



GS Ballistic Suite

User Manual

Version 4.7.34

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Compiled from the in-app guidance library. Covers Rifles, Venues, Ballistic Tools, Sessions & History, Load Development, and Utilities.

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1. Getting Started

1.1 Home Screen

Access to the main app sections, supporting tools, and saved venue routing.

- On a new install the Welcome screen first asks for the feature level - Standard (the core tools, preselected) or Advanced (adds the specialist tools) - then offers three choices: Try it now with sample data (during the 14-day trial: a sample 6.5 Creedmoor rifle with one load and a Sample Range, then Preferences first so the units suit you), Set up my own (the step-by-step guide), or Skip for now.
- Use the home screen for fast entry into the most common tools and workflows.
- Home keeps the main workflow tiles as Ballistic Solver, Wind Effect, Load Development, and Sessions. Target Card, Range Card, Match / Stage, Universal Weather Meter, Vault, Universal Loader, and Hit Probability are listed under Shortcut, with a divider and a separate Tools button below the grid for less frequent utilities.
- Open Sessions when you want to begin live capture. Open History from the bottom navigation when you need Session Summary or previous session records.
- Use Target Card for selected known targets. Use Range Card for a generated DOPE table across a range band from the selected rifle and current environmental. Use Match / Stage to build a competition as Stages of Targets and run them one-handed in the field.
- Use Universal Weather Meter under Shortcut to read Weather Meter or Phone Weather and review the active source/countdown, or enter Manual Weather by hand.
- The Tools button under Shortcut opens a hub with Converter, Targets, Documents, and Route to Venue - less frequent utilities kept off the main Shortcut grid to keep it short. Weather Meter and Vault live on the Shortcut grid and are also cross-referenced from the Tools page under Also on Shortcut; Universal Loader and Hit Probability live on the Shortcut grid only. Backup lives under System Settings, not on this hub.
- Route to Venue lists venues with saved GPS locations and opens phone navigation back to the selected venue. Only detected routing options are shown, so choose the available app you want to use.
- Use the resource links as reference material, not as a substitute for recording actual session data.

1.2 Preferences

Set units, display defaults, and optional workflow modes for the app.

- Use Preferences to set the default units and display options used across the app.
- Feature level: Standard shows the core tools (Solver, Target Card, Range Card, Sessions, Load Development, Weather Meter and the everyday utilities); Advanced adds ELR Diagnostic, Velocity Loss BC, Hit Probability, Match / Stage, Equipment Reach, Tools to True, the extra Analyze Ballistics data, Competition Mode, live sharing and the spin drift / Coriolis / aerodynamic jump / WMM switches. It only changes what is shown: corrections that are switched on keep applying in Standard, and the Solver then shows an Advanced corrections active note. A new install chooses on the Welcome screen (Standard is preselected); an existing install starts on Advanced so nothing disappears.
- Guidance: Show guidance (the help panels on each screen) or Hide guidance. This is separate from the feature level.

- Theme (under Guidance): a new install starts in Daylight; an existing install keeps Dark mode, the original look, until you change it. Daylight is a light theme for bright sun, built on a 60-30-10 colour balance: a soft grey page (60%), charcoal structure - the header bar, hub tiles, section headers and secondary buttons such as Share, Add, Edit, Photo and the weather and device buttons (30%) - and one orange accent for the key actions and active states - Calculate, Analyse, Run, Save, Apply, the selected tab, radio buttons and chosen options (10%). Red is kept for Delete, Clear and Erase, and Back, Close and Cancel are quiet light grey. The same kind of button looks the same everywhere in the app. The theme switches at once and is kept on this device.
- Choose values that match the way you normally shoot and record data so entries stay consistent.
- Load development and shooting solution defaults here affect how related screens present and interpret values.
- Advanced only: enable Competition Mode only when you want the Solver to offer Capture Turret for a saved reference screenshot. Normal solver use does not require it.
- Advanced only: tick Load Development for Others only if you develop loads for other people (see Load Development > Load Development for Others). "Developed by" on its exports uses the name, phone and email saved under User Details. Upload business logo adds your logo on the right of the header of every Load Development PDF; the preview shows it on white as it prints, and Remove logo takes it off. In Standard the option is hidden and switched off, but stays remembered for when you return to Advanced.
- Tick Allow Live Sharing only when you want Range Viewer and Share Live View controls available on Solver and Target Card screens.
- When Allow Live Sharing is unticked, sharing controls stay hidden and normal Solver, Target Card, and BLE weather-meter workflows are unchanged.
- Tick Support Rimfire only when you need to add new rimfire rifles or ammo. Leave it unticked for a centrefire-only app; a rimfire rifle you already saved stays fully visible and editable either way, and license/document storage (Vault) always offers every caliber regardless of this setting.
- Choose the Energy unit (Joules or ft-lb) used wherever the app displays bullet energy.
- Measurements sets two cm / inch units: Rifle (scope height and barrel length, and the starting unit for new rifles) and Target (target sizes, hit spread and wind drift). Target follows Rifle until you set it separately.
- WMM Declination is on by default for a more precise declination model (the World Magnetic Model) than the built-in country average, worldwide. It still needs GPS; without GPS it falls back to the country average automatically. Turn it off to use the simpler country-average model instead.
- Competition Mode's only effect is adding a saved reference screenshot kept outside the app; the ballistic calculation and your backup data continue exactly as before.
- Setup guide & sample data appears for demo users during the 14-day trial: Open setup guide reopens the first-time setup guide, Load sample data adds a sample 6.5 Creedmoor rifle (one load) and a Sample Range, and Remove sample data deletes them. Sample data is removed automatically when the trial ends and is never included in a Full Backup; your own data is kept.
- You can change these settings at any time; saved session records stay as they were recorded.

1.3 System Settings

Central access to preferences and system utilities.

- Use this page as a central access point for preferences and system utilities.

- Apply display and unit changes in Preferences before running field workflows.
- Compass & Sensors (now under Maintenance) is for when heading or DOF accuracy appears unstable in the field.
- Use repair and support tools only when you need them, separately from normal daily data capture.
- Use Wish List to send improvement requests to support with an optional picture from the device.
- Manage Purchases (renamed License Status once every module is owned) opens the module unlock screen.

1.4 Licensing & Purchases

Unlock a licensed module individually, or the whole Full Suite at once.

- Solver, Sessions, and Load Development each need unlocking - either one at a time or together as the Full Suite - once their shared 14-day trial from first use has run out. The rest of the app (Rifles, Venues, Utilities, and everything else) is never gated.
- Switch between modules using the tabs at the top of the unlock screen - a small checkmark marks any module already owned on this device.
- Unlock just one module for permanent access to it alone, or Unlock Full Suite for all three at once - the price shown comes live from Google Play and reflects local currency and any active promotion.
- Once the Full Suite is owned, every per-module purchase option disappears since there is nothing left to buy.
- Use Restore Purchases after reinstalling the app or setting it up on a new device to recover a purchase already made on that Google account, without paying again.
- Purchases are handled entirely through Google Play Billing - GS never collects payment details itself.

1.5 User Details

Save your personal details and country-specific shooting or hunting memberships.

- Use the compact two-column fields for Name, Surname, ID / Passport, Country, and Email.
- Tap Country to choose from countries with built-in associations, or choose Other to enter your own country and association.
- Tap Add under Associations / Memberships to choose a listed association, or use the manual fields when Country is Other.
- Enter the membership number and tap Apply to persist that membership immediately.
- You can save multiple associations and membership numbers; duplicates for the same country are blocked.
- Membership cards stay collapsed for a cleaner screen; expand them only when editing.
- The main Save button can still be used at any time to save all User Details fields.

1.6 Compass & Sensors Calibration

Calibrate and verify phone heading sensors used by DOF workflows.

- Use Compass & Sensors when DOF or heading readings jump, drift, or differ from a known direction.
- Run the calibration away from vehicles, steel structures, rifle barrels, speakers, and magnetic phone covers.

- The calibration runs one step at a time. Step 1 is a large upright digit-8 in the air, not a sideways infinity symbol. Continue slowly and smoothly for about 30 seconds until Bar 1 is complete.
- The main progress bar follows the full process in order: 30-second digit-8, phone-rotation coverage, then sensor quality check. Later bars stay pending until the current step is complete.
- Only after Bar 1 is complete, Step 2 starts. Flip and rotate the phone through portrait, upside down, landscape left, landscape right, face-up, and face-down positions so all sensor axes are exercised.
- Step 3 is not a strict stillness test. Hold the phone normally and point at a fixed object while the app averages sensor quality for a few seconds. Good is preferred for long-range DOF use; Fair can be usable; Poor means interference may still be present.
- Use Repeatability Check by saving a reference direction, pointing at the same object again, and checking the difference before relying on the heading.
- The phone operating system still controls low-level sensor calibration. This tool guides the calibration motion, averages live compass quality, and warns when results are unreliable.

1.7 Wish List & Feedback

Send improvement ideas and feature requests to support.

- Write a clear request explaining what you want added or changed.
- Attach a picture from the device when it helps explain the idea or screen layout.
- Use Send to Support to prepare the message for support@gsbs.co.za.

2. Rifles & Loads

2.1 Rifles

Choose a rifle to view, edit, export, and manage its active load data.

- Select a rifle to open its saved setup, photos, notes, load data, and export options for review or editing.
- Create or edit the rifle record with its core details first so later tools can reference it correctly.
- PCP / Air Rifle is a third rifle platform alongside centrefire and rimfire - enable Support PCP / Air Rifle in Preferences to add one. PCP is stored on its own, with a dedicated bore-size picker, pellet/slug working loads, and its own G1/G7/CDM drag path separate from rimfire's built-in RA4.
- Enter twist rate in 1:X format and set twist direction to RH or LH. These rifle fields are used by the spin-drift model.
- Enter scope height, zero range, active load, and any Permanent Zero Offset carefully because Shooting Solution and Target Card depend on them.
- Use Permanent Zero Offset only for a known rifle-specific zero correction that must follow that rifle every time; leave it at 0 when the rifle zero is normal.
- Use the favourite star to prioritise rifles you use often: outline means not favourite, filled orange means favourite.
- Favourite rifles appear first alphabetically in rifle selectors, followed by the remaining rifles alphabetically.
- Use the photo and notes fields only as supporting reference; they should not replace the core setup values.

