

4.3 — Finger Measurements

- [4.3.1 Entering finger hole size \(ring and middle fingers\)](#)
- [4.3.2 Entering span measurements \(Full Span and Cut to Cut\)](#)
- [4.3.3 Inputing Vertical and Lateral pitch for fingers](#)
- [4.3.4 CLT \(Corrected lateral tilt\) angle and its effect on lateral pitch](#)
- [4.3.5 How to input a finger oval measurement \(no inserts\)](#)
- [4.3.6 Ring Finger 5/16" rule — auto and manual calculation](#)
- [4.3.7 Insert type and size: STD vs. VACU, selecting drill bit OD](#)

4.3.1 Entering finger hole size (ring and middle fingers)

Entering finger hole size (ring and middle fingers)

<https://www.youtube.com/embed/J0770yAFMco?si=YRWgTj2gqYnGC9oC>

1. Select Customer Account

Click and select the bowler
Select Customer Account

2. Hole size

Click on hole size
Access Customer Options Menu

3. Open drop down

Click here to open the drop down.
Open Customer Details

4. Select the size

Click and select the size of the hole

Choose Appointment Date

5. Hole size

Repeat the same process for the other finger.

Open Date Options

6. Open drop down

Open the drop down

Confirm Date Selection

7. Select the size

Select the size

Select Product Size

4.3.2 Entering span measurements (Full Span and Cut to Cut)

Entering span measurements (Full Span and Cut to Cut)

<https://www.youtube.com/embed/qvs9ONhVLC0?si=7B14sm9wtKOk2ZZm>

Span measurements define the distance between the thumb hole and each finger hole on a bowling ball. Spectre Cloud supports two primary span measurement methods — **Full Span** and **Cut to Cut** — and it is important to enter the correct type to ensure accurate drilling. Using the wrong method will produce holes that are drilled in the wrong position, even if every number looks correct on screen.

□□ Understanding the Two Span Types

Full Span (F)

A **Full Span** measurement is taken from the **near edge of the thumb hole** to the **near edge of the finger hole** — that is, the distance measured along the surface of the ball from the edge of one hole to the edge of the other, with the bowler's hand in its natural relaxed position over the ball.

- ☐ The most common measurement method used in North American pro shops.
- ☐ Measures the actual gap between the two holes — the distance of ball surface the bowler's skin bridges.
- ☐ Easy to take with a standard span gauge or ruler directly on the ball blank.

Cut to Cut (C)

A **Cut to Cut** measurement is taken from the **center of the thumb hole** to the **center of the finger hole**. It is a center-to-center measurement rather than an edge-to-edge measurement.

- ☐ Common in some European fitting traditions and in certain legacy pro shop software systems.
- ☐ Produces a consistent reference point regardless of hole diameter — useful when hole sizes vary significantly.
- ☐ Less intuitive to measure directly on a hand — typically calculated or taken from a fitting device rather than measured freehand.

☐☐ The Relationship Between Full Span and Cut to Cut

Because Full Span measures edge-to-edge and Cut to Cut measures center-to-center, the two values differ by the **radius of the thumb hole** and the **radius of the finger hole** combined. In practical terms:

- Cut to Cut is always **larger** than Full Span for the same bowler.
- The difference equals half the thumb hole diameter plus half the finger hole diameter.
- For a typical adult fingertip bowler, Cut to Cut runs roughly $\frac{1}{2}$ " to $\frac{3}{4}$ " longer than Full Span — but this varies with hole size.

Important: Never enter a Cut to Cut value into a Full Span field, or vice versa. Even a small mismatch will result in holes drilled in the wrong location. If you are unsure which method was used on a legacy fitting sheet, check the raw numbers against typical ranges for your bowlers — Full

Span for an adult fingertip bowler typically falls between $3\frac{5}{8}$ " and $4\frac{5}{8}$ "; Cut to Cut values for the same bowler will read higher. When in doubt, re-measure.

☐☐ Entering Span Measurements in Spectre Cloud

1. Open the spec sheet and confirm the **Span Type** is set correctly — F for Full Span or C for Cut to Cut — before entering any numbers. The span type selector must match the method used to take the measurement.
2. Enter the **middle finger span** in the Middle field.
3. Enter the **ring finger span** in the Ring field.
4. Double-check both values against the fitting sheet before moving on — transposing middle and ring span is one of the most common data-entry errors.

Verify with Spectre team: confirm the exact field labels and UI layout for span entry — specifically whether Middle and Ring are entered as separate fields or as a combined span with an offset value.

