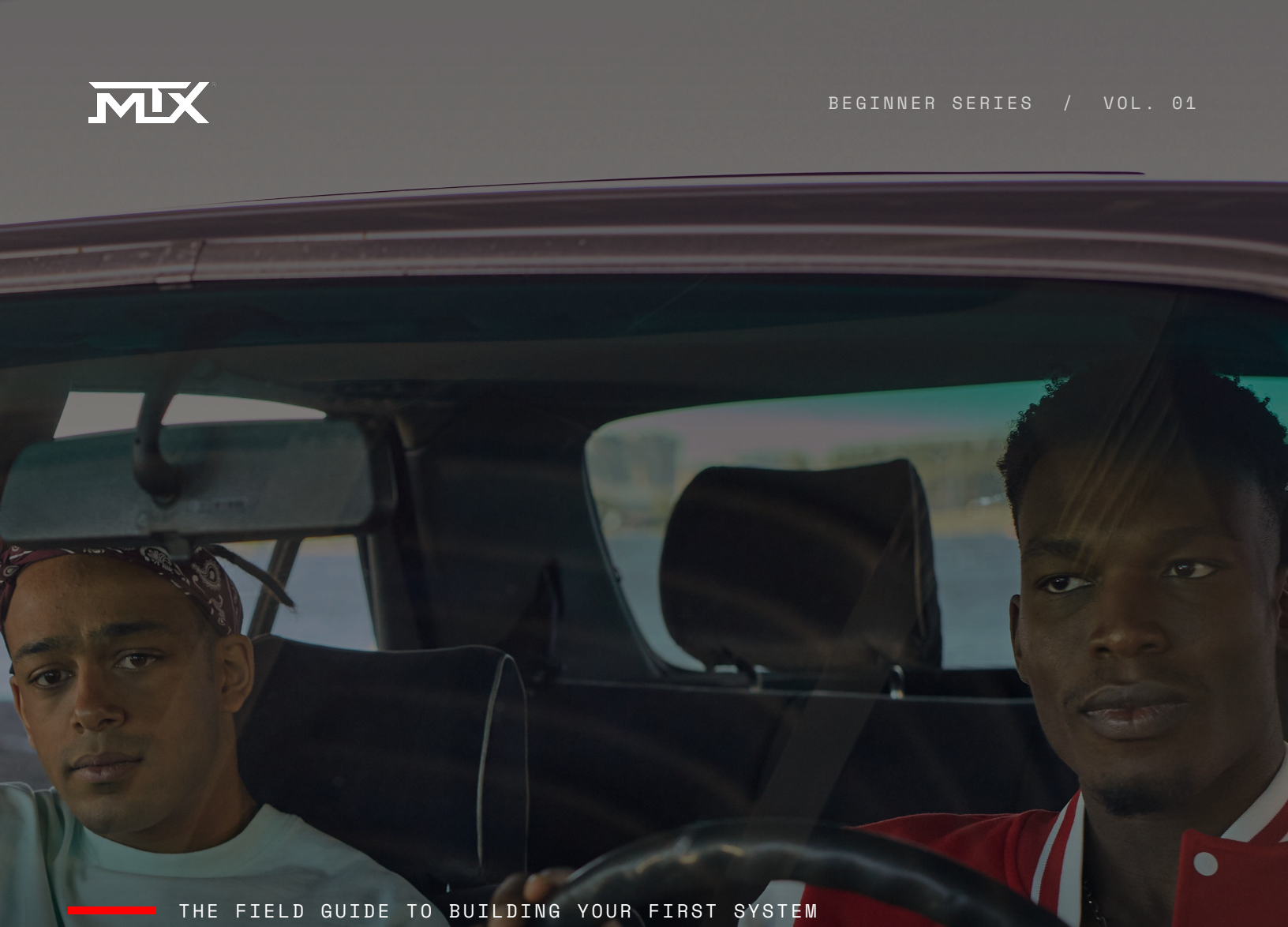


THE FIELD GUIDE TO BUILDING YOUR FIRST SYSTEM

BEGINNER'S CAR AUDIO GUIDE

No jargon, no gatekeeping. Everything a first-timer needs to go from stock speakers to a system that actually moves you: the parts, the power, the install, the tune.

START HERE

WHERE THE NOISE BEGINS

Factory audio is built to a price, not to a feeling. This guide takes you from "why does my music sound flat?" to a plan you can actually build, one component at a time, on any budget.

Read it front to back the first time. After that, jump to the chapter you need. Every section ends with the one thing that matters most.