- After saving the rifle, add or review loads and make sure the correct load is marked active.
- A Needs Review badge can appear on any rifle, not only imported ones - it is a live reminder that something looks incomplete (name, caliber, twist, sight height, zero range, or a load's weight/MV/BC), and clears itself as soon as that field is filled in. It never blocks saving, editing, or solving.

2.2 Load Data

Add and manage load data for the selected rifle.

- Add one load per meaningful recipe or configuration so the rifle history stays clean.
- Record muzzle velocity for any load you expect to use in Shooting Solution or Wind Effect.
- Record bullet weight, BC, muzzle velocity, and bullet length for the active load when available. These fields are used by the Solver, Target Card, Range Card, and spin-drift model.
- Only mark one load active for a rifle at a time.
- Keep load naming consistent so export, session history, and later review remain easy to follow.
- For centrefire rifles, Pick from common bullets... above the Bullet field prefills brand, name, weight, and BC from a catalogue spanning 21+ calibers with hundreds of component-bullet entries, plus bullet length when the manufacturer publishes it.
- Every entry in the common bullet/ammo pickers (centrefire and rimfire) is tagged Hunting or Sport, so target/match/competition loads are easy to tell apart from hunting ammunition at a glance.
- For a rifle with Factory ammo ticked, the same area shows Pick from common factory ammo... instead - the reloading fields and component-bullet picker are hidden, since there is no recipe to record.
- Rimfire rifles always use Factory ammo automatically - the toggle is hidden and factory-ammo specs are assumed, so rimfire loads are ready to add right away. Enable Support Rimfire in Preferences first to add a new rimfire rifle; a rimfire rifle you already saved stays fully visible and editable either way.
- For rimfire rifles, the loads table shows bullet velocity (fps) and weight (gr) instead of powder charge and powder weight, matching how rimfire ammo is bought and logged. Bullet length is not asked, since it is not published for rimfire ammo; the Solver uses a built-in estimate instead.
- Picking a load from the common rimfire ammo list (covering 22 LR, 22 WMR, 17 HMR, 17 HM2, 17 WSM, and 22 WRF) also fills in a rough starting BC as a placeholder. For any other rimfire caliber, enter bullet, weight, velocity, and BC manually.
- For PCP / air rifle loads, the working load records pellet or slug type, tune name, power setting, and regulator pressure alongside the usual ballistic fields - a catalogue of pellets and slugs across common bore sizes is available the same way as the centrefire bullet picker. PCP still requires an explicit G1/G7 BC or a CDM curve; GS never assumes a drag model on the user's behalf for it.
- Tap the Powder field to open a worldwide powder catalogue search (matches by number or manufacturer); selecting an entry fills in just the powder number/name. Close the picker to type a powder manually instead.
- Tap the Brass field the same way to open a worldwide brass catalogue search; selecting an entry fills in just the brand/product name, not the country.

- Tap the Primer field the same way to open a worldwide primer catalogue search; selecting an entry fills in manufacturer and designation together, e.g. "CCI 450", since a bare designation alone can collide across brands (Federal "200" and CCI "200" are different products).
- Ave SD is the average velocity SD of the load (in the velocity unit from Preferences, more than 0 and at most 50 fps). Hit Probability uses it for the rifle's active load; left empty, Hit Probability assumes 10 fps.
- Powder Temperature Sensitivity is a tick on the load itself, not a Preferences setting. Ticking it reveals Temp measured plus optional 2nd/3rd chronographed velocity/temperature readings, letting the Solver compensate MV for the current temperature - enter the temperature your normal Ave velocity was chronographed at, plus a second real reading at a different temperature (e.g. your coldest or hottest range day), and the app works out the rate itself. Ticking it without Temp measured filled in blocks saving with a reminder, since a tick with no baseline temperature would otherwise silently do nothing.

3. Venues

3.1 Venues

Manage shooting venues, GPS locations, and sub-range references.

- Create a venue for each range or shooting location you want to reuse in sessions.
- Save the venue GPS location so it can be used again later and navigated to directly from the app.
- Use the Route button to launch navigation back to the selected venue.
- Enter whole-venue distances for the default distance list, then add sub-ranges only where they add value.
- Use clear names for sub-ranges so field selection stays obvious during a session.
- Keep notes short and practical so the venue remains fast to use on the firing line.

4. Ballistic Tools

4.1 Shooting Solution

Solve a firing solution using rifle, load, and environment inputs.

- Choose the correct rifle and load inputs before relying on the solution values.
- Wind starts at 0 from 12 o'clock. Selecting a rimfire rifle sets a 50 m starting distance (a PCP rifle 30 m); switching back from rimfire or PCP to a centrefire rifle sets 100 m. Distance only changes automatically when switching into or out of rimfire or PCP, not between two centrefire rifles.
- Factory ammo rifles have no separate ammo entry or preset picker here - Shooting Solution always solves from whichever load is marked active in the Rifles tab, the same as any handload. A small Factory Load / Box Ammo badge appears under the rifle summary as a reminder only; choose or add the load itself in the Rifles tab.
- Elevation and Windage show whichever unit this rifle's own Scope unit (set in Rifles tab) is configured for as the larger, first value, with the other unit shown alongside it.

- Centerfire rifles at close range: the scope sits above the bore, so up to roughly the zero distance the bullet is below the crosshair and the Solver shows Up - correctly - with angular holds that look large at very short range (5.6 mil at 10 m is just 5.6 cm). Under 50 m the Solver therefore also shows the hold in cm or inches (Preferences > Measurements > Target), for example "Close range: hold 5.6 cm high", and a distance under 5 m is raised to 5 m. Rimfire and PCP rifles are not affected.
- The Environmentals / Direction of Fire panel is outlined green while Temp, Humidity and Pressure are all in - from a Weather Meter, Phone Weather or Manual snapshot, or typed into the Solver by hand - and red when any is missing. Emptying one of those boxes turns it red as well (the red message then asks for Environmentals again), although the solve keeps the last value until a new one is entered. Weather from a snapshot is removed when the snapshot timer expires or it is cleared; weather typed into the Solver by hand is valid for 30 minutes from the last entry, the same as Phone Weather, and the weather boxes then clear. Either way the outline turns red again.
- The weather snapshot is shared by every screen. Weather Meter outranks Phone Weather, which outranks Manual: while a Weather Meter snapshot is valid, neither Phone Weather nor Weather Meter takes a new reading; while a Phone Weather snapshot is valid, Phone Weather does not, but Weather Meter does and replaces it; a Manual snapshot is replaced by either, always with a fresh reading. A Weather Meter snapshot only counts as valid with the phone GPS latitude it was read with - without it, Weather Meter takes a new reading as usual. When a button keeps the active snapshot, a message shows which snapshot it is and how many minutes are left. To take a new reading, clear the snapshot first in Weather Meter on the home screen. The Weather Meter page itself works as before: there you read, enter or clear the snapshot yourself. While a snapshot is valid, Manual Weather does not open and the typed weather boxes are read-only on every screen (Solver, Target Card, Range Card, Sessions, Load Development, ELR Diagnostic, Equipment Reach, Velocity Loss BC and the Weather Meter page), so typed values can never replace it. History is the exception: it records a past session, so manual weather can always be entered and saved there. Weather Meter, Phone Weather and Manual snapshots are all valid for 30 minutes.
- Distance, MV and Temp follow the units chosen in Preferences (metres or yards, fps or m/s, °C or °F) and are converted for the calculation, so type them in the units shown. Station Pressure (SP), QNH and DA also follow the Preferences pressure and distance units, as their labels show.
- For accurate spin drift, verify rifle twist rate, twist direction, active load bullet weight, BC, muzzle velocity, and bullet length. If bullet length is blank, the Solver uses an estimated fallback and spin drift may not match a Kestrel bullet-library profile exactly.
- RA4, a built-in .22-class drag curve, is applied automatically when a rimfire rifle is selected, since a single BC does not hold across a rimfire shot. Open Advanced drag (Multi-BC / CDM / RA4) to switch away from it if you have better data; see the Rimfire Custom Drag Curve (CDM) document under Utilities > Documents for sourcing guidance.
- Tick Powder Temperature Sensitivity on the active load in Rifles (not a Preferences setting), then enter Temp measured plus a second chronographed velocity/temperature reading, to have MV compensated for today's temperature automatically. The adjustment shows as "Derived from Temp" next to MV. It only applies when a real current temperature is known - Weather Meter, Phone Weather, or manual entry.
- Confirm the active weather source before using the solution: Weather Meter, Phone Weather, or Manual.