☐☐ Recording Span from a Hand Measurement

If you are measuring a bowler's hand directly rather than copying from an existing fitting sheet, follow these steps for a Full Span measurement:

1. Ask the bowler to place their hand flat and relaxed on a flat surface or span gauge.
2. Align the gauge (or ruler) from the crease of the thumb — the point where the thumb meets the palm — toward the middle and ring fingers.
3. For a **fingertip grip**, measure to the first knuckle crease of each finger.
4. For a **conventional grip**, measure to the second knuckle crease of each finger.
5. Record middle and ring measurements separately — they are almost always different.

Tip: Always measure both hands if the bowler is new to your shop, even if they bowl with only one hand. Hand dimensions can vary between left and right, and having both on file is useful if the bowler ever requests a second opinion or switches equipment.

☐ Typical Span Ranges for Reference

Bowler type	Grip	Typical Full Span (middle)	Typical Full Span (ring)
Adult male	Fingertip	4 $\frac{1}{8}$ " - 4 $\frac{1}{2}$ "	3 $\frac{7}{8}$ " - 4 $\frac{1}{4}$ "
Adult female	Fingertip	3 $\frac{3}{4}$ " - 4 $\frac{1}{8}$ "	3 $\frac{1}{2}$ " - 3 $\frac{7}{8}$ "
Adult (either)	Conventional	4 $\frac{1}{2}$ " - 5"	4 $\frac{1}{4}$ " - 4 $\frac{3}{4}$ "
Youth	Conventional	3" - 4"	2 $\frac{3}{4}$ " - 3 $\frac{3}{4}$ "

Note: These ranges are general references only — individual hand anatomy varies widely. Never reject a measurement simply because it falls outside a typical range. Flag outliers for a second look, but trust a careful measurement over a table.

☐ Common Mistakes to Avoid

- ☐ **Mixing span types** — entering a Cut to Cut value in a Full Span field is the single most common span entry error. Always confirm the span type selector before entering numbers.
- ☐ **Transposing middle and ring** — middle span is almost always longer than ring span for the same bowler. If your middle value is shorter than ring, double-check before saving.
- ☐ **Copying from a worn or faded fitting card without verifying units** — some older cards recorded spans in millimeters. Spectre Cloud uses inches. *Verify with Spectre team: confirm whether Spectre Cloud supports millimeter entry or inches only.*
- ☐ **Using a tight or forced hand position during measurement** — always measure with the hand relaxed. A forced stretch or curl produces a span that will feel uncomfortable once drilled.

Related Sections

- 4.2.3 — Selecting span type (F, C, O)
- 4.2.4 — How to identify grip type from a measurement sheet
- 4.3.3 — Entering pitch values
- Book 05 — Oval Calculator (for Oval span type)

Tip: If a returning bowler says their previous ball always felt slightly stretched or cramped, the first thing to check is whether the original spec sheet used Full Span or Cut to Cut — and whether that

matches what was actually drilled. A span type mismatch is one of the most common causes of an otherwise correct-looking spec sheet producing an uncomfortable fit.

...

4.3.3 Inputting Vertical and Lateral pitch for fingers

Forward and lateral pitch for fingers

4.3.3 measurement

<https://www.youtube.com/embed/s8Ec4t9hpZ8?si=anmPbEwhmubHYKHD>

Pitch describes the angle at which each finger hole is drilled into the ball — not straight down, but tilted in a specific direction to match the natural resting angle of the bowler's finger. Spectre Cloud records two pitch values for each finger hole: **vertical pitch** (the tilt toward or away from the bowler's palm) and **lateral pitch** (the tilt toward or away from the thumb). Entering both values accurately is essential to a comfortable, repeatable fit.

Understanding Vertical Pitch

Vertical pitch describes the angle of the finger hole along the **palm-to-fingertip axis** — that is, whether the hole tilts toward the palm (forward) or away from it (reverse).

Direction	What it means	Typical use
Forward	Hole tilts toward the bowler's palm. The bottom of the hole leans in the direction of the thumb.	Most common for fingertip grips. Helps the finger seat naturally at the first knuckle without strain.

Direction	What it means	Typical use
Zero (0)	Hole drilled perpendicular to the ball surface — no tilt in either direction.	Used for some conventional grips and as a neutral baseline.
Reverse	Hole tilts away from the bowler's palm. The bottom of the hole leans away from the thumb.	Less common for fingers; used occasionally for conventional grips or when a bowler has a specific release preference.

Typical vertical pitch ranges for fingers

- **Fingertip grip:** $\frac{1}{4}$ " to $\frac{1}{2}$ " forward is the most common starting range for both middle and ring fingers.
- **Conventional grip:** 0" to $\frac{1}{4}$ " forward is typical — conventional bowlers generally need less forward pitch than fingertip bowlers.
- Vertical pitch beyond $\frac{3}{4}$ " forward for fingers is unusual and should be confirmed before drilling — it may indicate a measurement error or an atypical hand anatomy that warrants a closer fitting.

