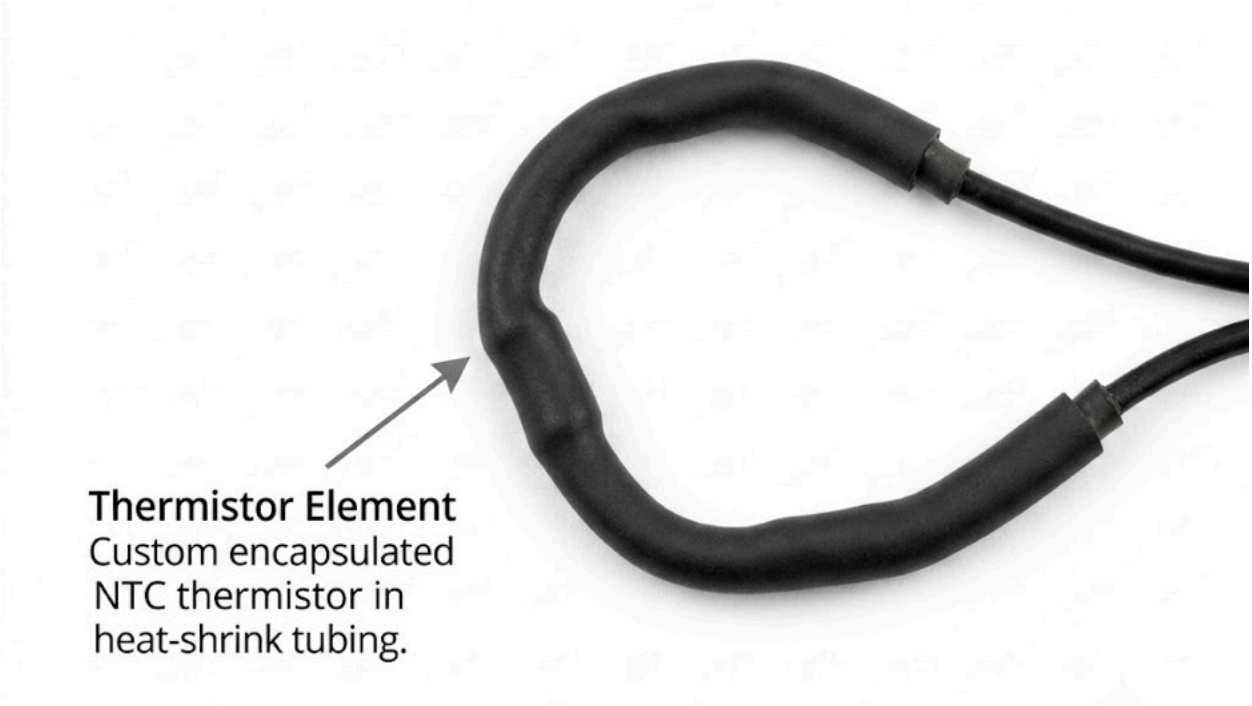
RCATS

AK2-T Temperature Probe Guide

Overview

The AeroKore Temperature Sensor is an NTC thermistor probe (10kΩ nominal, Beta 3892K) built for general-purpose temperature monitoring in RC applications. It connects directly to AeroKore TS telemetry modules or a standard Spektrum receiver temperature port, and is rated from -55°C to 300°C (572°F), with a hermetically sealed, glass-encapsulated sensor tip and heavily insulated 28AWG wire intended for hot, vibration-prone environments.

Like any thermistor probe, it has practical limits. It measures the temperature of whatever it's in direct physical contact with — it does not sense radiant heat or airflow temperature from a distance, and a poor or loose contact point will read low and lag behind real changes. Response time depends on the mass and material it's mounted to; a probe clamped to a large metal fin will always react more slowly than one against a thin surface. It's also not rated or suited for direct flame or exhaust-gas-stream contact — sustained exposure at the very top of its range, or to combustion gas velocity and chemistry, is outside its intended use and will shorten its life or damage the sensor.