CONTENTS — 8 CHAPTERS

01 CHAPTER ONE

SYSTEM ANATOMY

Every car system, from mild to wild, is built from the same four blocks. Learn what each one does and the rest of this guide clicks into place.

THE SIGNAL CHAIN

MUSIC the heart → **SOURCE** the brain → **AMPLIFIER** the muscle → **SPEAKERS AND SUBS** the voice

THE BRAIN

SOURCE

The receiver that reads your music, controls volume and tone, and sends the signal downstream. It can be a head unit, DSP, or line-out converter. Better audio output here means a better foundation for everything else.

THE MUSCLE

AMPLIFIER

Takes that small signal and gives it real power. Clean, plentiful power is what makes music effortless and loud without distortion. It's the biggest upgrade most people skip.

THE VOICE

SPEAKERS

Where electricity becomes sound. Coaxials are the easy all-in-one swap; component sets split the tweeter out for a wider, more detailed stage. Your first upgrade, always.

THE VOICE

SUBWOOFER

Handles the low bass your door speakers physically can't. Add one and the whole system relaxes. Everything else gets to do less and sound better.

TL;DR Four parts, one team. A monster amp bolted to bargain-bin speakers still sounds like bargain-bin speakers. Spend evenly.

02 CHAPTER TWO

CHOOSING YOUR GEAR

Great builds start with three questions, in order. Answer them and the shopping list writes itself.

Goal

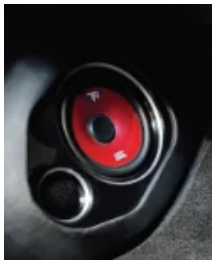
Clean, detailed sound? Chest-punch bass? Loud for the lot? Pick one to lead. It decides everything else.

Budget

Set the number first, then split it. A rough starting point: 40% speakers, 35% amp + sub, 25% install and wiring. Amps are usually the priciest piece, so adjust to whatever you want to concentrate on most.

Space

Measure your doors and trunk. Fitment and enclosure room decide sub size and speaker depth before brand ever matters.



COAXIAL VS. COMPONENT

Coaxial: tweeter mounted on the woofer. One-piece, cheap, drops right in. Perfect first upgrade.

Component: a separate tweeter with more mounting options. More detail, wider stage, more install work.

SIZING THE AMP

Channels = speakers driven. 4-channel for four doors; add a mono amp for the sub.

Match the amp's RMS to the speaker's RMS. More on power in Chapter 03.

SPEND IN THIS ORDER

Work left to right. Each upgrade gives the biggest jump for the money before the next one is worth it.

01 SPEAKERS
Biggest gain per dollar. Start here, always.

→

02 AMP
Clean power to wake those speakers up.

→

03 SUB
Adds the deep bass door speakers miss.

→

04 HEAD UNIT
Last, and only for better sources and control.

TL;DR Buy for your goal, not the biggest number on the box. Nobody at the red light is impressed by watts they can't hear.

03 CHAPTER THREE

POWER AND WIRING

Three numbers scare beginners off. They shouldn't. Here's exactly what watts, ohms and gauge mean for your build.

WATTS

RMS, NOT PEAK

RMS is continuous, real-world power. Peak is a marketing sprint number. Match RMS to RMS and ignore peak.

OHMS

IMPEDANCE

Electrical resistance of the load. Lower ohms pull more power but run hotter. 4Ω is the safe beginner default.

GAUGE

WIRE SIZE

Lower AWG = thicker wire = more current. Too small and your amp starves. Size it to the current draw below.

POWER WIRE GAUGE — QUICK REFERENCE

Total System RMS	Fuse (approx.)	Power / Ground Wire
Up to 250W	30 A	8 AWG
250 – 500W	50 A	6 AWG
500 – 1000W	80 A	4 AWG
1000 – 1500W	120 A	2 AWG
1500W +	150 A +	1/0 AWG

Guideline only. Always follow your amp's manual and fuse at the battery within 18" of the terminal.

TL;DR A starving amp kills more speakers than a big one ever will. Feed it clean watts and fat wire, and everyone goes home happy.

04 CHAPTER FOUR

SOUND QUALITY VS. LOUDNESS

Two builds, two totally different goals. Knowing which one you're chasing keeps you from buying the wrong gear twice.

SQ

Sound Quality

Accuracy over volume. A wide, realistic stage where every instrument sits in its own place. You hear detail you missed for years.

