

4.1.6 Insert OD: drill bit sizing for STD and VACU grips

4.1.6

concept

When drilling finger holes for bowlers who use inserts, the drill bit must match the insert's **Outside Diameter (OD)** — the outer dimension that sets the hole size. Spectre Cloud sizes these holes for you through **Autofill Insert OD (2.6.6)**. This page explains what OD is, how it differs from insert size, and how the two insert systems — **STD** and **VACU** — are drilled and recorded on the spec sheet.

□□ Insert OD vs. Insert Size

Two dimensions matter for an insert, and it's important not to confuse them:

- □ **OD (Outside Diameter)** — the outer dimension of the insert, published by the manufacturer. This is the **drill bit size**. You match the bit to the OD, never to the bowler's finger.
- □ **Insert size** — the inner diameter (ID), sized to fit the bowler's finger. In Spectre Cloud, the **insert size field is the ID** — Spectre does not track ID as a separate value.
- □ Spectre derives the OD (drill bit size) from the **insert type and insert size** you record — so entering both correctly is what makes Autofill Insert OD accurate.

□□ STD (Standard) Inserts

Standard inserts are **press-fit**: the hole is drilled to the insert's OD and the insert is pressed in, held by friction against the ball's coverstock.

- □ Drill bit size equals the insert's published OD — a direct, one-to-one match, at full depth.

- ☐ A correct STD fit presses in with firm hand pressure or a seating tool — it should not drop in freely or require excessive force.
- ☐ If the insert spins after seating, the hole was drilled slightly too large — re-drilling to size is preferable on a new ball.

☐ VACU (Vacuum) Inserts

VACU inserts are drilled in **two diameters** so the insert has room to expand. The hole is stepped: an oversized pocket at the top, then the insert's true OD deeper down.

1. Drill the **top portion** of the hole at the size shown on the spec sheet.
2. Drill that top portion **1"** deep.
3. Continue to the full depth of the insert using the insert's **regular, actual OD**.

The oversized top creates a **pocket** — a void where the insert does not touch the surrounding ball wall. That void gives the insert room to expand.

- ☐ The spec-sheet OD value for a VACU insert is the **top-portion (pocket) size**, not the insert's body OD.
- ☐ The deeper portion is drilled at the insert's actual OD, exactly as a STD hole would be.
- ☐ Drilling the whole hole at the actual OD removes the pocket entirely — the insert loses its room to expand, defeating the purpose of a VACU fit.

☐ STD vs. VACU — Key Differences

	STD (Standard)	VACU (Vacuum)
Drilling method	Single diameter at the insert's OD, full depth	Two diameters — oversized top ~1" deep, then the actual OD to full depth
What the spec-sheet OD means	The drill bit size for the whole hole	The top-portion (pocket) drill size
Why it's sized this way	Friction press-fit secures the insert	The oversized top leaves a void so the insert can expand
Common use case	General fingertip / insert fitting	Bowlers whose fingers need room to expand

How Spectre Cloud Handles STD vs. VACU

Autofill Insert OD (2.6.6) populates the drill bit size on the spec sheet from the insert type and insert size recorded for the bowler. Recording the insert **type** correctly is what tells Spectre which sizing to apply.

- □ When the insert type is **STD**, the autofilled OD is the drill bit size for the full hole.
- □ When the insert type is **VACU**, the autofilled OD is the top-portion (pocket) size — drill that ~1" deep, then switch to the insert's actual OD for the rest.

The drill bit size is saved to the spec sheet and carries forward when the sheet is cloned. Confirm the insert type and OD are still correct for the new ball before saving, and if a bowler switches systems (STD to VACU or vice versa), create a new spec sheet so the history reflects what was actually drilled on each ball.

Related Sections

- 4.1.5 — Bridge: the standard 1/4" bridge
- 4.1.4 — Pitch terminology: Forward, Reverse, Lateral, Zero
- 4.1.3 — Grip type definitions: Fingertip vs. Conventional
- 2.6.6 — Autofill Insert OD: auto drill bit size per insert type and size
- 2.6.7 — Auto-Repeat Insert Size: mirror size from ring to middle finger
- 9.x — Tips & Troubleshooting: insert seating issues and OD mismatches

Tip: The most common VACU error is drilling the whole hole at one size. Remember it's two cuts: the spec-sheet size for the first inch to form the pocket, then the insert's actual OD to depth. If your shop is adding VACU for the first time, walk every driller through that two-diameter step at the press before the first VACU ball — it's the one detail that's easy to miss and easy to get right once seen.

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