- With no weather yet, opening Environmentals shows only Phone Weather, Manual and Weather Meter; choosing one opens the fields. Phone Weather and Weather Meter fetch straight away; Manual puts the cursor in the first empty field, and once you type the Manual button becomes Apply Manual Weather. Apply follows the manual weather rules: a valid Weather Meter or Phone Weather reading is kept (a message says so), Temp, Pressure and Humidity are required, and the values become the shared Manual Weather snapshot (valid 30 minutes); the panel then closes. A typed DOF closes Environmentals only when every field is filled.
- The green arrow beside Distance shows your Wind Direction (where the wind blows to, the target at the top) with the degrees and the clock time, in Standard and Advanced. It is a visual aid only.
- Advanced - Live Wind: after a Kestrel Weather Meter reading a LIVE WIND button appears left of Distance. It connects to your Kestrel only when needed (a Weather Meter reading disconnects 30 seconds later; LIVE WIND connects again, retrying your own meter, and STOP or leaving the Solver lets it go), reads it continuously, and changes only the Windage block (3-second average); your Wind and Wind Direction inputs, elevation and everything else stay on your own values, which apply again when Live Wind stops. With a DOF entered, the arrow follows the live wind direction: mount the Kestrel on its wind vane and set its declination (True North), since its heading is used as the Kestrel shows it. If the connection drops, tap LIVE WIND to relink; without a valid Weather Meter reading it asks you to connect to the Weather Meter first. It is hidden while the weather comes from Phone Weather and stops when you leave the Solver.
- DOF is never saved as true north without a declination: with no GPS fix and no usable Country in User Details the capture screen shows the heading as magnetic and does not confirm it.
- Use Weather Meter to read a supported external meter. Weather Meter snapshots stay valid for 30 minutes.
- Your own weather meter is remembered and always looked for first (the first meter you connect becomes yours). If it is not found but other meters are nearby, you are asked before they are shown; another meter is used for that connection only and forgotten once it disconnects, unless you choose to remember it as yours (for example after changing meters) - then only it is looked for from then on.
- Use Phone Weather to fetch nearby station weather through the phone. Phone Weather snapshots stay valid for 30 minutes.
- If Weather Meter is active and Phone Weather is pressed, Solver keeps Weather Meter weather data and shows the shared retained-snapshot message.
- Solver latitude is obtained from phone GPS when weather is requested. Existing latitude remains if phone GPS is unavailable.
- When using a Calypso wind meter, point the arrow toward the target before taking a reading. The app will use the measured wind data to estimate the wind clock position automatically and populate the wind inputs.
- The estimated clock position may still be adjusted manually if observed conditions differ from the measured value. Wind speed is taken directly from the weather meter while direction remains editable by the user.
- Use Solve deviation with MV when the deviation likely comes from muzzle velocity: hotter or colder conditions, ammo lot change, barrel speed change, suppressor/setup change, or chronograph mismatch.
- Use Solve deviation with DSF when MV and rifle inputs are verified but the remaining deviation is drag/drop related, especially at longer range or near transonic distance.

- MV is the correct tool when the actual bullet speed changed; DSF is the correct tool when the drag curve needs calibration - choose based on which one actually applies.
- Use Session Zero Offset for a temporary zero correction in the current Solver session only. It uses the entered deviation and is cleared when the rifle/session changes.
- Use the rifle Permanent Zero Offset when the same rifle-specific zero correction must be applied every time that rifle is selected. This value is stored with the rifle and included in backup/import data.
- Use Scope / Prism offset only for a fixed optical or mechanical correction, such as a prism, mount, or extra scope offset when travel is limited. The entered value stays saved until changed, but is applied only while its Active tick box is selected. The tick is session-only and clears when the Solver session is left. Use Scope / Prism offset, not MV or DSF, for that situation.
- Session Zero Offset, Permanent Zero Offset, and Scope / Prism offset each add a correction to the elevation result only, leaving MV, BC, DSF, zero distance, drag model, and wind calculation exactly as solved.
- Distance is the big box at the top; wind speed, wind direction and MV sit on one row below it (MV stays visible and editable but the keyboard never moves on to it). After a distance is entered the keyboard simply closes; the red message under the result then reads "Tap here to set wind and direction. Enter DOF and Environmentals for the most accurate solve." Tap it to go to wind speed - if you change the wind, the wind direction clock opens next, then Environmentals; if you leave it, Environmentals opens straight away. Any time you change the wind speed and tap Done, the wind direction clock opens. Confirm Direction of Fire again for each new distance, because the target direction can change even when weather values are retained. The red message asks for Environmentals (Temp, Humidity, Pressure) at every distance, and, with a centerfire rifle, for DOF only above 420 m: from about 420 m the direction of fire can move the hold by half a 1/4 MOA click (about one 0.1 mil click at 1000 m). Rimfire and PCP rifles are never asked for DOF - after the wind step Environmentals opens at the first weather field instead, and once Temp, Humidity and Pressure are captured (Weather Meter, Phone Weather) the Environmentals panel closes without asking for DOF or latitude. The same applies to centerfire rifles at 420 m or less. Above 420 m a weather read moves to DOF only if it is still empty - a DOF you already entered is kept and not selected again - and asks for latitude only if the phone GPS could not supply it. For PCP rifles Spin Drift and Aerodynamic Jump are left out of the solution, because the firearm-bullet stability model they rely on is not validated for air-rifle pellets or slugs; drop, wind, drag, time of flight and velocity are calculated as normal.
- Under Analyze Ballistics > Velocity/Flight Profile, DIAGNOSE TRAJECTORY opens the ELR Trajectory Diagnostic (see Utilities) with this rifle, distance, weather, and the first distance's shot conditions carried over.
- DOF is calculated as true north. The capture screen reports both True and Mag; it uses GPS-based declination when available, country-average declination fallback when GPS is unavailable, and manual DOF entry remains available if phone sensors are unreliable.
- WMM Declination is on by default in Preferences for a more precise declination model (the World Magnetic Model) than the built-in country average, worldwide. It still needs GPS; without GPS it falls back to the country average automatically. The active source (WMM decl. / GPS decl. / country avg) is shown next to the True/Mag reading, on Solver, Target Card, and Session alike.
- Use Scan Angle when the shot angle must be measured through the camera. Point the camera at the target and hold steady until the angle turns stable, then tap Capture to lock the actual measured angle. The 1x / 2x / 4x zoom controls are positioned to the right of the camera circle and are only for visual framing.

- Capture stops live angle measuring and freezes the value. Back changes to Confirm Angle after a capture; Confirm Angle returns to the DOF arrow screen, where the locked angle is displayed. The captured angle is sent to the Solver only when the DOF itself is confirmed.
- If no camera angle is captured, the Solver keeps the normal DOF workflow, using only the angle you actually confirm.
- In Advanced, with Competition Mode enabled, Capture Turret becomes available only after a valid solution and complete Environmentals, plus DOF for centerfire above 420 m. Use the yellow guide to photograph the actual turret setting; once the photo is taken, Capture Screen runs automatically and saves the reference screenshot with the turret strip.
- Capture Screen saves the actual Solver view automatically, including the turret reference when present. It hides the navigation/actions during capture and saves outside the app, so it is not part of backup/restore.
- Target Card and Range Card use this same solver as callers only: they supply rifle, environmentals, distance, DOF, wind speed, and wind o'clock, then display the returned elevation and windage.
- When opened from a Range Card row, Solver receives that row distance plus the Range Card rifle, weather, DOF, angle, wind speed, and wind clock, and opens with Environmentals visible for review.
- Use the solution as a calculated firing aid, then verify it against real-world results in your session history or saved reference screenshots.

4.2 Wind Effect

Model wind effect using a rifle, distance, and wind input.

- Select the correct rifle first so the tool uses the rifle's active ballistic inputs.
- Verify the active load has bullet weight, BC, muzzle velocity, and bullet length where possible so lateral modelling uses the same ballistic profile as the Solver.
- Enter the target distance for the wind-effect calculation.
- Enter wind speed manually in the WS field, or press Read Weather Meter to scan for a supported wind-capable meter.
- Wind Effect uses the shared Weather Meter scanner and connection path, then performs a wind-only 10-second sample.
- Wind Effect applies wind speed and wind direction only, independent of any shared temperature, pressure, humidity, density altitude, altitude, or latitude snapshot.
- The meter disconnects after the 10-second wind sample and the screen shows the wind-reading feedback.
- When using a Calypso wind meter, point the arrow toward the target before reading. The app uses measured wind to estimate clock position, and the clock remains editable.
- The drift result shows two cards: the first in your own units - the rifle's scope unit (MOA or MIL) and your Target measurements unit (cm or inch) - and the second in the other angular and length unit.
- Use the calculated result as a modelling aid and verify it against observed impacts.

4.3 Target Card

Build and manage multi-target cards using Current Target Card, Create Card, Saved Target Cards, and the Environmentals panel.

- The page starts on Current Target Card. Use Select target card to open an existing card, or Create Card to start a new one.
- Create Card includes two paths: Create New Card, or Create from Venue and Sub-range distances. Create from Venue requires a card name first, then imports each sub-range distance with default DOF 0°, wind speed 2 mph, and wind 3 o'clock, and calculates automatically.
- Saved Target Cards is a collapsible section under the editor. Expand it to open saved cards sorted alphabetically by card name.
- An unsaved card in progress shows a collapsed amber "Unsaved - tap to review or save" banner so you never lose track of it while scrolling.
- Select rifle before calculating or sharing. Target Card starts with no rifle selected and highlights the rifle area until selected.
- Target Card, Range Card, and the Solver all share one active rifle for the session. Target Card never saves a rifle with the card itself; it always shows whichever rifle is currently selected elsewhere in the app, and re-syncs automatically whenever you land on this page.
- Phone Weather, Manual, and Weather Meter sit in one row; Manual reveals editable SP/Temp/Humidity/Latitude fields (Latitude from the phone GPS, density altitude worked out from them) and an Apply Manual Weather button.
- The active weather source label shows Weather Meter, Phone Weather, or Manual.
- Weather Meter snapshots stay valid for 30 minutes. Phone Weather snapshots stay valid for 30 minutes.
- If Weather Meter is active and Phone Weather is pressed, Target Card keeps Weather Meter data and shows the shared retained-snapshot message.
- Target Card keeps the current card open and retains Environmentals values while moving between app pages.
- Target Card uses the Ballistic Solver for each row. It passes rifle, environmentals, distance, DOF, wind speed, and wind o'clock to the Solver calculation path.
- Target Card DOF uses the same shared true-north capture as the Solver. Manual DOF entry remains available when the phone compass is unreliable.
- Use Scan Angle from DOF when the shot angle must be measured through the camera. Tap Capture to lock the measured angle, then confirm DOF to apply it.
- For the same rifle, environmentals, distance, DOF, wind speed, and wind o'clock, Target Card elevation and windage must match the Ballistic Solver.
- Use Show Summary for a compact firing reference (Distance, Elevation, Wind), then switch back to Edit Target Card to change rows.
- In the editor footer, use Export PDF, Share, and Save (when there are unsaved changes). Delete Target Card is shown for saved cards.