FOCUS ON

- Component speakers, tweeters up high
- Clean amplification, careful tuning
- One tight, musical subwoofer

SPL

Sound Pressure

Raw output. Bass you feel in your chest and hear from a block away. Built to move air and turn heads in the parking lot.

FOCUS ON

- Multiple subs in a tuned enclosure
- High-current mono amplification
- Upgraded electrical & big wire

TL;DR Pick a lane: detail or slam. You can absolutely have both, but one has to sit in the driver's seat.

05 CHAPTER FIVE

INSTALLATION TIPS

A great component installed badly sounds worse than a cheap one installed right. Sweat these five and you'll punch above your budget.

01 KILL THE RATTLES FIRST

Sound deadening on the door skins and any body paneling that rattles tightens bass and kills buzz. It's the cheapest upgrade that sounds expensive.

02 GROUND IT PROPERLY

Short, thick ground to bare metal. A bad ground is the #1 cause of engine whine and power issues.

03 SEPARATE YOUR WIRES

Run power wire down one side of the car and RCA signal cables down the other to keep noise out of the signal.

04 FUSE AT THE BATTERY

Within 18 inches of the positive terminal. This is a safety must, not an option. It protects the whole car.

05 LEAVE SLACK AND SECURE IT

Zip-tie every run so nothing chafes on metal edges over time. Grommets wherever wire passes through the firewall.

TL;DR Measure twice, wire once. If the electrical makes you sweat, let a pro handle it, then take all the credit at the meet.

06 CHAPTER SIX

TUNING YOUR SYSTEM

New gear is only half the win. Tuning is the free upgrade. Set these controls in order and the whole system snaps into focus.

SET FIRST

GAIN

Not a volume knob. It matches the amp to the head unit. Set it too high and you get distortion, not loudness. Start low and raise it until just before it distorts.

SPLIT THE SOUND

CROSSOVERS

Send highs to speakers, lows to the sub. Set a HPF on the doors (~80 Hz) and a LPF on the sub (~80 Hz) so nothing plays what it can't handle.

SHAPE IT

EQ

Small cuts beat big boosts. Trim harsh frequencies before adding. A flat, natural curve almost always beats a smiley face.

BLEND IT

PHASE AND SUBSONIC

Flip sub phase (0°/180°) to whichever setting sounds fuller up front. A subsonic filter protects a ported box from wasted deep travel.

WHERE THE CROSSOVER SPLITS

SUB	SPEAKERS
20 – 80 Hz · lows	80 Hz – 20 kHz · mids & highs

↑ ~80 HZ CROSSOVER POINT

DIAL IT IN

TL;DR Tuning is free horsepower. One knob at a time, at real volume, with your actual ears. Costs nothing, changes everything.

07 CHAPTER SEVEN

BUILD RECIPES

Three complete starting points at three budgets. Every one is a real, balanced system. Pick the tier that fits and build up from there.

TIER 01

THE STARTER

$ · CLEANER SOUND

- New coaxial speakers, all doors
- Sound deadening on front doors
- Keep the factory head unit
- Proper install & wiring

Biggest gain per dollar. Do this first.

TIER 02 · POPULAR

THE WEEKEND

$$ · SOUND + BASS

- Component set up front, coax rear
- 4-channel amp for the doors
- One 10" or 12" sub + mono amp
- Full wiring kit & deadening

The sweet spot for most first builds.

TIER 03

THE FULL SEND

$$$ · MAX OUTPUT

- Component sets front & rear
- Multi-channel + high-power mono
- Dual subs in a tuned enclosure
- Big-3 electrical upgrade

Loud, and still clean. Plan your electrical.

TL;DR Start where your wallet is. Every tier here is a real system. There's no wrong door, just a 'not yet.'

08 CHAPTER EIGHT

GLOSSARY

The words you'll hear at the shop and online, in plain English. Walk in knowing what they mean.

RMS
Continuous power a component handles or makes — the number that matters.

SOURCE
Audio receiver that controls sound and sends the audio signal — a head unit, DSP, or line-out converter.

COAXIAL
All-in-one speaker with the tweeter built onto the woofer.

CROSSOVER
Filter that routes the right frequencies to the right speaker.

GAIN
Amp input-level match to the source — not a volume control.

ENCLOSURE
The box a sub sits in — sealed for tight, ported for loud.

BIG-3
Three upgraded ground/power cables for a stronger electrical.

IMPEDANCE (Ω)
Electrical resistance of a speaker load, in ohms. Commonly 2 or 4.

PREOUT
RCA output that feeds a clean signal to an amplifier.

