

FIRST, THE GATE — RECOGNISE, DO NOT DIAGNOSE

Any stall indication is the trigger — the aural warning, the red message on the PFD, or buffet you can feel. You do not need to know why. The single thing that ends a stall is reducing angle of attack, and every second spent working out the cause is a second at an angle of attack that is still too high.

1

Nose down — apply

PITCH FIRST, ALWAYS

This is the whole recovery: reduce the angle of attack. If you find you lack pitch-down authority, reducing thrust may be what gives it back to you — thrust and pitch are coupled here.

2

Wings level

BANK — ROLL OUT

Lift is doing less than you need already. Any bank angle spends part of what is left holding you up sideways instead of getting the nose down.

3

Then thrust — smoothly

ONLY ONCE OUT OF THE STALL

Increase as needed, smoothly. On one engine, feed the asymmetry in progressively with rudder as thrust comes up — a fast handful here trades a stall for a roll.

4

Recover the flight path

SPEEDBRAKE CHECK RETRACTED

Check the speedbrakes are in, then recover smoothly. If you are clean and low, selecting Flaps 1 buys margin — and if the ground is a factor, establish a positive gradient smoothly rather than snatching it.

Height is the second problem

Recovery costs altitude, and that is accepted — the stall is the first problem and it must be solved first. But once you are genuinely clear of the indications, a smooth positive climb gradient matters more than a tidy speed. Do not trade a recovered stall for a ground impact by fixating on the numbers.

Why thrust is not the answer

Thrust pitches you up. The instinct to add power in a stall works against the one thing that ends it. Pitch comes first and thrust follows.

The warning may be the last thing you hear. Treat any indication as real, immediately, and sort out its validity afterwards.

AIR FRANCE 447
ATLANTIC, 2009

Pitot icing took the airspeed away and the aircraft entered a sustained stall. The warning sounded, the buffet was there, and the flying pilot held nose-up sidestick through most of the descent. **The crew never identified the stall, so they never flew a recovery.** Nothing on this page is difficult to perform — recognising that you need it is the entire problem, which is why the gate says recognise, do not diagnose.

RECITE IT — COVER THE RIGHT-HAND COLUMN

Nose down pitch control

APPLY

Bank

WINGS LEVEL

When out of stall — thrust

INCREASE SMOOTHLY

Speedbrakes

CHECK RETRACTED

Flight path

RECOVER SMOOTHLY

If clean and low — flaps

SELECT 1

WHERE IT GOES WRONG

- **Adding thrust first.** The commonest instinct and the wrong one — it pitches you further up. Unload first.
- **Rolling before unloading.** Wings level helps, but reducing the angle of attack is what ends it.
- **Snatching the recovery.** Smooth. An abrupt pull straight back into buffet is a second stall, lower down.
- **Waiting to be sure.** Any indication is the trigger. Validity is a debrief question, not an in-the-moment one.