4.4 Range Card

Build and manage rifle-specific DOPE tables using Current Range Card, Create Range Card, Saved Range Cards, Environmentals, and Range Setup.

- The page starts in Current Range Card. Use Select range card to open an existing card, or Create Range Card to start a new one.

- In the editor, set card name, choose rifle, and use Create New when you want a fresh card without leaving the page.
- Saved Range Cards is a collapsible section under the editor. Expand it to open saved cards.
- Select the rifle first. Range Card highlights rifle selection until a rifle is chosen. Range Card, Target Card, and the Solver all share one active rifle for the session, so switching rifles anywhere carries through to Range Card.
- Phone Weather, Manual, and Weather Meter sit in one row; Manual reveals editable SP/Temp/Humidity/Latitude fields (Latitude from the phone GPS, density altitude worked out from them) and an Apply Manual Weather button.
- The active source label shows Weather Meter, Phone Weather, or Manual.
- Weather Meter snapshots stay valid for 30 minutes. Phone Weather snapshots stay valid for 30 minutes.
- If Weather Meter is active and Phone Weather is pressed, Range Card keeps Weather Meter data and shows the shared retained-snapshot message.
- If a saved Range Card is already open and a new shared weather reading arrives, a brief "Updating Range Card..." message replaces the table while it recalculates, instead of showing stale rows.
- The Manual fields are SP, temperature, humidity and latitude, for review before generating; density altitude is worked out from them.
- Range Setup can be opened or closed and includes start distance, end distance, increment, DOF, angle, wind speed, and wind clock.
- A new card starts from defaults that follow the rifle: centerfire 100 to 1000 every 100; PCP 30, then 50 and every 25 up to 250 (rows after the first stay on the 25 grid); rimfire 50 to 300 every 25. The same applies when Range Card opens with the rifle chosen in the Solver or Target Card. Change any of them in Range Setup.
- Tap Generate Range Card to refresh solver inputs and rebuild the generated table for the current setup.
- Range Card sends each distance through the same Ballistic Solver calculation path used by Solver and Target Card.
- Tap any generated row to open the Ballistic Solver at that distance with the current rifle, weather, DOF, angle, wind speed, and wind clock retained.
- Jumping between Range Card and Solver retains the Range Card rifle, weather, range setup, and generated rows. The active rifle and weather snapshot also carry over if you jump to Target Card instead.
- Use Save to store the generated Range Card. Opening a saved card loads that setup for further generation and review.
- Use Export PDF for report output and Share for copy-and-paste text. Delete actions are available from the Saved Range Cards list.

4.5 Match / Stage Mode

Organise a competition into Stages of Targets, then run each Stage one target at a time.

- A Match holds one or more Stages, and each Stage holds one or more Targets - build the whole match ahead of time.

- Add a blank Stage and fill in each Target's distance, DOF, and wind by hand, or use Import Target Card to bring in an existing Target Card as a ready-made Stage.
- Tap a Target's name row to collapse it to a summary line - name, distance, and Elevation/Windage once calculated - so a stage with many targets stays easy to scan.
- Tap a Stage's header (Tap to show / Tap to hide) to collapse the whole stage - a collapsed stage still lists a summary line per target underneath its header, so you can review every target's name, distance, and hold without expanding it.
- Select a rifle before calculating. Match / Stage Mode shares the same active rifle as Target Card, Range Card, and the Solver. A saved Match is not tied to a rifle: it opens with the rifle in use (the rifle it was saved with is only a record), and if that differs its old holds are cleared - recalculate before live mode.
- Tap Recalculate Match with Active Weather to solve every target in every stage at once using the current weather snapshot. If no weather is active yet, you are taken to the Weather Meter page to set it, then brought straight back with the calculation already applied.
- If a Solver session MV override is active for the selected rifle, an amber notice explains that Match / Stage Mode uses the Load Data MV instead, so the numbers here can intentionally differ from what Solver just showed.
- Save the Match to keep it in Saved Matches for later. Start Match is only enabled once every stage has a calculated hold.
- Run Stage drops into live mode: one target fills the screen with large Elevation and Windage values, and Previous / Next at the bottom moves through the stage's targets one-handed.
- Finish ends live mode and returns you to the match overview.

4.6 Range Viewer (Live Sharing)

Share selected Solver or Target Card data directly to another phone by using the locked BLE live-view connection.

- First enable live sharing in Solver Preferences. When Allow Sharing is off, Share / View controls stay hidden and normal Solver, Target Card, and BLE weather-meter workflows are unchanged.
- On the data phone, tap Share Live View, choose the display mode, then tap Share Now. Spotter is the default mode for a shooter/spotter workflow because it shows the main dope clearly and supports impact feedback.
- The Share screen guides both users during connection: keep the sharing phone on the Share screen, ask the shooter to open View, select the sharing phone from the scan list, and wait for the connected confirmation before shooting.
- The Viewer scan stays available longer so the shooter has more time to open View and connect. The Share phone does not change the Android Bluetooth device name; role and owner information are handled inside the app/BLE sharing flow only.
- Use Big Solution when the shooter only needs very large Distance, UP, WIND, and DOF values.
- Use Target Card when the receiving phone should see all target rows in a compact firing-reference list.
- Use Competition when you want to hide context and show only the correction needed to shoot.
- Use Custom when you want to choose exactly which fields are visible on the receiving phone.

- In Spotter mode, the sharing phone can open the Impact Target from the Share screen. The target is brought to the top so the spotter can mark impacts without scrolling.
- Tap the target to send an impact point to the shooter. The newest impact flashes red with the Impact label for about two seconds, then changes to its shot number. Older impacts remain on-screen as shot numbers.
- Impact numbering is capped at 10 shots. If the cap is reached, reset / clear the target before continuing; clearing impacts resets numbering back to 1.
- On the viewer phone, rotating sideways shows the fullscreen dope + target view. The app header, bottom navigation, and viewer controls are hidden in this landscape target view so only the firing data and target fit on screen. Rotating upright restores the normal view.
- For Target Card sharing, the viewer landscape layout keeps the card rows and impact target side by side. The Target Card viewer target layout is intentionally kept fixed so it scales correctly on the shooter phone.
- After connection, the View phone automatically uses the layout chosen on the Share phone and updates as the Share phone sends new live data.

5. Sessions & History

5.1 Session Setup

Sessions are intended to record a complete shooting event for later review, DOPE reference, and quick return to the same venue/setup.

- Select the correct rifle, venue, and load before recording shots.
- Record accurate environmentals, rifle/load setup, and target details so the session becomes a reliable future DOPE reference for the same venue.
- Use notes for observations that are hard to capture in the structured fields.
- Saving a session here plans the event; it does not yet count as rounds fired. Round count is only recorded once the actual shot data is entered and the session is marked completed in History.

5.2 History

Open Session Summary and active/saved session history from one collapsed entry point.

- History opens as a hub with Session Summary, Active Session, and full History sections collapsed under clear icons so the screen stays clean.
- If any session was set up but still needs shot data, History shows an amber open-session indicator and an Input required badge.
- Tap the open-session indicator or expand History to enter actual shot data / DOPE for the saved open session after shooting.
- Expand Session Summary to review saved sessions by rifle, venue, date, environmental conditions, and proven DOPE.
- Expand Active Session when you need to continue or review the current live session workflow.
- Search by rifle, venue, or title when you want to find a past session quickly.
- When editing a saved session, keep corrections tied to the correct distance row so the record stays reliable.

- Refresh environment: filling in straight after the session, Weather Meter or Phone Weather takes the current weather (a recent Weather Meter or Phone Weather snapshot is reused without a new read). Filling in later, type SP, Temp and Humidity (density altitude is worked out) and tap Apply Manual Weather if the weather changed - History records a past session, so the weather snapshot in use now never blocks this; it applies to this saved session only, with no expiry timer and no effect on the current weather in the rest of the app; otherwise the saved values stay.
- Check the active source label after a weather refresh: Weather Meter, Phone Weather, or Manual.
- If Weather Meter is active and Phone Weather is pressed, History keeps Weather Meter data and shows the shared retained-snapshot message.
- When exporting a PDF, leave Export report only ticked for a normal report. Tick Include user detail and Include association when the PDF must include the extra details required for association submission.
- Use Input Shot Data to enter real elevation, windage, and wind readings for every planned distance, then save and mark the session completed once every row is filled in — this is what confirms the session actually happened.
- The camera button on a distance row takes a photo or chooses one already on the phone; you are asked before an existing photo is replaced.
- Elevation and Wind are entered in the session rifle's scope unit (MOA or MIL) and wind speed in your preferred unit; the PDF export uses the same units. Elevation follows the rifle's zero: inside the zero distance any value is accepted (including negative), at the zero it must be 0 or more, and beyond it more than 0. Enter moves to the next empty field in screen order.

5.3 Session Summary

Review previous sessions by rifle, venue, and date.

- Use Session Summary to quickly review previous sessions by rifle, venue, conditions, and date when returning to a known shooting location.
- Filter and search before drawing conclusions so you are comparing the correct sessions.
- Treat the summary as a review surface; use Session or History when you need to correct the underlying record.
- When exporting a PDF, use Export report only for a normal report. Add user detail and association only when the export needs to meet association requirements.

6. Load Development

6.1 Overview

Create and track load development projects for a rifle. Previous load development history can be opened from the History tab.

- Use the History tab to review all previous load development records for the selected rifle before starting a new project.
- Select the rifle first, then start a new development for that rifle only.
- Use a clear project name that identifies rifle, bullet, and test type.
- Choose Ladder or OCW based on the process you want to run; the guidance below changes with the selected type.

