

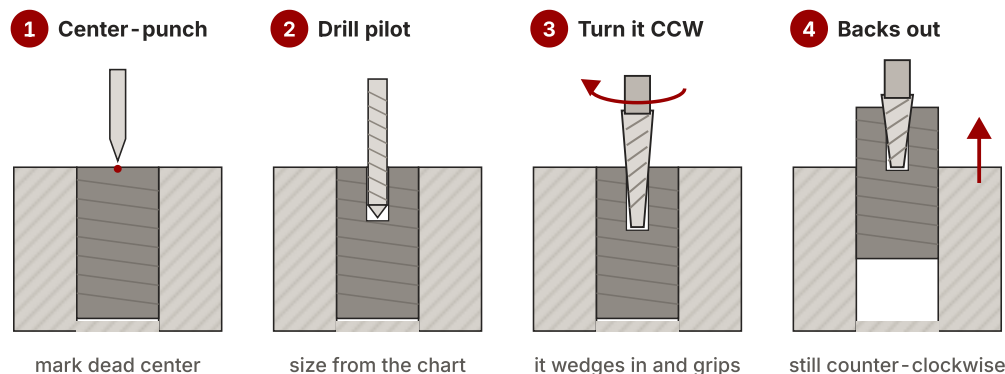
Screw Extractor Size Guide

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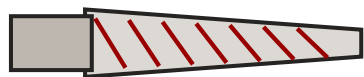
A bolt sheared off flush. A cap screw stripped its socket. A screw extractor bites into the broken shank and backs it out — but only if you use the right size and drill the right pilot hole. Here's how to match them.

A screw extractor (an “easy-out”) works in reverse: you drill a small pilot hole down the center of the broken fastener, then thread the extractor **counter-clockwise** into that hole. Its reverse taper wedges tighter as it turns, grabs the walls, and spins the broken piece out the same direction. The two everyday styles — **spiral flute** and **straight flute** — are each sold by a **number (#1, #2, #3...)**.

The number is a size step — not the bolt's diameter. Each extractor number backs out a *range* of broken fastener sizes, and the **same number covers different sizes on each style** — a #4 spiral is not a #4 straight. So work the other way around: find the size of your **broken bolt or screw**, then read across to the extractor whose “removes” range covers it and the pilot hole it calls for.

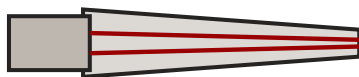


Cut-away view. The hatched part is what the bolt broke off in; the dark piece is the broken bolt. Full steps are at the bottom of the page.



Spiral flute

twisted, tapered — grips harder the more you turn



Straight flute

straight splines driven in — for stubborn, hard breaks

Spiral flute — the workhorse

Reverse-tapered spiral grips harder the more you turn it. Best all-around choice for broken bolts and studs.

Straight flute

Straight splines drive into the pilot hole. Handles harder, more stubborn breaks where a spiral could over-expand.

Drill-out (combo)

Drill bit and extractor in one bit — drill the pilot, flip it, back the bolt out. Fast for common sizes.

Damaged-head grip

For screws that still stand proud but whose head is stripped — grips from above instead of a drilled hole.

Spiral flute — by number

The everyday workhorse. Find the number whose **Removes** range covers your broken bolt or screw, drill the pilot straight down the center, and back it out counter-clockwise — start on the small side of the pilot and step up only if it won't bite. Sizes are inches.

EXTRACTOR	REMOVES — BROKEN BOLT/SCREW	PILOT DRILL
#1	3/32–5/32	5/64



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EXTRACTOR	REMOVES — BROKEN BOLT/SCREW	PILOT DRILL
#2	5/32–7/32	7/64
#3	7/32–9/32	5/32
#4	9/32–3/8	1/4
#5	3/8–5/8	19/64
#6	5/8–7/8	13/32
#7	7/8–1 1/8	17/32
#8	1 1/8–1 3/8	13/16
#9	1 3/8–2	1 1/16
#10	2 1/8–2 1/2	1 5/16
#11	2 1/2–3	1 9/16
#12	3–3 1/2	1 15/16

Pilot sizes are a safe starting point. Many extractors stamp their own recommended drill; if yours does, use it. Need a full set? A spiral set keeps every number on hand.

Straight flute — by number

Straight splines drive into the pilot hole — good on harder, more stubborn breaks where a spiral could over-expand. **The ranges are not the same as the spiral line** — a #4 straight (1/2–9/16) is a much bigger tool than a #4 spiral (9/32–3/8). Read this chart on its own.

EXTRACTOR	REMOVES — BROKEN BOLT/SCREW	PILOT DRILL
#1	3/16–5/16	9/64
#2	3/8	3/16
#3	7/16	15/64
#4	1/2–9/16	5/16
#5	5/8	3/8
#6	3/4	15/32
#7	7/8	9/16

Prefer a set? A straight-flute set spans the common numbers.

Browse everything — spiral & straight flute, drill-outs, damaged-head grips and sets — in Tools > Screw Extractors. Bigger than a #12? Give us a call.

How to back out a broken bolt

1. **Center-punch it.** Mark dead center on the broken face so the drill doesn't wander off to one side.
2. **Drill the pilot hole.** Use the pilot size above, straight and centered, about as deep as the break. A **left-hand drill bit** is worth trying here — it often grabs and spins the bolt out on its own before you ever reach for the extractor.
3. **Insert the extractor** and turn it **counter-clockwise** with a tap wrench or T-handle. It tightens as it bites; keep steady, even pressure.
4. **Help it along.** Penetrating oil, and a little heat on a seized bolt, do more than muscle. Let the oil work before you crank harder.

Don't snap the extractor off in the hole. Screw extractors are hardened and brittle — a broken extractor is far harder to remove than the bolt was, because it won't drill. If it stops turning and won't move, back off: add heat and penetrating oil, step up a pilot size, or bring it to us. Force is what breaks them.

Reference values drawn from the governing standards. For critical applications, confirm against the standard and the manufacturer's published data. Technical information disclaimer →



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