↔ Understanding Lateral Pitch

Lateral pitch describes the angle of the finger hole along the **thumb-to-little-finger axis** — whether the hole tilts toward the thumb side of the hand or away from it.

Direction	What it means	Typical use
Toward thumb (inward / medial)	Hole tilts in the direction of the thumb. For a right-handed bowler, the middle and ring finger holes tilt left.	The most common lateral direction for finger holes — mirrors the natural inward curl of the fingers.
Zero (0)	No lateral tilt — hole drilled straight relative to the lateral axis.	Used as a starting point or when a bowler has a very square finger position.
Away from thumb (outward / lateral)	Hole tilts away from the thumb. Less common for finger holes.	Occasionally used for bowlers with a pronounced outward finger angle or specific release mechanics.

Typical lateral pitch ranges for fingers

- **Most bowlers:** 0" to $\frac{1}{4}$ " toward thumb for both middle and ring fingers.
- Middle and ring fingers often carry the same lateral pitch, but they do not have to — record each finger independently.

- Lateral pitch beyond in either direction for finger holes is uncommon and worth double-checking.

Entering Pitch Values in Spectre Cloud

1. In the spec sheet, locate the **pitch section** for the middle finger and ring finger — each finger has its own vertical and lateral pitch fields.
2. For each finger, enter the **vertical pitch value** — the amount in inches (e.g., , ,) — and select the direction: , , or .
3. Enter the **lateral pitch value** and select the direction: , , or .
4. Repeat for both the middle and ring finger.
5. Review all four pitch entries (vertical + lateral for each finger) before moving on to thumb pitch.

Verify with Spectre team: confirm whether pitch is entered as a fraction (e.g., 1/4") or a decimal (e.g., 0.25"), and whether direction is selected via a dropdown, radio buttons, or a +/- toggle. Also confirm the exact field labels used in the UI.

How Pitch Is Recorded on Fitting Sheets

Legacy and handwritten fitting sheets record pitch in a variety of ways. Here is how to interpret the most common notations when transferring records into Spectre Cloud:

Notation on fitting sheet	How to enter in Spectre Cloud
<input type="text" value="1/4F"/> / <input type="text" value="1/4 Fwd"/> / <input type="text" value="1/4 Forward"/>	Vertical: <input type="text" value="1/4"/> , direction: Forward
<input type="text" value="0"/> / <input type="text" value="Zero"/> / <input type="text" value="Neutral"/>	Vertical or lateral: <input type="text" value="0"/> , direction: Zero
<input type="text" value="1/4R"/> / <input type="text" value="1/4 Rev"/> / <input type="text" value="1/4 Reverse"/>	Vertical: <input type="text" value="1/4"/> , direction: Reverse
<input type="text" value="1/4T"/> / <input type="text" value="1/4 In"/> / <input type="text" value="1/4 toward thumb"/>	Lateral: <input type="text" value="1/4"/> , direction: Toward Thumb
<input type="text" value="1/4 Out"/> / <input type="text" value="1/4 Lat"/> / <input type="text" value="1/4 away"/>	Lateral: <input type="text" value="1/4"/> , direction: Away from Thumb

Notation on fitting sheet	How to enter in Spectre Cloud
3° / 5° (degrees)	Convert to inches using your drill press conversion chart, then enter. <i>Verify with Spectre team: confirm whether Spectre Cloud accepts degree entry directly or requires conversion to inches.</i>

□ Tips for Accurate Pitch Entry

- □ Enter middle finger pitch and ring finger pitch **separately** — they are often the same, but do not assume. Many bowlers carry slightly different pitches on each finger.
- □ When in doubt on lateral pitch for a new bowler, 0" to ¼" toward thumb is a safe starting point. You can refine on future visits.
- □ If a bowler reports finger soreness or difficulty releasing after a drilling, pitch is usually the first adjustment to consider — noting the original pitch values accurately makes future corrections much easier.
- □ Do not confuse vertical and lateral pitch fields when entering data from a handwritten sheet — double-check the axis before saving.
- □ Do not leave pitch fields blank if the original fitting sheet shows zero — enter 0" explicitly so the record is unambiguous.

IBPSIA tip: Spectre Cloud's auto-suggestion feature can recommend starting pitch values based on grip type and span measurements. These are reference points, not prescriptions — always defer to a measured fitting or a returning bowler's known preferences over a suggested value. See 4.5 — *IBPSIA Auto-Suggestions* for details.