- Use Weather Meter or Phone Weather in Weather Fields when current environmental data are required. Check the active source label before saving.
- If Weather Meter is active and Phone Weather is pressed, Load Development keeps Weather Meter data and shows the shared retained-snapshot message.
- Keep development records focused on planning and results so they remain easy to review later.
- When exporting a PDF, leave Export report only ticked for a normal report. Tick Include user detail and Include association when the PDF must include the extra details required for association submission.
- Powder and BC (Published/True) are required fields: BC must be a number greater than 0.10 and no more than 1.00. Round count is only added to the rifle once you record the actual shots for an entry and save.
- The export buttons (and, with Load Development for Others, Export Technical Report) only show once a load development is selected and on screen. Any open export window closes when you change the rifle or the load development, so an export can never be made for the wrong one.
- The method follows the GS guides, Ladder Explained and OCW Explained (Utilities > Documents): a Ladder finds the node - the charges whose impacts stay level while velocity keeps rising; an OCW confirms the best charge inside that node; a seating test then finds the most forgiving seating depth at that charge.
- Suggested next step (optional): under the results a blue box suggests the next stage. On a Ladder, Plan OCW from this node opens New as an OCW with charges inside the node; on an OCW, Plan seating test opens New as a seating test at the best charge. Both copy the components, seating data, distance and customer from the stage before, and everything stays editable. New still works exactly as before when you would rather plan the next stage yourself.
- Tap How to use this data with the results for a short explanation of how the green, orange and red rows are chosen for the type on screen.

6.2 Ladder Testing

Plan and review charge ladders.

- Enter the test components and seating data before planning the charge ladder.
- Set a sensible start charge, end charge, and increment so the ladder stays controlled and reviewable. Charge weight must be greater than 0 (soft ceiling 300gr); the charge increment/step must be between 0.10 and 2.00gr.
- Use the target distance and environmental fields as planning support, not as a replacement for safe load work-up.
- Keep each ladder project limited to one clear test objective so later analysis is straightforward.
- The test distance is required for a Ladder (the impact heights and the node are angles at that distance). Shoot the Ladder at 300 yd / 300 m or more - 400-600 is preferred, because vertical differences hide at short range. The planner shows a warning when the distance is below 300 in the unit shown (yards or metres).
- Until the impacts are marked, the highlighted rows are a Possible Node found from velocity only: neighbouring charges whose average velocities stay within 12 fps, green the steadiest, then orange and red. The row note reads "Tap the impacts to confirm the node". A Possible Node is a starting point, not the answer.

- Every Ladder charge is fired at its own point of aim. After you take the Ladder target photo, a notice asks you to mark the impacts; tap Mark impacts now (or Later, and Measure on the photo whenever you are ready).
- Marking: Step 1 sets the scale (tap both ends of a known size, enter it and tap Apply). Step 2 walks through the charges in order: for each charge tap its point of aim (orange cross) first, then its bullet hole. Each hole is saved at once - there is no Save button to forget. The line at the top shows the last saved charge and the node found so far; All charges lists every charge with its height above or below its point of aim.
- Skip charge moves on when a charge has no hole on the target. Undo removes the last mark - right after a hole is plotted it removes that hole and asks for it again, and it also works after the photo is opened again later. Start over (after asking) clears every saved mark. Recalibrate redoes the scale.
- Once two or more charges are marked, impact height alone decides: the node is two or more neighbouring charges whose impacts stay within 0.5 MOA in height while velocity rises. Velocity no longer decides, so a velocity-flat charge that prints out of line vertically is never part of the node, and when no charges are level there is no node. The node rows read Node with "Impacts level on the target".
- With a confirmed node, the charges outside it shrink to thin one-line rows (charge, shot number, velocity, Edit / Delete) so the node stands out; while it is still a Possible Node every row keeps its full size.
- Tap Charge range in the summary to hide or show the charge range and the Load Summary; it starts shown, and when hidden the range stays visible on one line.
- The measuring screen uses the full screen: the steps and readings at the top, the photo below. Zoom with + and " , Fit shows the whole photo again, and you can drag the L every charge. The photo of a single Ladder charge is for viewing only and stays in place.
- Plan OCW from this node opens an OCW with charges inside the node on even steps of about half the Ladder step, scaled to the case: never under 0.2 gr (0.1 gr jumps are not effective), between 0.4% and 1% of the charge, at most four loads (the middle of a wide node), and never above the highest charge the Ladder fired; a narrow node gets one extra charge below it. For example a 0.2 gr Ladder node of 41.6-42.0 gr gives 41.6 / 41.8 / 42.0 gr, and a .275 / 7 mm Ladder in 1.0 gr steps with a node of 52-54 gr gives 52.5 / 53.0 / 53.5 gr (0.5 gr apart). With two nodes that look equal, the lower one is the safer choice. If pressure signs appear as charges rise, stop: nothing above that charge is usable.
- The Ladder PDF shows the node in its notes column - Node with "Impacts level on the target" once the impacts are marked, otherwise Possible Node with "Tap the impacts to confirm the node".

6.3 OCW Testing

Plan and review OCW test groups.

- Set the session count first, then use the wizard to configure the OCW test cleanly.
- The wizard checks each load before Next moves on: Powder, Bullet, Bullet Weight, Test distance, BC (Published), Actual Lands (BTO), Test COAL (BTO), Charge and Shots planned are required. A missing field is named in red and the screen jumps to it; Back is always free, and Complete checks every load the same way. Pick from common bullets... fills bullet, weight and BC in one tap.
- Keep each load group clearly separated so charge-to-velocity comparisons remain valid.
- Use the graph and SD values as review aids after capturing enough shots per charge.

- Add to load data on a load saves it under the rifle as a new load: components, the average velocity of all its shots, and their velocity SD as Ave SD (used by Hit Probability; carried only with 2+ shots and an SD of at most 50). The load summary line ends with the Vel and SD that will be sent.
- Do not mix different component sets into one OCW project unless that is the exact comparison you intend.
- Rotate the phone sideways while Record load data is open for a side-by-side layout - charge/velocity entry on the left, the shot-impact target on the right, both visible together. It opens automatically on rotation, no extra tap needed.
- On the target, any tap without dragging places the next numbered shot directly - there is no separate Start/Stop recording step in portrait or landscape. Drag the target itself to recentre the aiming area first if needed.
- Undo shot removes the last placed shot; Redo shot brings it back. Placing a new shot, or switching to a different charge, clears the redo history.
- While recording, the target shows only the load you're currently tapping in, so it never gets cluttered with earlier loads' shots - each load's shots are still saved separately. A legend in the corner lists every charge recorded so far in the project (charge and shot count), with the active one highlighted.
- Choose Round, Square, or Diamond from the small icons on the target to change how it's drawn - this is a display choice only and never changes how group size is calculated or which target you tapped on.
- Tapping impacts automatically estimates that charge's group size and fills in Group - the target's ring spacing is treated as 1 cm per ring for a MIL-preference rifle or 25.4 mm per ring for MOA, converted to a true angular value using the actual test distance. The Group value shown always reflects your latest taps, live; a real photo measurement is kept separately and always takes precedence in the exported PDF's Data table and photo captions once one exists, so re-tapping after measuring a photo still updates what you see on-screen without changing the export.
- Tap the Group value on any result to correct it manually or force a fresh recalculation from that charge's tapped impacts.
- Tap the camera button on an entry or target to take a photo or choose one already on the phone (Android's own chooser; no storage permission needed). A chosen photo is processed, measured and calibrated exactly like one taken in the app, and you are asked before an existing photo is replaced.
- After a target photo is saved, a notice asks you to mark its holes - tap Mark impacts now or Later. Measuring a group from a photo is two steps: Step 1 sets the scale - tap both ends of something with a known real-world size (a coin, a printed grid square, a ruler mark), enter that size and tap Apply; Step 2 taps the aiming point (orange cross) first, then every hole. No aiming point skips the cross when there is none; Undo removes the last tap, and Recalibrate redoes the scale. The scale carries over to every other photo in the same project, so Step 1 is normally only needed once per session.
- The measuring screen uses the full screen: the step, help and live readings at the top, the photo below. Zoom with + and -, Fit shows the whole photo again, and you can move the holes near the edge.
- From the marked holes the app works out the group size (the widest pair, centre to centre), the vertical and horizontal spread, the shape (round, vertical or horizontal stringing) and the centre against the aiming point, live as you tap. Save writes them to the charge (Group and its Notes line: holes marked, vertical, horizontal, shape and centre); the positions are kept for the analysis and the reports.

- On an OCW result, the Ø=Ü÷ with the green dot opens that charge's photo as Notes (view, Measure, zoom). The viewer shows the charge's chronograph readings in shot order at the bottom left (for example 1-2720, 2-2722, 3-2718), in the same place as on the export photos.
- A photo overrides the taps: once a charge has a photo, its marked holes are used and the taps on the in-app target are not. In Edit mode, Delete photo removes the photo, its measurement and its marked holes; a group size measured on the photo goes back to the value from the tapped target, and a group size typed by hand stays.
- The PDF export lists each charge's raw chronograph readings (numbered in recording order) near the bottom of its photo/target block, tags the Group size line with how it was measured (Photo Impact, Tapped Impact, or Entered manually), and shows Group in both MOA and MIL in the Data table, your preferred unit first.
- Once a charge has tapped impacts, a Target icon appears next to Photo on its row in the results list - tap it to view just that charge's own impacts. The Target icon on the project's Notes/Photo toolbar instead shows every load's impacts overlaid together, colour-coded by charge, for comparing the whole project at a glance.
- If a target is ever lost before it can be photographed, a charge with tapped impacts but no real photo still shows up in the PDF export - the recorded impact target is rendered as its own image, sized and placed exactly like a real photo would be, and included in Best Load ranking on equal terms.
- Green, orange and red follow the GS OCW guide - impact position first. With the impacts tapped, or the holes marked on the photo with an aiming point, green is the OCW node: neighbouring charges whose group centres stay at the same height (within 0.3 MOA), with the middle charge first (with an even number, the better group of the two middle ones). A charge out of line vertically is never the node, whatever its group size or SD. Horizontal spread is left to wind and the shooter.
- Without impacts, green is only a possible node, ranked by measured group size, then velocity SD, then ES (each only when available). An amber note under the Load Summary heading then says so and asks you to tap the impacts to confirm the node; it is not shown once holes are marked on a photo.
- Tap Load Summary to collapse or show the loads (it starts shown).
- Confirm the chosen charge with one or two 5-10 shot groups before tuning seating depth.
- A seating test is an OCW with one charge and a different jump per load. It ranks the most forgiving depth first: of the neighbouring jumps whose groups stay within 25% of the best group, the middle one - a depth that keeps grouping as the throat wears. On an OCW, Plan seating test opens one at the best charge with three jumps 0.020 in apart - 0.020 / 0.040 / 0.060 in off the lands (test lengths worked out from Actual Lands) - and 3 shots per load; everything stays editable.
- When the best charge already groups under 1/4 MOA (0.073 MIL, or about 7.3 mm at 100 m / 21.8 mm at 300 m when the group is in mm), the suggestion still offers Plan seating test but says the grouping already seems suitable and a seating test is entirely optional - only if one-hole groups are sought.
- When the jump to the lands is not the same across a development (a seating test, or loads seated differently), every result shows its Jump next to the charge (for example Jump 0.040in), and the OCW PDF prints the Jump values in bold for easy identification.
- The OCW PDF names its BEST LOAD the same way - the node from the impacts first, the seating window for a seating test - and shows an amber note when green comes from group size or SD instead of the impacts.

