9.3.2 CLT chart (lateral tilt angle vs. lateral pitch)

CLT chart (lateral tilt angle vs. lateral pitch)

> 9.3.2 reference

The **CLT chart** — Compensating Lateral Tilt — maps the relationship between a bowler's lateral axis tilt angle and the appropriate lateral pitch value for the finger holes. Where forward pitch addresses how deeply and securely the fingers seat in the ball, lateral pitch corrects for the natural angle at which the fingers approach the holes relative to the ball surface. Getting lateral pitch right produces a grip that feels neutral and natural — the fingers enter and exit without twisting, and the hand does not have to compensate for a misaligned hole during the release.

□□ What CLT Measures and Why It Matters

When a bowler's hand approaches the ball at rest, the fingers do not always come straight down perpendicular to the ball surface — most bowlers have a natural lateral tilt to the axis of the finger approach. If the holes are drilled straight (zero lateral pitch) and the bowler's natural approach angle is offset, the inside wall of the hole contacts the finger on one side while the other side has a gap. The finger compensates by twisting slightly to fill the hole — and that twist is felt at the release as friction, torque, or discomfort.

Lateral pitch corrects for this by tilting the hole axis to match the bowler's natural approach angle. When the hole and the approach angle align, the finger seats cleanly and exits cleanly without compensation. The CLT chart gives you the pitch value that produces that alignment for a measured tilt angle.

📐 Measuring the Lateral Tilt Angle

The lateral tilt angle is the angle between the bowler's finger axis and the vertical when the hand is in grip position. It is assessed with the bowler holding a ball in their natural stance or with a fitting ball:

1. Ask the bowler to hold or rest their hand on a fitting ball in their natural grip position — relaxed, not forced.
2. Observe the angle of the middle finger from the side — specifically whether the finger tilts toward the thumb side (inward tilt) or away from the thumb (outward tilt) relative to vertical.
3. Estimate the angle of tilt in degrees. Most bowlers fall between `0°` and `10°` — values beyond `15°` are uncommon and warrant verification before drilling.
4. Note the direction — tilt toward the thumb (toward the ring finger side for the middle finger hole) is the most common direction and typically calls for lateral pitch toward the thumb side.

🗒️ **Note:** Lateral tilt is most easily assessed with a fitting ball or a house ball in the bowler's hand rather than from observation alone. A bowler who is asked to mime their grip without a ball often holds their hand in a slightly different position from their actual delivery grip — the weight and feel of the ball reveals the natural approach angle more accurately.

🗂️ CLT Chart — Lateral Tilt Angle vs. Lateral Pitch

Lateral tilt angle	Direction	Recommended lateral pitch	Notes
`0°`	None — fingers approach vertically	`0` (zero lateral pitch)	Holes drilled straight. Most common in bowlers with a neutral, square grip position.

Lateral tilt angle	Direction	Recommended lateral pitch	Notes
`1°` – `3°`	Toward thumb (inward)	`1/16"` toward thumb	Minimal tilt — borderline for correction. Some fitters leave this at zero; others prefer to compensate even at small angles.
`4°` – `6°`	Toward thumb (inward)	`1/8"` toward thumb	Most common range for right-handed fingertip bowlers. Standard lateral pitch for a typical fingertip fit.
`7°` – `9°`	Toward thumb (inward)	`3/16"` toward thumb	Moderate tilt requiring meaningful correction. Verify the tilt angle before committing — this range is less common and worth re-assessing.
`10°` – `12°`	Toward thumb (inward)	`1/4"` toward thumb	Significant tilt. Check for physical causes — unusual hand geometry, grip tension, or measurement technique. Use this pitch only if the angle is confirmed.
`1°` – `3°`	Away from thumb (outward)	`1/16"` away from thumb	Less common direction. Occurs in some left-handed bowlers or those with an unusually open grip position.
`4°` – `6°`	Away from thumb (outward)	`1/8"` away from thumb	Requires careful verification — outward tilt at this level is atypical and worth discussing with the bowler before drilling.
Above `12°`	Either direction	Consult experienced fitter	Values above 12° are unusual. Re-measure and verify before proceeding. May indicate grip tension, an atypical physical characteristic, or a measurement technique issue.

⚠ **Verify with Spectre team:** Confirm the lateral pitch values in this chart against the CLT standard values used as the basis for Spectre Cloud's auto-suggestion algorithm. The values above are based on general IBPSIA-derived CLT guidance and should be cross-checked against the specific values the app references before publishing.