Common Applications

Because it's a general NTC contact-temperature sensor, it isn't limited to CHT work. Common applications include:

- **Cylinder Head Temperature** — monitor your gas or glow engine's temperature during flight to help with tuning or warning of overheating.
- **LiPo/battery pack temperature monitoring** — mounted against or between cells to watch for overheating during charge or high-current flight.
- **Electric motor temperature** — mounted on the motor case or near the windings to catch thermal buildup under sustained high load.
- **ESC (electronic speed controller) temperature** — monitoring heat sink or case temperature on high-power electric setups.
- **Ambient/air temperature reference** — mounted away from heat sources as a baseline comparison point.
- **General airframe or component monitoring** — anywhere a repeatable contact-temperature reading is more useful than a guess.

EXAMPLE 1: CHT Measurement

The primary worked example in this document is **cylinder head temperature (CHT) monitoring** on gas and glow RC engines, since installation and placement considerations are most detailed there. The same mounting principles (good metal contact, consistent placement, avoiding artificial cooling/airflow bias) carry over to the other uses above.

One important note: ***this probe should not be used for exhaust gas temperature (EGT) measurement.*** EGT requires a probe designed to sit in the exhaust gas stream itself and withstand sustained, direct combustion-gas exposure and velocity — a different sensor class and mounting method entirely. Using this contact thermistor in an exhaust stream is outside its design intent and rating.

It is tempting to chase the single hottest spot on the cylinder, but that is not the point of this sensor.

The goal of CHT monitoring is a consistent, repeatable measurement from a fixed reference point, not the absolute peak temperature on the cylinder. A reading that is reliably placed lets you compare flight to flight, tune to tune, and engine to engine, and lets you spot trends (rising baseline, sudden spikes, cooling-down rate) that actually tell you something about engine health. Keep in mind that ambient conditions matter too — the same engine running the same tune will show a lower CHT on a cold winter day than on a scorching summer afternoon, simply because the incoming cooling air starts out colder. That's normal, and it's another reason to judge trends relative to your own baseline rather than chasing a fixed target number. A probe chasing hot spots that shift with airspeed, cowl airflow, or mounting drift will give you noisy, misleading data even if any single reading looks impressive.

Used well, a consistently placed CHT reading is also a useful tuning tool in its own right — it can help you evaluate and optimize cooling airflow through your cowling, letting you compare the effect of different inlet/outlet sizing or baffling changes on how well the engine is actually being cooled.

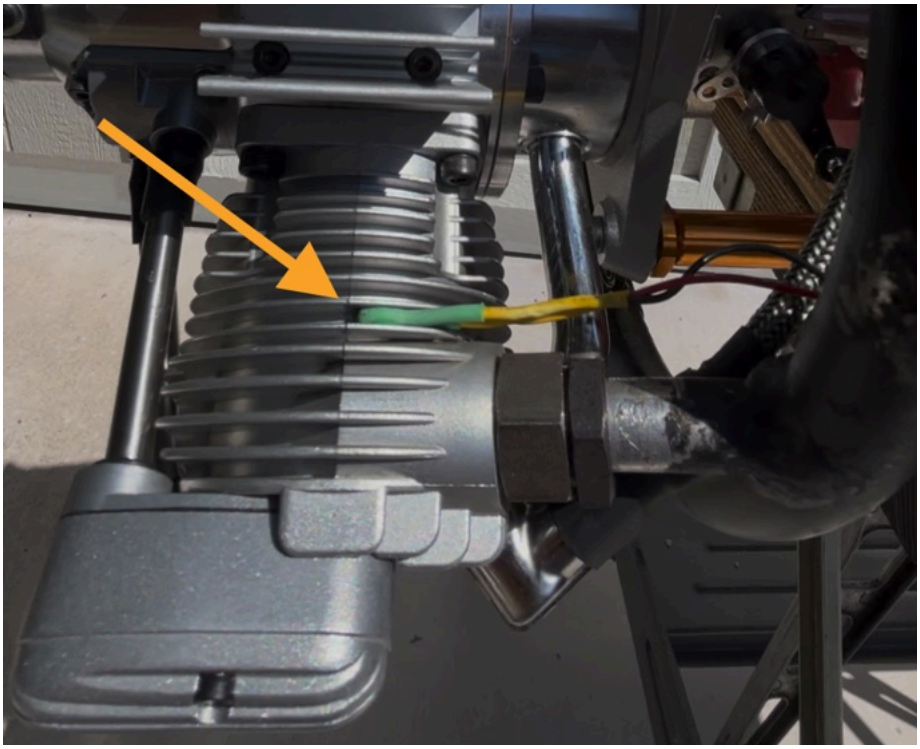
CHT Measurement | Where to Mount It — and Where NOT To