- Deleting a session while still in pre-wizard planning (no velocities recorded anywhere yet) automatically renumbers the remaining sessions back to S1, S2, ... - each session's own charge, notes, and photos travel with it as its label shifts. Once any session has recorded data, a delete leaves a gap instead of relabeling sessions that already hold results.
- Velocity entry accepts space, comma, and period as equally valid separators between shots (e.g. "2765 2772", "2765,2772", and "2765.2772" all mean the same two shots) - typing a comma or period auto-adds a space so multiple readings stay clearly separated as you type.
- In landscape, the Velocity field is read-only and a small on-screen keypad (digits, comma, decimal point, backspace) appears below it instead of the system keyboard, so the keyboard never covers the target. Portrait keeps the normal keyboard.

6.4 Load Development for Others

For developers who develop loads for customers (Advanced feature level).

- Turn on Load Development for Others under Preferences (Advanced feature level). The customer fields and Export Technical Report only appear while it is on; in Standard they are hidden.
- A new load development shows Customer Name and Surname at the top of the form. Both are optional and are saved with the project. The customer is shown under the selected load development and in the load development picker.
- Ladder and OCW PDF exports then add Developed for (the customer) and Developed by (your User Details name), with your phone and email. If Include user detail is also ticked, name, phone and email are not printed twice; only ID / Passport and Country are added. Your business logo (Preferences) shows on the right of the header.
- Export Technical Report builds a customer report in English. It needs recorded shots. A chooser lists the load developments of this rifle (oldest first) - tick the Ladders and OCWs to compile into one report; the Ladder before an OCW is suggested, because it explains why the OCW charges were chosen. Each stage is analysed on its own in date order, and the conclusion comes from the last one. Tick Add each standard export as an appendix to add the normal Ladder / OCW exports (graph, data table, load summary, target photos) at the end.
- Every report page shows the page number, and Developed by when your name is saved under User Details (without it, the export asks first). With one shot per charge, SD and ES are left out.
- To share a load development with your customer, use Utilities > Export (Create / Send Partial Export) and select it there; your customer imports the file with Import Partial Export From File.
- BC is not part of Load Development reports. Add the chosen load to the rifle's Load Data with its BC.

7. Utilities

7.1 Utilities Overview

Supporting tools for export, backup, documents, and more.

- Utilities contains support tools that assist the main workflows without changing rifles, venues, sessions, or load development records directly.
- Open the specific utility you need rather than treating this page as a workflow step.

- Use Converter, Targets, and Documents as supporting tools before or after field use, plus Route to Venue for phone navigation to a saved location. Weather Meter and Vault are also reachable here (Also on Shortcut) though they live on the main Shortcut grid; Universal Loader and Hit Probability are Shortcut-only and are not listed on this page. Backup/Restore and Export/Import live under System Settings.

7.2 Universal Loader

Connect and control BLE powder dispensers from the Shortcut grid.

- Universal Loader connects to AutoTrickler and RCBS ChargeMaster Link, plus early RCBS Supreme/MatchMaster frames. It is reached from the Shortcut grid only, not from this Utilities page.
- No brand is selected by default. Tap Scan on the entry screen to search for any supported loader nearby - AutoTrickler and RCBS ChargeMaster Link both show up from the same scan, so there is no need to pick a brand first.
- AutoTrickler V4 and RCBS ChargeMaster Link are the two confirmed, tested protocols. AutoTrickler V3 support exists but has not been tested on real hardware; ChargeMaster Supreme and MatchMaster are implemented but untested, so a scan still finds them, marked Untested, but connecting to them is disabled until they have been verified.
- Once connected, use the Control / Loads / Powder / Calibration tabs at the bottom of the screen - each has its own Help button with details specific to that screen.
- On AutoTrickler V4, dispensing requires the selected powder to have a real Calibration result first, since that gives the controller a safe basis to size a pour.
- On the RCBS ChargeMaster Link, AUTO/MANUAL can only be switched with the physical MODE key on the scale - tell the app which mode is currently set to unlock the keypad.
- Once RCBS ChargeMaster Link is connected, use the Control / Load / Calibration / Setup tabs at the bottom of the screen. Load and Setup are placeholders for now; Setup also holds Disconnect.
- Universal Loader opens full-bleed - it replaces the main app's bottom navigation with its own Control/Loads/Powder/Calibration tab bar while the page is open, keeping the layout uncluttered on a small screen. Leaving Universal Loader restores the normal app navigation.

7.3 Universal Weather Meter

Read external weather meters or Phone Weather into the shared weather snapshot.

- Use Read Weather Meter to scan for a supported external weather meter and apply its weather snapshot. Weather Meter snapshots stay valid for 30 minutes.
- Use Phone Weather to get nearby station weather through the phone. Phone Weather snapshots stay valid for 30 minutes.
- Use Manual to enter SP, Temp and Humidity by hand, in your Preferences units, when no meter or phone reading is available. Latitude fills in from the phone's GPS (type it if GPS is not available) and Density Altitude is worked out from the values. Manual snapshots stay valid for 30 minutes, same as the other sources.
- Weather Meter has priority. If a valid Weather Meter snapshot is active and Phone Weather is pressed, the app keeps the Weather Meter snapshot and reports the shared message.
- Use Clear at the bottom of this page to remove the active shared weather snapshot and stop active weather activity.

- If a valid weather snapshot is already active and a new Phone Weather or Manual reading comes back meaningfully different, a Conditions Changed card shows the Temperature and Pressure delta before anything is applied - tap Apply New Environment to use it, or Keep Current Conditions to discard the new reading.
- Check the source label and countdown before using the snapshot in Solver, Target Card, Range Card, Sessions, Load Development, or History.

7.4 Converter

Convert between supported units.

- Choose the conversion category first, then select the exact conversion you want to use.
- Use the converter as a quick reference tool and verify the target unit before copying results.
- Where possible, align Preferences with your working units so you do not need repeated conversions.

7.5 Targets

Download, share, or print standard PDF targets.

- Use this page when you need a clean printable target for zeroing, grouping, OCW, or ladder testing.
- Tap the target card you want. The app opens the PDF through the normal phone share/print flow.
- Choose OCW / Ladder for load development workups, diamond targets for precise zero confirmation, and square targets for simple group or confirmation work.
- MOA and MIL targets are true-scale: print at 100% / Actual size (not Fit to page) and check the validation bar with a ruler.
- The target files are support material only. Record the actual shooting results in Sessions or Load Development so the data is saved with the rifle and range context.

7.6 Backup

Back up or restore app data.

- Create a backup before major cleanup, imports, or app changes.
- Use Create Full Backup to save a full backup straight to Downloads/GSBallisticBackups on this device, with no share-sheet app picker needed.
- Use Restore Latest Full Backup to automatically find and restore the newest backup saved in Downloads/GSBallisticBackups.
- Local backup/restore stays on this device only. Use Export Full Backup (share) when you need an offsite copy, for example on OneDrive.
- Use restore carefully because it affects stored data across the platform, not just this page.
- Use Restore Full Backup only for complete-device recovery or migration. It is not intended for sharing selected rifles, venues, sessions, or load-dev data.
- If restore fails, first confirm the file is a GS_Ballistic_Full_Backup JSON (or ZIP containing that JSON), then retry from a local device copy if the file came from cloud storage.
- Keep backup files clearly named so you know what point-in-time snapshot you are restoring.

7.7 Export

Create a merge-safe JSON share/import file only.