⚖ Middle Finger vs. Ring Finger — Are They the Same?

In most fits, the middle and ring fingers have similar lateral tilt angles and receive the same lateral pitch value. However, they should always be assessed independently — assuming symmetry without checking is a common source of subtle grip discomfort that is hard to trace after drilling.

- Assess both fingers in grip position and note whether their tilt angles appear the same or different.
- For most bowlers the difference, if any, is small enough to round to the same pitch value — but note the independent assessment in the spec sheet rather than recording a single assumed value for both.
- In cases where the middle and ring finger tilt angles are noticeably different — more than one or two degrees apart — enter different lateral pitch values for each hole and note the reason.

CLT and Handedness

The direction of lateral tilt is often influenced by handedness, though it varies by individual. As a general orientation:

- **Right-handed bowlers** most commonly tilt toward the thumb (inward) — lateral pitch toward the thumb side is the standard correction.
- **Left-handed bowlers** follow the same physical principle but mirrored — inward tilt for a left-handed bowler also tilts toward the thumb, which is on the opposite side from a right-handed bowler.
- Confirm the direction by observation rather than assumption — a right-handed bowler with an outward tilt is unusual but not impossible.

Using CLT Values in Spectre Cloud

Once you have determined the lateral pitch value from the CLT chart, enter it in the **lateral pitch field** for each finger hole on the spec sheet. Spectre Cloud's auto-suggestion system may generate a lateral pitch suggestion based on the bowler's measurements — compare this against the CLT chart value as a cross-check:

- **Suggestion and chart agree** — accept the suggestion with confidence.
- **Suggestion is zero but chart indicates correction needed** — the measurement-based formula may not capture the tilt angle directly. Override with the CLT chart value and note the reason.
- **Chart and suggestion differ by one increment** — use fitting judgement. The chart value is based on physical observation; the suggestion is based on measurements. Both are valid inputs — the bowler's comfort after a test session is the final arbiter.
- **Large discrepancy between chart and suggestion** — re-assess the tilt angle and re-verify the measurements before committing. A large discrepancy usually means one of the inputs needs checking.

CLT Quick Reference — Common Lateral Pitch Values

Bowler profile	Typical lateral pitch
Most right-handed adult fingertip bowlers	`1/8"` toward thumb
Most left-handed adult fingertip bowlers	`1/8"` toward thumb (mirrored)
Bowler with very neutral grip position	`0` (zero)
Bowler with noticeable inward tilt	`3/16"` to `1/4"` toward thumb
Conventional grip bowler	`0` to `1/8"` toward thumb — less lateral correction typically needed than fingertip
Two-handed bowler	Start at `0` — assess from delivery observation; standard CLT values less reliable
Junior bowler	`0` to `1/8"` — start conservatively and adjust

When Lateral Pitch Needs Revisiting After Drilling

Lateral pitch is one of the fitting values most likely to need fine-tuning after a bowler has thrown the ball in competition. The following post-drill feedback signals that lateral pitch may need adjustment:

- **Fingers feel like they are twisting in the hole** — lateral pitch is in the wrong direction or insufficient.

- **One side of the finger hole causes a pressure mark or soreness** — the hole wall is contacting the finger unevenly, typically a sign of lateral pitch mismatch.
- **Bowler reports the ball feeling like it wants to roll off one side of the fingers** — often a lateral pitch issue, though it can also relate to the oval cut orientation.
- **Release feels inconsistent side to side despite consistent swing** — lateral pitch is a likely contributor when the inconsistency is specifically directional rather than general.

Related Sections

- 9.3.1 — Pitch suggestion chart (flexibility vs. forward pitch)
- 9.1.4 — Using Auto-Suggestions effectively for faster fitting sessions
- 9.2.3 — The suggested pitch is not what I expect — is Auto-Suggestion on
- 6.1.3 — Step 3: Set grip type and enter finger measurements
- 5.6.5 — Choosing EDGE vs. CENTER: which method fits which bowler
- 5.5.2 — Using the oval cut chart to determine cuts manually

Tip: For a new bowler or any bowler whose lateral tilt you are assessing for the first time, take the measurement twice — once with the bowler holding a ball in their delivery grip, and once with them resting their hand flat in a natural position. The difference between the two positions is often instructive: a bowler whose hand is neutral at rest but shows significant tilt in grip position has developed a grip-specific compensation that the lateral pitch needs to accommodate. A bowler whose tilt is consistent in both positions has an anatomical characteristic that the pitch should correct.

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