Related Sections

- 4.3.2 — Entering span measurements (Full Span and Cut to Cut)
- 4.3.4 — Inputting thumb pitch
- 4.2.4 — How to identify grip type from a measurement sheet
- 4.5 — IBPSIA auto-suggestions
- Book 05 — Oval Calculator

Tip: Keep a laminated pitch reference card at your drill press with common notation translations. When transferring a stack of legacy fitting cards, having the conversion table visible saves time and prevents the most common transcription errors.

...

4.3.4 CLT (Corrected lateral tilt) angle and its effect on lateral pitch

CLT (Corrected lateral tilt) angle and its effect on lateral pitch

https://www.youtube.com/embed/KVp3njbLgFY?si=D_GTkJ2VdMHaalHv

When a bowler places their hand on a ball during a fitting, the natural resting angle of the fingers is rarely perfectly vertical. **Corrected Lateral Tilt (CLT)** is a measurement — taken in degrees — that captures how far the bowler's fingers deviate from vertical when seated in the grip. Spectre Cloud uses this value to automatically apply a correction to the lateral pitch, ensuring that what gets drilled matches the bowler's actual hand angle rather than an idealized flat-hand measurement.

CLT is entered by the operator as a direct measurement taken during the fitting process. Spectre Cloud handles the correction calculation internally — you do not need to do the math yourself.

☐☐ What CLT Measures

When a bowler grips a ball, gravity, hand anatomy, and finger flexibility all cause the fingers to tilt slightly to one side. A lateral pitch value entered without accounting for this tilt may feel correct on paper but produce a grip that pulls or torques the fingers during the release.

CLT quantifies this tilt by measuring the angle — in degrees — between the bowler's finger axis and true vertical, taken while the bowler's hand is actually in the ball during the fitting.

- ☐ A CLT of 0° means the bowler's fingers sit perfectly vertical — no correction is needed.
- ☐ A positive CLT value means the fingers tilt in one direction; a negative value means they tilt the other way. *Verify with Spectre team: confirm the sign convention — which direction is positive and which is negative, and how this maps to toward-thumb vs. away-from-thumb tilt.*
- ☐ Most bowlers will show a small but measurable CLT — a reading of 0° is the exception rather than the rule.

☐☐ How to Measure CLT During a Fitting

1. Have the bowler place their hand in the ball in their natural grip position — fingers and thumb seated, hand relaxed, not forced.
2. Observe the angle of the middle and ring fingers relative to vertical. Use a protractor, fitting gauge, or tilt measurement tool to capture the angle.
3. Record the measurement in degrees. Note the direction of tilt.
4. Enter the value into the **CLT field** in the Spectre Cloud spec sheet.

Verify with Spectre team: confirm the recommended measurement tool or technique for taking the CLT reading — whether a specific gauge, a phone-based level app, or a visual estimation method is standard practice, and whether middle and ring finger CLT are measured and entered separately or as a single shared value.

⚙️ How CLT Affects Lateral Pitch

Once a CLT value is entered, Spectre Cloud applies a correction formula to the raw lateral pitch value. The corrected lateral pitch — not the raw value — is what is used for the actual drilling.

- The correction is applied **automatically** — you enter the raw lateral pitch and the CLT measurement independently, and Spectre Cloud computes the adjusted drilling value.
- The greater the CLT angle, the more the effective lateral pitch deviates from the raw entered value.
- For bowlers with a CLT close to , the correction is negligible — the drilled result will be very close to the raw lateral pitch entry.
- Do not manually pre-adjust your lateral pitch entry to try to compensate for CLT yourself — entering both a manually adjusted pitch *and* a CLT value will result in double correction and an inaccurate drilling.

Verify with Spectre team: confirm and document the exact formula Spectre Cloud uses to derive corrected lateral pitch from the raw lateral pitch and CLT values, for operators who want to understand the underlying calculation.

CLT in Practice — What to Expect

CLT reading	What it indicates	Effect on lateral pitch
<input type="text" value="0°"/>	Fingers sit perfectly vertical in grip	No correction applied — drilled lateral pitch equals entered value
Small angle (e.g. <input type="text" value="2°-5°"/>	Slight natural tilt — very common	Minor correction; noticeable on precise fittings
Moderate angle (e.g. <input type="text" value="6°-10°"/>	Pronounced tilt — often seen in bowlers with larger hands or strong release habits	Meaningful correction; skipping CLT entry would produce a noticeably off lateral pitch
Large angle (<input type="text" value=">10°"/>	Significant tilt — worth double-checking the measurement before proceeding	Substantial correction; verify the reading is genuine and not a measurement error

Verify with Spectre team: confirm the realistic expected range of CLT values seen in practice, and whether Spectre Cloud flags or warns on unusually large CLT entries.