- External (GS-to-GS sharing) and Import Files from Other Ballistic Apps sit in two collapsible sections, like Backup - tap a header to expand it. Only one stays open at a time, and External is open by default.
- Rifles and Venues start unticked and collapsed. Tick only the sections you want to include in the JSON export.
- Use All rifles / All venues for a full share file, or untick All and use the selector to choose individual records.
- Selecting Sessions automatically includes linked Shot / DOPE rows. Shot Data can still be selected on its own when Sessions is not selected.
- Load Dev uses its own project selector and reads the actual Load Dev projects for the selected rifle(s). The exported JSON keeps those projects editable/importable in the receiving app.
- Use this export to share selected app data with another user or another device. The receiver imports the JSON, then the data becomes available inside the normal app sections.
- Use Export Partial File to Local Folder to save the selected partial export straight to Downloads/GSBallisticExports on this device, with no share-sheet app picker needed.
- Use Import From Local Folder to choose a file from Downloads/GSBallisticExports. Unlike Restore Latest Full Backup, you always pick which file to import, since more than one partial export can exist there.
- Local export/import stays on this device only. Use Create / Send Partial Export (share) when you need an offsite copy, for example on OneDrive.
- Import Files from Other Ballistic Apps reads Strelak .srl exports and Applied Ballistics/Kestrel .pro files that are readable as text/XML, and identifies the source automatically - you do not choose it yourself. Strelak imports are load data only: its rifle setup fields (caliber, twist, scope, zero) have repeatedly proven unreliable or missing, so GS never creates a new rifle from a Strelak file - only the load(s) are imported, and you attach each one to one of your existing rifles instead. AB Quantum is not supported: it only shares profiles as a QR code, and the data inside it is a proprietary format Applied Ballistics does not publish, so GS cannot read it under any circumstances - enter that rifle and load manually instead.
- Every rifle and load in the preview has its own tick, all ticked by default. Untick a whole rifle to skip it entirely, or untick just one load under a rifle to leave that specific load out.
- For Applied Ballistics/Kestrel imports (which do create a new rifle), GS checks each rifle's loads against its established caliber for a mismatch - source apps do not stop a load being filed under the wrong rifle. When a numeric bullet diameter was not exported, GS establishes one from the rifle's declared caliber or name (e.g. "6.5 C Moore" resolves to 6.5 Creedmoor) and from named bullets it recognizes (e.g. "Scenar 139" resolves to .264in) - only ever using a match it's fully confident in, never a guess. A mismatched load is hidden from the list by default, collapsed behind a "N load(s) hidden - Show" toggle so it never clutters the preview, but stays reachable if you know better. The same bullet-recognition logic also powers the "Attach to" suggestion when allocating a Strelak load to one of your existing rifles.
- Tick a load without ticking its own rifle to attach just that load to one of your existing rifles instead of creating a new one for it - GS suggests the closest match by bullet diameter in the Attach to dropdown next to it, defaulting to Skip when there is no confident match.

- Every imported profile is added as a brand new rifle - GS never overwrites an existing one - and any missing or unreadable field (caliber, twist, zero range, BC, muzzle velocity) is flagged Needs Review on the rifle card instead of being guessed.
- After a successful export (local or share), a small green confirmation message is shown on-screen so the result is obvious.
- If import fails, confirm you selected a GS_Ballistic_Partial_Export JSON file. Full-backup JSON files belong in Backup restore, not Partial Import.
- Rifle exports include twist rate and twist direction. Load exports include ballistic inputs such as bullet weight, BC, muzzle velocity, and bullet length when entered, so spin-drift inputs are preserved during backup/import.
- Print or share PDF reports from the relevant sections, such as Rifle Data, Load Development, Sessions, or other section-specific report screens.

7.8 Documents

Browse bundled reference documents.

- Use this page for bundled reference material and quick reading in the field or at the bench.
- Search by title or tags to find the document you need quickly.
- Treat documents as supporting reference; store your actual session and load data in the main app flows.

7.9 Vault

Store license front and back photos with a searchable name, and get reminded before a license expires. Free and unlimited.

- Tap Add License and enter a clear name.
- Capture the front and back photos.
- Choose the caliber from the full list, which always includes rimfire calibers - Vault is an independent record store and is not gated by the Support Rimfire preference the way rifle/ammo pickers are.
- Enter the optional Expiry date to get reminders 6, 3 and 1 month before it, then weekly until it is renewed or the license is deleted - as Android notifications, even with the app closed. Notification permission is asked for when you save a license with an expiry date.
- The expiry badge in the list and viewer turns amber from 6 months before expiry, bright amber from 1 month, and red in the last week and after expiry. The expiry date is also printed on the license PDF.
- Tap Edit to update a license, for example to enter the new date after renewal; the screen scrolls up to the edit form.
- Use Search to find saved licenses.
- Open a license to view it or export it to PDF.
- Vault is free and unlimited for everyone, with or without a purchase.

7.10 Hit Probability

How likely your first shot is to hit your target, with the errors every shooter makes - and which of your rifles gives the best chance.

- Choose a rifle, then enter the shot in Shot Setup: distance, DOF, shot angle, wind speed and Wind O'clock. GS uses the active weather snapshot and the rifle's active load exactly as the Ballistic Solver does. If no weather snapshot is active, or a value is missing, you are taken to Weather Meter and brought straight back.
- Pick the Target: 1 MOA circle, 1.5 MOA circle, 10 / 20 / 30 cm plate and IPSC 46 x 76 cm (4 / 8 / 12 inch plate and IPSC 18 x 30 inch when Target measurements is set to inch), or Custom (circle or rectangle). Until you pick one on a visit, the target follows the distance: the 30 cm / 12 inch plate up to 799 (m or yd), IPSC from 800, and a 1.5 MOA circle from 2000 (sized for the distance, as ELR targets are). A rifle that needs more than 90 mil elevation at the distance cannot reach it for an aimed shot: it gets no hit % and is listed at the bottom with the reason. A picked target is never overridden, and a custom size is remembered. Under the target, its angular size at the current distance is shown in the rifle's scope unit (MOA or MIL).
- Open Input Your Error Calls and enter how far off each call might be - these are errors (+/-), not the wind or distance themselves. Your calls (wind speed, wind direction, range) apply to every rifle and start at 0 on every visit, since they depend on the day - enter your own, or tap Reset to typical (2 mph, 15 deg, 3 m). This rifle is just its field group (typically 1 MOA, 5 shots; at most 2 MOA), remembered per rifle and named in the result. BC certainty comes from the load (+/-0.5% for a trued BC or CDM curve, +/-1% for a published BC) and velocity SD is the Ave SD entered on the rifle's active load (Rifles > load data), or 10 fps when none is entered - then a message says the result uses an assumed SD and asks you to add Ave SD to the load; the note under This rifle shows which. A warning shows while typical values are in use.
- Tap CALCULATE. GS measures how far the impact moves for each kind of error with the exact solver, then simulates 10,000 first-round shots and counts how many land on the target. Hit % = how many of 100 first shots hit, before any correction.
- The result shows the first-round hit %, an impact plot with the 1-SD spread, how far you keep 80% and 50% first-round hits (Show range chart draws the whole curve), and What's costing you hits - the hits you would gain if each error were perfect. Work on the top one first; at long range it is nearly always the wind call.
- Below 10% the result shows one decimal and reads as "about 1 in N first shots". Low numbers at long range are normal - follow-up shots corrected from your spotting hit far more often.
- CALCULATE works out only the chosen rifle - other rifles are not solved. CALCULATE ALL RIFLES answers one question: for this exact shot, which of my rifles gives the best first-round chance? Every rifle gets the same distance, wind, weather and target plus its own field group. Rifles a few % apart are effectively equal; each also shows the target size it needs for 50% hits. When every rifle is below 10%, rifles are ranked by that target size instead.
- Nothing recalculates while you type. After a change - including picking a different rifle - the results are marked out of date: RECALCULATE redoes the selected rifle, and RECALCULATE ALL RIFLES updates every rifle in the ranking.
- Get the Job Done walks you through the shot one field at a time and shows the three best rifles. If every rifle is below 10%, it says no rifle is suited to a first-round hit here instead of naming a winner.
- A rifle is excluded whenever its active load is missing muzzle velocity, zero range, Height Above Bore, or valid drag data; the missing field is shown next to it.

7.11 ELR Trajectory Diagnostic

Compare real observed DOPE at multiple distances against the stored load to find which single explanation best accounts for any gap.

- This calculator is read-only, leaving the rifle and load exactly as they are. It tests which mathematical explanation best reproduces the observations you enter, weighing every entered distance equally rather than forcing one to match exactly.
- Open it from Tools > Utilities, or tap DIAGNOSE TRAJECTORY under Analyze Ballistics > Velocity/Flight Profile on the Solver to arrive with rifle, distance, weather, and the first distance's shot conditions already carried over.
- The Weather card starts collapsed once valid weather is applied (from the handoff, or previously fetched) and expanded otherwise. Phone Weather, Manual, and Weather Meter all sit in one row; Manual exposes its own Temp/Humidity/Pressure fields when tapped.
- Each observed distance has its own DOF, Wind speed, and Wind O'clock fields below it, since the direction and wind you were shooting in can differ between groups taken at different times. New rows default to 0° DOF and a light 3 o'clock breeze - adjust each row to match what was actually happening when that group was shot.
- Distance entry follows your Preferences distance unit (m/yd); Actual elevation entry follows the selected rifle's own Scope unit (Rifles tab), falling back to the app-wide preference only if the rifle does not specify one.
- Enter at least two observed distances with the actual elevation DOPE required to centre the group at each - use multi-shot group centres where possible, not single called shots, since the diagnostic can only work with the number you give it.
- ANALYSE TRAJECTORY tests Zero Offset, Muzzle Velocity, Global BC/Drag, and - with 4 or more observations on a BC-method load - Velocity-Banded BC, a late-trajectory drag change useful for divergence that only appears near or past transonic range.
- RMSE (Root Mean Square Error), shown next to every model, is how closely its predictions match your entered observations, averaged across all of them and in the same unit as your data - lower is a closer fit. It is the number every model is ranked by; "Max" alongside it is the single worst residual among your rows, a separate figure worth checking even when RMSE looks good.
- Scope Tracking gets a dedicated advisory instead of a ranked model score, since it's something to verify directly - a tall-target test - rather than something this app can act on. That advisory appears whenever none of the tested models meaningfully improve on the stored load; rule out shooter-side causes (single called shots, cant, parallax, unverified weather) first, then run the tall-target test to check tracking directly.
- A best fit identifies the model that most closely reproduces your entered observations, and is worth confirming at another distance - the Recommended Validation Distance card suggests where - before treating it as settled.
- APPLY TO SESSION, shown on the Best Mathematical Fit card for Zero Offset, MV, Global BC/Drag, and Velocity-Banded BC, sends that correction to your current Shooting Solution session only, using the same session-only fields Tools to True already uses, and resets the moment you leave that Solver session.
- SAVE DIAGNOSTIC stores the comparison and its notes to History for later reference only, keeping rifle/load data exactly as it was whether or not you also used Apply to Session.