COMPONENT SET
Separate woofer, tweeter and crossover for a better stage.

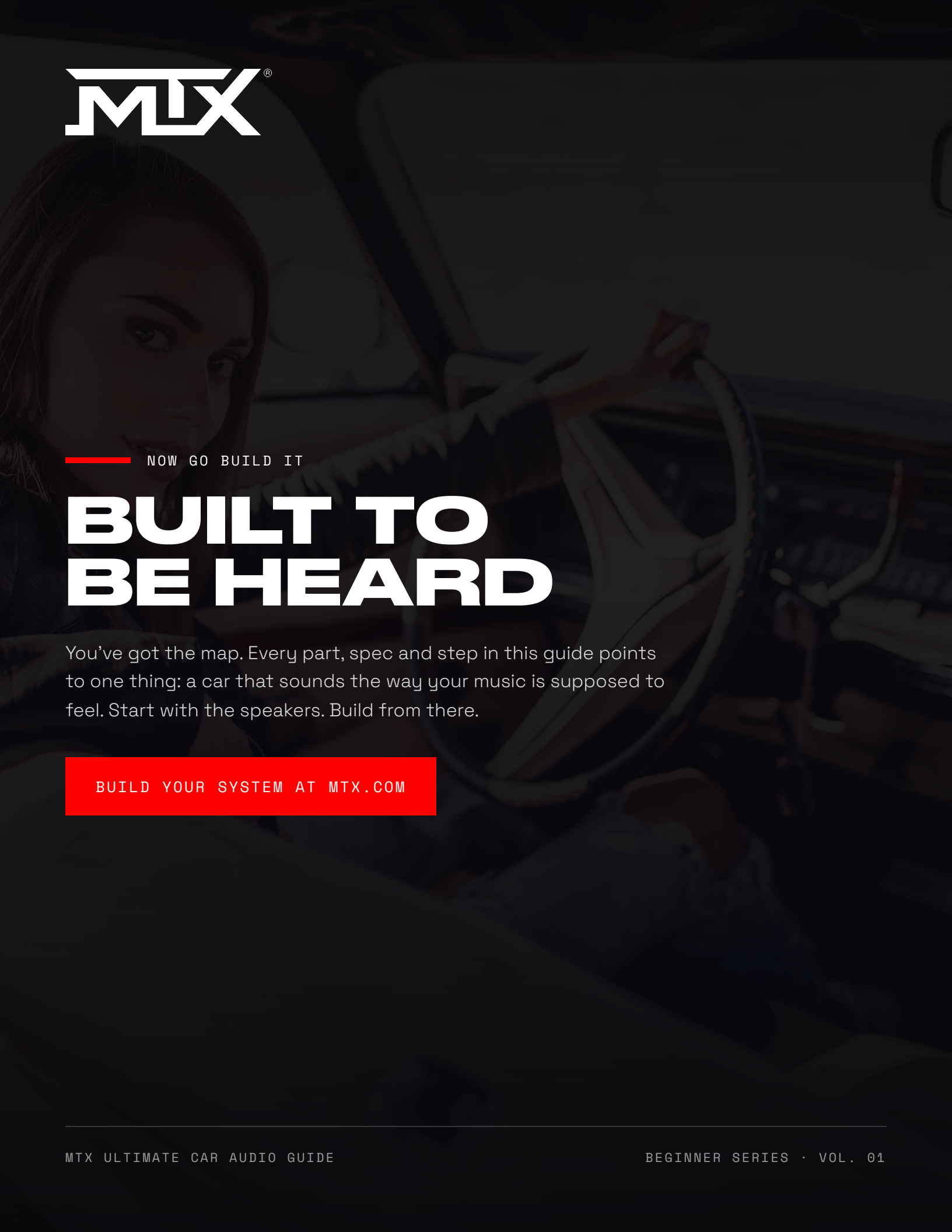
HPF / LPF
High-pass blocks lows; low-pass blocks highs.

CLIPPING
Distorted signal from an output played past its limitations — the top speaker-killer.

SPL / SQ
Sound-pressure (loudness) vs. sound-quality (accuracy).

AWG
Wire gauge — lower number means thicker wire.

TL;DR Now you can nod knowingly at the shop instead of Googling under the table.



NOW GO BUILD IT

BUILT TO BE HEARD

You've got the map. Every part, spec and step in this guide points to one thing: a car that sounds the way your music is supposed to feel. Start with the speakers. Build from there.

BUILD YOUR SYSTEM AT MTX.COM