Tips for Accurate CLT Entry

- Always measure CLT with the bowler's hand in a **relaxed, natural grip** — a forced or exaggerated position will produce a CLT value that does not reflect real drilling conditions.
- If a bowler reports that a previously drilled ball pulls their fingers sideways during the release, check whether CLT was measured and entered on that spec sheet. A missing or incorrect CLT entry is a common cause of lateral discomfort.

- ☐ For returning bowlers with a known CLT, clone their existing spec sheet — the CLT value carries over with all other measurements, saving time and ensuring consistency across balls.
- ☐ Do not skip CLT for bowlers who seem to have a "normal" grip. A small but consistent tilt left uncorrected compounds across multiple balls and can contribute to long-term finger strain.
- ☐ Do not enter CLT in a lateral pitch field by mistake — they are separate inputs and serve different purposes in the spec sheet.

Related Sections

- 4.3.3 — Inputting vertical and lateral pitch for fingers
- 4.3.5 — Inputting thumb pitch
- 4.3.2 — Entering span measurements (Full Span and Cut to Cut)
- 4.5 — IBPSIA auto-suggestions
- 4.2.5 — Cloning a spec sheet to preserve old measurements

Tip: CLT is one of the measurements that separates a precise professional fitting from a basic one. Taking the extra minute to measure and record it — especially for competitive bowlers who care about consistency across their arsenal — is a tangible demonstration of the quality of service your shop provides.

...

4.3.5 How to input a finger oval measurement (no inserts)

How to input a finger oval measurement (no inserts)

<https://www.youtube.com/embed/vA3pY0rBNUo?si=xUc5KGRw75crGbEc>

For bowlers who do not use finger inserts, the oval measurement captures the natural shape of each finger hole needed to achieve a comfortable, secure fit. Because fingers are not perfectly round in cross-section, drilling a round hole to a round measurement often produces a grip that feels loose or allows unwanted rotation. The oval measurement corrects for this by recording the finger's true cross-sectional dimensions — its **width** and **depth** — so the hole can be drilled to match.

This page covers how to enter oval measurements directly in the spec sheet. For the full oval calculation workflow, including how to derive oval dimensions from hand measurements, see *Book 05 — Oval Calculator*.

□□ What an Oval Measurement Consists Of

An oval measurement for a finger hole has two components:

- **Width** — the measurement across the finger in the lateral direction (side to side, across the knuckle).
- **Depth** — the measurement through the finger in the vertical direction (front to back, from the pad to the back of the finger).

Together, width and depth define the elliptical shape of the hole. When width and depth are equal, the hole is effectively round. When they differ, the hole is a true oval — wider than it is deep, or deeper than it is wide, depending on the bowler's finger geometry.

Note: Oval measurements are recorded separately for the **middle finger** and the **ring finger**. Do not assume both fingers share the same oval — most bowlers have measurable differences between the two. *Verify with Spectre team: confirm whether Spectre Cloud also records an oval for the thumb on this same form section, or whether thumb oval is handled separately.*

How to Enter Oval Measurements in Spectre Cloud

1. In the spec sheet, locate the **Oval** section for the finger measurements. This is separate from the span and pitch fields.
2. Ensure the spec sheet span type is set to (Oval) if oval measurements are being used as the primary span reference, or confirm with the Spectre team whether oval dimensions can be entered alongside an F or C span type. *Verify with Spectre team: clarify whether oval entry is only available when span type O is selected, or whether it is always accessible regardless of span type.*
3. Enter the **width** measurement for the middle finger.
4. Enter the **depth** measurement for the middle finger.
5. Repeat for the **ring finger** — enter its width and depth independently.
6. Review all four values before saving.

Verify with Spectre team: confirm the exact field labels used in the UI for oval width and depth, and whether measurements are entered in inches (fractions or decimal) or millimeters.

How to Take Oval Measurements from the Bowler's Hand

Oval measurements are taken directly from the bowler's finger, typically using a dedicated oval gauge or digital calipers. For no-insert fittings, the goal is to measure the finger at the **point of insertion** — the first knuckle for fingertip grips, the second knuckle for conventional grips.

1. Ask the bowler to extend their finger naturally — relaxed, not tensed or fully straightened.
2. Position the measuring tool at the appropriate knuckle joint.
3. Measure the **width** — across the finger, parallel to the knuckle crease.
4. Measure the **depth** — through the finger, perpendicular to the knuckle crease.
5. Record both values for middle and ring fingers before moving to the ball.

Tip: Take oval measurements with the bowler's hand warm and relaxed. Cold or tense hands can cause fingers to appear narrower than their natural resting size, resulting in a hole that fits correctly in the shop but feels tight after a few frames once circulation increases.