- After saving, EXPORT REPORT (PDF) shares a one-page report: the best fit, its error (RMSE) and improvement over the stored load, where to confirm it; a chart of how far the stored load and the best fit miss at each distance; the models ranked by error; the observations with predicted elevation, miss, impact velocity, Mach and wind; the models tested and what each changes; the next test; and the conditions. History > ELR Diagnostics records have the same Export button; diagnostics saved before 4.6.39 export without the per-distance miss chart.

7.12 Velocity Loss BC Calculator

Work out the BC - or RA4 drag scale for rimfire - from your own measured velocity loss, and save it to the rifle, as Multi-BC, or to History.

- Enter a measured velocity loss and GS inverse-solves for the drag parameter that reproduces it, using the same drag tables and integrator as Shooting Solution. Nothing is written to the rifle unless you choose Save to rifle or Save as Multi-BC and confirm.
- Selecting a rifle is required - the drag model, muzzle velocity and suggested distances all come from that rifle's own data, so nothing runs until one is chosen.
- Drag model is set automatically from the rifle's platform: G7 for centerfire, G1 for PCP, and RA4 for rimfire - a built-in .22-class Cd(Mach) curve. RA4 solves a drag-scale factor (DSF) instead of a BC, using the rifle's actual bullet weight (active load) and bullet diameter (Rifle Data).
- Muzzle velocity auto-fills from the rifle's active-load MV, which may not be today's: the first Calculate jumps to it and asks you to confirm it was measured at this test, or to type today's reading. Suggested distances suit the rifle's platform and MV; for a PCP they come from the active load (its BC, or pellet/slug, weight and diameter), aiming for about 50 / 100 / 150 / 200 fps of speed loss over four readings, up to 100 m. Add one to five downrange readings (distance and velocity) - two chronographs, or one moved between shot strings. Distances must increase and each farther velocity must be lower.
- Import chrono file (under the muzzle velocity) and Import File (beside Add Reading) read the file your chronograph app exports - CSV, TXT or Excel, one or several shot strings, fps or m/s, comma or dot decimals (Garmin Xero, LabRadar, MagnetoSpeed and others). GS lists each string with its shots, average, SD and ES and suggests where it goes - the muzzle velocity or a reading - which you can change. Each string's average is used; SD, ES and the shot count are kept for the report. Typing over an imported value drops its statistics.
- An active weather snapshot is applied automatically; Phone Weather, Manual and Weather Meter sit in one row to update it.
- One reading gives a single effective result from the muzzle to that distance. With two or more, the headline is a best-fit BC fitted to all readings together, so no single noisy reading decides it; GS shows the average miss and how far the fit misses each reading.
- Each velocity band between readings also gets its own BC, used for Multi-BC (a drag-scale factor per band for RA4, as a consistency check).
- A recommendation compares the fit misses with chronograph accuracy (about +/-3 fps): Single BC when one BC fits every reading within that; Multi-BC when the near and far readings miss in opposite directions by more than that, so the BC really changes with speed (with only two readings, a third would confirm it); Check a reading when one middle reading misses while the others fit; and Single BC with a re-measure note when the readings scatter without a speed trend. Both save options stay available.

- Save to rifle writes the best-fit BC to the active load as its trued BC and turns Multi-BC off; Save as Multi-BC writes the velocity bands, turns Multi-BC on and also sets the trued BC to the best-fit BC (with its G1/G7 label, which is the drag model the bands are read in, so the two always match); Save to History only leaves the rifle untouched. Saving to the rifle asks you to confirm first. Rimfire results are a drag scale, not a BC, so they save to History only.
- Every save is kept under History > Velocity Loss / BC, next to ELR Diagnostics, together with its Findings: the recommendation, how far the fit missed each reading, and the spread of the band BCs. There is one record per calculation - saving it again (for example History first, then to the rifle or as Multi-BC) updates that record instead of adding a duplicate. Records are included in backups and removed with their rifle.
- After Calculate the inputs fold into a one-line summary (Edit Inputs opens them again) and the screen jumps to the result.
- After saving, Export Report (PDF) shares a one-page report: the headline BC and recommendation, a velocity-over-distance chart (measured averages with SD bars and the best-fit curve, dashed past the last reading), a BC-by-velocity-band chart, the readings table with shots, SD, ES, speed loss, fit miss, segment BC and Mach, What the new BC changes (elevation hold with the load's previous BC vs the new one at typical distances, in the rifle's scope unit, and where the previous BC would put the shot) beside a hold-over-distance chart of both, the distances where the bullet goes transonic (Mach 1.2) and subsonic with each value, the conditions, and data-quality checks. For rimfire the comparison is the new drag scale against the stock RA4 curve (x1.000), at 50 - 200 m. The velocity chart shades the transonic zone (Mach 1.2 - 0.9) where it reaches it. History > Velocity Loss / BC records have the same Export button; records saved before 4.6.37 export without the sections they lack.
- Density ratio (sigma) and speed of sound are shown alongside the result so you can sanity-check the atmosphere the solve used.
- Measurement quality matters: average a shot string at each chronograph position, measure the spacing accurately, and use the atmosphere at the time of the test. Over short distances (for example pellets at 10 m steps) one BC is usually the better number; velocity bands pay off only when the readings are far enough apart to show a real change - follow the recommendation.

7.13 Equipment Reach Planner

Check whether one selected rifle can mechanically dial a desired distance, and get a ranked plan of what would close any gap.

- This is a single-rifle tool: select one rifle, enter the desired distance, then enter that scope's mechanical setup - available Up travel and Down travel from the established zero, and the current Picatinny rail/base cant in MOA. These are entered fresh every time and are never saved to the Rifle profile, since this is a rarely-needed check, not a live workflow field.
- Selecting a rifle hides the intro guidance and scrolls the Rifle section to the top; tapping GET ME THERE scrolls the results into view as soon as they are ready.
- GS solves that rifle's exact active load against the active weather snapshot through the normal Ballistic Solver, using a fixed level-shot test condition (0° shot angle, 0 mph wind, DOF 0°) so the equipment comparison is not confused by wind or angle effects.

- The result always shows a Ballistic flight state - GOOD BALLISTIC MARGIN (Mach 1.20 or higher at impact), TRANSITION REGION (Mach 0.80-1.20), or, only for a round that left the muzzle supersonic and has since dropped below Mach 0.80, EXTREME SUBSONIC FLIGHT / VERIFY IN FIELD. These are informational only and never hide the equipment answer below them - many legitimate ELR shots arrive transonic or subsonic, and the mechanical answer is exactly as valid there. A load that starts subsonic (most .22 LR loads) gets a neutral subsonic label instead of the transition warning, since it never crosses that transition.
- The planner's NO-GO is always an objective equipment limitation: when rail/mount cant alone falls short of the required elevation even after practical configuration, GS shows "Mechanical reach: NO" / EQUIPMENT LIMITATION, followed by Alternatives showing what would actually close the gap.
- GET ME THERE shows a ranked plan, not just a shortfall: a single Recommended Solution (a standard rail/base size, or a combined rail-plus-reduced-scope-travel fix when rail alone is not enough), followed by Alternatives - an adjustable canted mount, the minimum usable scope travel to shop for, a Prism/TARAC-style external elevation device (pairs with Shooting Solution's Scope / Prism offset), dialing to the mechanical limit and holding the remainder in the reticle, and a CHECK RIFLES pointer to Hit Probability if another saved rifle/load would need less elevation here.
- Higher-MOA rail/mount cant and taller scope rings solve different problems: cant is what adds usable long-range turret travel, while ring height only changes how high the scope sits above the bore - recommendations here are always about rail/mount cant.
- A Precision factor percentage is shown alongside the Mach reading, using the same fixed-reference suitability scoring Hit Probability keeps for breaking ranking ties, adapted for this page's always-0-mph-wind test condition - it is informational context only.
- Recommendations on this page show the theoretical mechanical minimum only; add your own margin if desired, and always confirm actual mechanical travel and re-zero after changing a rail, mount, or optic.

7.14 SG Pulse

Connect an SG Pulse unit over Bluetooth, see live rifle cant and run the Pro timer.

- Tap Scan for SG Pulse, then Connect on your unit; the green CONNECTED button disconnects.
- Set ALLOWED CANT for the tolerance you want; the cant reading comes straight from the unit. On a unit that supports it, the allowed cant is read from and saved on the unit itself (0.2 deg steps), and a change made on the unit or in another app is followed here.
- Calibrate unit (the small link next to RIFLE CANT) stores level in the unit itself: hold the rifle level and still, confirm, and the unit calibrates in about 2 seconds. SET LEVEL only zeroes the reading in this app; a successful Calibrate unit clears it so the two never add up.
- LEFT or RIGHT shows which way the rifle is canted, and the number is the angle from level.
- Set the Timer period (up to 16:39, default 3:00), tap Apply, then START; a standard Pulse runs it on the phone. On a Pro, Apply after a finished run also puts the 0:00 display back to the period.
- In Alert, set the times and beeps, pick a Beep sound, then tap Apply; the red x removes an alert.
- Tap CONNECTED when you are done. Closing the app always releases the unit's Bluetooth link (a Pro keeps timing and the run is picked up on the next connect), and a failed scan or connect resets fully so you can simply scan again. SG Pulse does not change any solver or session data.

7.15 Maintenance

Inspect or repair stored data.

- Maintenance is a hub: Database Maintenance (inspect or repair stored data), Compass & Sensors, and Erase All Data each open as their own screen from here.
- Create a backup first before running any corrective actions.
- Maintenance is a support area, used only occasionally rather than as part of normal day-to-day shooting workflow.

7.16 Support

Collect app information for troubleshooting.

- Use Support when you need to report a problem or share app state for troubleshooting.
- Include a clear description of what happened and what screen or process you were using.
- Where possible, create a backup first so support has a safe point-in-time reference.