

No Power, No Top Speed — Diagnostic Chart

It runs, but it will not pull. The first question separates a transmission fault from an engine fault, and almost nobody asks it.

BEFORE YOU START

Petrol vapour ignites, batteries produce hydrogen, ignition coils carry thousands of volts and a machine on a stand can fall. Work outdoors or with the door open, disconnect the battery before probing wiring you are not deliberately measuring live, and never run an engine in a closed space. This sheet helps you observe and record. It is not a repair manual and it does not know your machine.

ANSWER THIS ONE FIRST, ON A RIDE

When it will not pull, does the engine rev HIGHER than normal while the speed stays down, or does it stay LOW and flat? Revs up without speed is transmission slip. Revs flat and low is the engine. The two share almost no components, and every step below depends on which you saw.

REVS HIGH OR FLAT WHEN IT WILL
NOT PULL?

LOST EVERYWHERE, OR ONLY AT THE
TOP?

WORSE UPHILL OR UNDER LOAD?

FRONT TYRE PRESSURE

 psi

REAR TYRE PRESSURE

 psi

WHEN DID IT LAST FEEL RIGHT?

DO THE FREE ONE BEFORE THE EXPENSIVE ONE

Low tyre pressure is named by the most consistent source in this niche as having a major effect on speed, and small scooter tyres hide low pressure well — they look normal a long way down. Check both against the figure on the sidewall or in the manual before you open anything.

BRANCH A — REVS RISE, SPEED DOES NOT

1 With the transmission cover off, is there loose black dust coating the inside of the case?

- YES** Belt and clutch material is being shed. Note how much — a light film is normal, a coating is not.
- NO** Little or no dust. Go on.

↓ still not solved — go on

2 Is the belt cracked across its teeth, frayed at the edges, or glazed and shiny on its sides?

- YES** A belt in that condition slips. Measure its width and compare against the width printed on it, if it is still readable.
- NO** Belt looks serviceable. Measure it anyway and write the number down.

↓ still not solved — go on

3 Are the clutch shoe friction faces shiny and glazed rather than matt?

- YES** A glazed clutch slips and flares. Note it, and note whether the clutch bell is scored or blued.
- NO** Clutch faces look matt. Check the spring holes in the shoes — are they round, or worn oval?

BRANCH B — REVS STAY LOW AND FLAT

1 Is the air filter clean, or clogged and oil-soaked?

- YES** Clean. Note it and go on — a clean filter rules out the cheapest cause.
- NO** A restricted filter chokes the engine and richens the mixture at the same time. Clean or replace it and retest before going further.

↓ still not solved — go on

2 What does the mixture table below say — do at least three of the signals point the same way?

- YES** Note which way. A consistent lean or rich reading is a real finding and worth acting on.
- NO** Signals disagree, or you only have one. Do not change jetting on one signal.

↓ still not solved — go on

3 Cranking compression: does it reach the benchmark below?

- YES** Compression is not your limiting factor. Record the figure so the next test has something to compare against.
- NO** Low compression explains a flat engine on its own and makes every other adjustment pointless. Note whether it improves with a little oil down the plug hole, which distinguishes rings from valves.

COMPRESSION FIGURES, AND THE ONE SOURCE THEY COME FROM

The 49ccScoot FAQ gives roughly 90 to 100 psi of cranking compression as the minimum for an engine to start at all, and around 150 psi or above as typical of a strong-running one. We could not find a second independent source for either figure, so treat them as one experienced author's benchmarks rather than a specification. The more useful comparison is against your own earlier reading on the same engine with the same gauge.

RICH OR LEAN — FOUR SIGNALS, NOT ONE

The same engine gives four independent signals about its mixture. One of them can mislead; three pointing the same way is a finding.

WHAT YOU OBSERVE	POINTS RICH	POINTS LEAN
Sound when it bogs	Sputtering, blubbering, a flatter and lower note	A “buwahhh” as it picks up, and revs that hang after you close the throttle
Spark plug after a run	Dark, black, sooty or wet	Light, white or unusually clean
In cold or damp weather	Runs worse	Runs better
At altitude	Runs worse the higher you go	Runs better lower down
Engine temperature	Runs cooler	Runs hotter
Restrict the air intake briefly	Gets worse	Gets better

WHERE THIS COMES FROM, AND HOW FAR TO TRUST IT

This is the mixture diagnosis used by the long-running 49ccScoot FAQ, which is the most internally consistent single source we found for these engines. It is one author's experience rather than a manufacturer document, and it is a direction of travel rather than a measurement — it tells you which way the mixture is off, never by how much. Do not change jetting on the strength of one signal.

FINDINGS

DATE	MILES	WHAT YOU OBSERVED	BRANCH A OR B

WRITE DOWN WHAT YOU SAW, NOT WHAT YOU CONCLUDED

Every box on this sheet asks for an observation. That is deliberate: the observation is recoverable later and the conclusion is not. "Plug dry after six attempts" is still useful in a month. "Fuel problem" is not, because you will not remember what made you think so.

Need to work out what you actually own?

The Scooter Parts Registry is a free public record of the Chinese factories behind US-market scooters, ATVs and go-karts — brand, engine family, VIN prefix, factory and related machines. No account, no email.

thescooterparts.com/identify