Oval vs. Round — When It Matters

Situation	Oval recommended?	Notes
Width and depth differ by $\frac{1}{32}$ " or more	<input type="checkbox"/> Yes	Even a small oval difference produces a meaningfully better fit for most bowlers.
Width and depth are equal or within $\frac{1}{64}$ "	Round hole is acceptable	A round hole will fit well — oval entry is still good practice for record accuracy.
Bowler reports finger rotation or looseness in a previously round-drilled ball	<input type="checkbox"/> Yes — measure and record	Switching to an oval hole is often the solution for a grip that feels sloppy without being oversized.
Youth bowler with rapidly changing hand size	Situational	Record oval for accuracy, but note in the spec sheet that re-measurement is expected at the next visit.

Tips for No-Insert Oval Entry

- Record the oval even when width and depth are nearly equal — having both values on file gives you a complete history if the bowler's fingers change over time.
- If you are cloning a spec sheet for a new ball, verify the oval measurements are still current before drilling — finger dimensions can shift with age, weight change, or injury.
- Label your measurement notes clearly when taking readings in a busy shop — it is easy to transpose middle and ring values when moving quickly between a fitting and the

keyboard.

- ☐ Do not use insert size as a proxy for oval on a no-insert fitting — insert sizes account for the insert wall thickness and are not equivalent to bare finger oval dimensions.
- ☐ Do not estimate oval by eye. Even experienced fitters can misjudge the depth dimension, which is harder to eyeball than width. Use a gauge.

Related Sections

- 4.3.3 — Inputting vertical and lateral pitch for fingers
- 4.3.4 — CLT (Corrected Lateral Tilt) angle and its effect on lateral pitch
- 4.3.6 — Inputting finger insert measurements
- Book 05 — Oval Calculator (full oval derivation workflow)
- 4.2.3 — Selecting span type (F, C, O)

Tip: The Oval Calculator in Book 05 can derive recommended oval dimensions from a set of hand measurements if you do not have a dedicated oval gauge available. Use it as a starting point, then verify with a physical measurement where possible.

...

4.3.6 Ring Finger 5/16" rule — auto and manual calculation

Ring Finger 5/16" rule — auto and manual calculation

<https://www.youtube.com/embed/eYbYv1w38Ho?si=3TMOFJgntVeFAP8k>

When setting up a spec sheet, the ring finger span is rarely measured independently from scratch. Instead, it is derived from the middle finger span using the **5/16" Ring Finger Rule** — a fitting convention that accounts for the natural anatomical difference between the two fingers. Spectre Cloud can apply this calculation automatically, or you can enter the ring finger span manually if you prefer to measure directly.

The Anatomy Behind the Rule

With a bowler's hand laid flat on a bowling ball, the second joint lines of the middle and ring fingers — measured from the base of each finger — do not line up evenly. The ring finger's second joint sits closer to the palm than the middle finger's. This difference, referred to here as **d**, is the key variable in the calculation.

If the two joint lines were perfectly aligned ($d = 0$ "), the ring finger span would need to be $5/16$ " longer than the middle finger span to produce an equivalent fit. Because **d** is almost never zero, the actual ring finger span adjusts up or down from that baseline depending on each bowler's

individual anatomy.

☐☐ The Formula

The ring finger span is calculated as follows:

$$\text{Ring Finger Span} = \text{Middle Finger Span} + (5/16" - d)$$

Where **d** is the observed difference between the second joint lines of the middle and ring fingers, measured while the bowler's hand is laid flat on the ball.

Working through the formula

Scenario	d value	Adjustment (5/16" - d)	Effect on ring span
Ring joint sits exactly 5/16" closer to palm than middle joint	5/16"	0"	Ring span equals middle span — no adjustment needed
Ring joint sits closer to palm than average (large d)	> 5/16"	Negative	Ring span is shorter than middle span
Ring joint sits further from palm than average (small d)	< 5/16"	Positive	Ring span is longer than middle span
Ring and middle joint lines are level (d = 0)	0"	+5/16"	Ring span is 5/16" longer than middle span

Note: It is entirely normal for the ring finger span to come out longer than the middle finger span for bowlers whose joint lines are close together. Do not assume the ring span must always be shorter — the formula determines the correct value, not anatomical intuition.

☐☐ How to Measure d

1. Ask the bowler to place their hand flat and relaxed on the ball, fingers together in their natural resting position.
2. Observe the second joint line (the joint closest to the base of the finger, not the fingertip joint) of the middle finger and the ring finger.
3. Measure the distance between the two joint lines along the finger axis — from the middle finger's joint line to the ring finger's joint line.
4. Record this as **d**. Note which finger's joint line sits closer to the palm — this determines the sign of the adjustment in the formula.

