- Chassis-vs-chassis competitive win-rate figures in this report are based on published class-winner specs from Tamiya's own event reports; field composition (how many of each chassis actually entered) is not published, so treat win counts as directional, not a precise market-share figure.