Tip: A small span ruler or fitting gauge works well for measuring d . The measurement does not need to be taken to finer than $\frac{1}{32}$ " precision for most fittings — but consistency matters more than extreme precision. Use the same technique each time.

Auto Calculation in Spectre Cloud

When using the **auto calculation** mode for the ring finger span, Spectre Cloud applies the $\frac{5}{16}$ " rule on your behalf:

1. Enter the **middle finger span** as measured.
2. Enter the **d measurement** in the designated field.
3. Spectre Cloud calculates and displays the ring finger span automatically using the formula: $\text{Ring Span} = \text{Middle Span} + (\frac{5}{16}'' - d)$.
4. Review the calculated ring span before saving — confirm it looks anatomically reasonable for the bowler in front of you.

Verify with Spectre team: confirm the exact field label used for the d measurement input in the Spectre Cloud UI, and whether the calculated ring span is displayed as a read-only result or as an editable field the operator can still override.

Manual Entry Override

If you prefer to measure the ring finger span directly — or if a bowler has an unusual hand geometry where the calculated value does not feel right — you can enter the ring finger span manually, bypassing the auto calculation entirely.

- Manual entry is appropriate when you have taken independent measurements of both fingers and want to record exactly what you measured.
- Manual entry is also useful when transferring records from a legacy fitting sheet that already contains explicit ring span values taken by another fitter.
- If the auto-calculated value and your direct measurement disagree by more than $\frac{1}{16}$ ", remeasure both the middle span and d before deciding which to use.
- Do not use manual entry simply to avoid measuring d — skipping d and guessing the ring span is the most common source of ring finger fit complaints.

Verify with Spectre team: confirm how the operator switches between auto and manual mode for ring span entry — whether it is a toggle, a checkbox, or simply leaving the d field blank to enable direct ring span input.

□ Tips for Consistent Results

- □ Measure d every time, even for returning bowlers — finger joint alignment can shift subtly with age, weight change, or injury, and the d value is quick to check.
- □ When cloning a spec sheet, the d value carries over with the other measurements. Verify it is still current before using the auto calculation for the new ball.
- □ Document the d measurement in the **Notes** field as a backup — if a question arises later about the ring span derivation, having d on record makes it easy to reconstruct the calculation.
- □ Do not conflate d with the ring finger span itself — d is an input to the formula, not a span measurement.

Related Sections

- 4.3.2 — Entering span measurements (Full Span and Cut to Cut)
- 4.3.3 — Inputting vertical and lateral pitch for fingers
- 4.3.5 — How to input a finger oval measurement (no inserts)
- 4.5 — IBPSIA auto-suggestions
- Book 05 — Oval Calculator

Tip: The 5/16" rule produces a starting span — not an immutable prescription. If a bowler tries the ball and reports that the ring finger feels consistently tighter or looser than the middle finger despite a correct-looking spec sheet, the d measurement is the first thing to recheck. A remeasure in-shop takes under a minute and often reveals a small error that explains the fit complaint.

...

4.3.7 Insert type and size: STD vs. VACU, selecting drill bit OD

Insert type and size: STD vs. VACU, selecting drill bit OD

4.3.7 measurement

Once span, pitch, and oval measurements are recorded, the spec sheet needs to know what is going into the finger holes — bare finger, a standard insert, or a VACU-style insert — and what drill bit outer diameter (OD) to use. These entries directly determine the physical size of the holes drilled in the ball, so accuracy here is just as important as the span and pitch values that position them.

Insert Types: STD vs. VACU

No Insert (Bare Finger)

If the bowler does not use finger inserts, select the bare finger or no-insert option. In this case the hole is drilled to the bowler's oval or round finger measurement directly, with no allowance for insert wall thickness. See 4.3.5 — *How to input a finger oval measurement (no inserts)* for how oval dimensions are entered for bare finger fittings.

STD (Standard Insert)

A **standard insert** is pressed into a hole drilled to a tight tolerance — the hole diameter is sized so the insert fits snugly and does not move once seated. The insert's inner diameter then becomes the effective finger hole the bowler uses.

- □ The most common insert type across all grip styles and skill levels.
- □ Available in a wide range of inner diameters and materials from multiple manufacturers.
- □ Once pressed in, a standard insert sits flush and stays fixed under normal use.
- □ If the pilot hole is drilled slightly oversized, a standard insert can work loose over time — precision on the OD entry matters.

VACU (Vacuum-Style Insert)

A **VACU-style insert** uses a different fit philosophy. The pilot hole is drilled slightly **larger** than it would be for a standard insert of the same finger size, allowing a slightly **smaller** insert to be used. When the bowler inserts their finger, the insert expands to fill the gap and conforms to the finger's shape under pressure.

- □ The expansion fit produces a more custom, form-fitting feel for many bowlers — particularly those who find standard inserts uncomfortable at the first knuckle.
- □ Useful for bowlers with irregular finger cross-sections where a rigid standard insert does not seat comfortably.
- □ The slightly larger pilot hole means there is more tolerance in the drilling — a small OD variance has less impact on the final fit than with a standard insert.
- □ Not suitable for all insert materials — confirm the insert manufacturer supports VACU-style installation before selecting this option.
- □ Because the insert is smaller than it would be for a standard fit, selecting the wrong insert size for a VACU installation will produce a hole that is either too loose or unable to expand correctly.

	STD	VACU
Pilot hole vs. insert	Tight fit — hole sized to grip the insert	Loose fit — hole slightly larger than insert OD
Insert behaviour	Fixed once pressed in	Expands to conform under finger pressure
Best for	Most bowlers; standard fitting workflow	Bowlers wanting a form-fitting feel or irregular finger geometry
OD entry in Spectre Cloud	OD of the insert — hole drilled to match	OD adjusted upward to allow expansion gap

Verify with Spectre team: confirm whether Spectre Cloud automatically adjusts the pilot hole OD calculation when VACU is selected, or whether the operator enters the adjusted OD manually. Also confirm the standard expansion gap allowance used for VACU calculations.

☐☐ Selecting Drill Bit OD

The **drill bit outer diameter (OD)** is the size of the bit used to drill the finger hole — or the pilot hole for an insert. The OD entry in Spectre Cloud determines the final hole size and must account for whether the bowler is using a bare finger, a standard insert, or a VACU insert.

For bare finger (no insert)

The OD is set to match the bowler's finger measurement directly — either their round hole size or the larger dimension of their oval. The hole is the finger hole; there is no insert wall to account for.

For standard inserts

The OD is set to match the **outer diameter of the insert** being used. The insert manufacturer's sizing chart determines which insert OD corresponds to the bowler's inner finger size. The hole is drilled to grip the insert; the insert's inner diameter is the effective fit dimension.

For VACU inserts

The OD is set slightly **larger** than the insert's outer diameter to provide the expansion gap. The exact allowance depends on the insert material and manufacturer recommendation.

Verify with Spectre team: confirm whether Spectre Cloud provides a drill bit OD lookup, dropdown of common sizes, or a free numeric entry field — and whether it cross-references insert manufacturer sizing data to suggest an OD automatically when an insert brand and size are selected.

☐☐ Entering Insert Type and OD in Spectre Cloud

1. In the spec sheet, locate the **Insert** section for the middle and ring finger fields.
2. Select the insert type for each finger: , , or . Middle and ring can differ — enter each independently.
3. Enter or select the **drill bit OD** for each finger. This should reflect the insert's outer diameter (STD), the adjusted pilot hole size (VACU), or the bowler's direct finger measurement (no insert).

4. Double-check that the OD entry is consistent with the insert type selected — a VACU OD entered against an STD selection, or vice versa, will produce a hole sized incorrectly for the intended insert.

Note: Middle and ring finger insert types and OD values are entered independently. It is not uncommon for a bowler to use a larger insert on the middle finger than the ring finger, or to use VACU on one finger and STD on the other. Record what the bowler actually uses — do not default both fingers to the same values without checking.

□ Tips for Accurate Insert and OD Entry

- □ When transferring records from a legacy fitting sheet, check whether the recorded hole size is the **insert OD** or the **inner finger size** — these are different values and the distinction is not always clear on older cards.
- □ Keep a reference card at the drill press with common insert brand OD sizes. Different manufacturers use slightly different OD standards for nominally equivalent insert sizes.
- □ If a returning bowler is switching insert brands, do not copy the OD from their previous spec sheet without checking the new brand's sizing — a $\frac{1}{32}$ " OD difference between brands is common and will affect the fit.
- □ For VACU inserts, note the insert brand and model in the **Notes** field — the expansion gap allowance may differ between products and having the reference on record avoids ambiguity on future visits.
- □ Do not enter the insert's **inner** diameter as the OD — the inner diameter is the bowler's finger size; the OD is the size of the hole drilled in the ball.

Related Sections

- 4.3.5 — How to input a finger oval measurement (no inserts)
- 4.3.6 — Ring finger 5/16" rule — auto and manual calculation
- 4.3.8 — Inputting thumb measurements
- 4.5 — IBPSIA auto-suggestions
- Book 05 — Oval Calculator

Tip: When drilling for a bowler for the first time, ask which insert brand they have been using — not just the size. Bringing their preferred insert to the fitting and measuring its OD directly with calipers is the most reliable way to ensure the pilot hole is drilled to exactly the right size, regardless of what the manufacturer's chart says.

...