We do not recommend wrapping or mounting the probe on the front of the cylinder, directly in the incoming prop blast. That location is bathed in the highest volume of cooling air on the whole engine, and it will consistently under-read actual cylinder temperature — often significantly. Worse, the amount of cooling airflow there changes with airspeed, climb angle, and ground vs. flight, so the reading swings for reasons that have nothing to do with combustion heat. That defeats the purpose of a consistent reference measurement. Instead, choose a location that is thermally close to the combustion chamber but shielded from the direct prop wash.

Rating	Location	What You Typically See	Notes
Best	Base of Spark plug boss / glow plug base	Highest, but most consistent readings; closest thermal path to the combustion chamber.	Preferred location on most engines when accessible.
Better	Side of the cylinder head (fin base, non-cooling side)	Moderate, stable readings; slightly lower than plug boss but still representative.	Good alternative when the plug boss is not accessible; keep it off the direct-flow side.
Good	Rear of cylinder / exhaust side fins	Readings run higher and noisier due to proximity to exhaust heat soak.	Depends on engine being mounted on, but can be made to work well.
Worst	Front of cylinder (prop-blast side)	Lowest, least consistent readings; heavily suppressed by incoming cooling air.	Avoid. Airflow-dependent drift makes trend data unreliable.

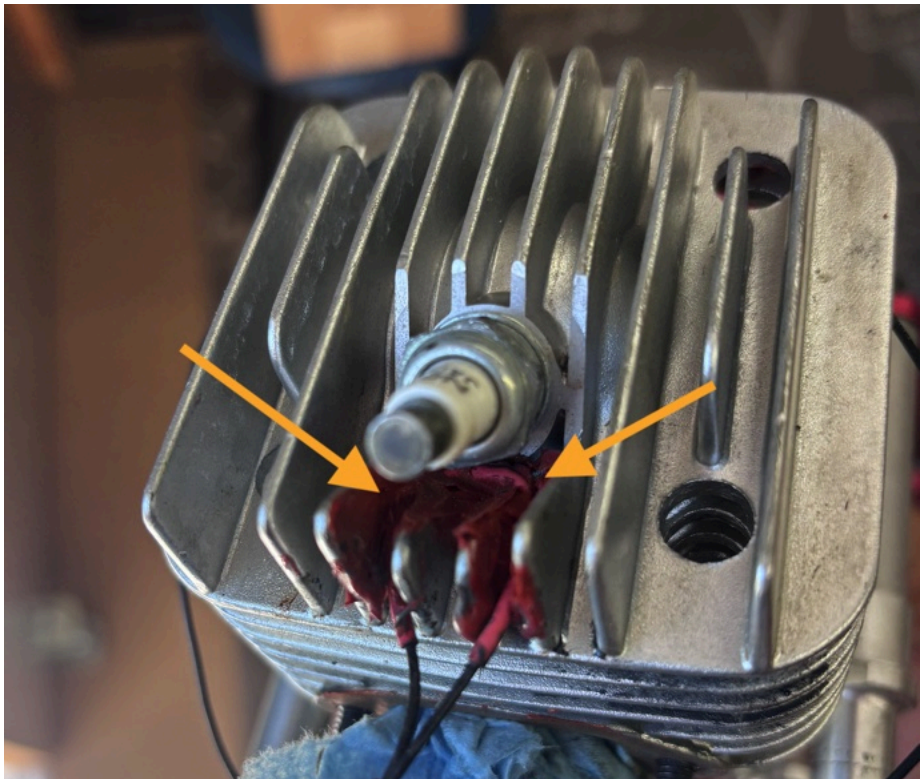
Additional installation and mounting notes for CHT's

- Contact: Mount the sensor tip in contact with bare metal on the cylinder head or barrel — not against paint, anodizing, or a fin edge. We want the thermistor bead to read metal temperature, not trapped air.
- Mounting: Place the sensor to surface and use high-temp RTV to pot the sensor in place. Preferably do not put the high-temp silicon under the sensor, only use it to keep it in place.
- Wire routing: Route the lead away from moving parts (prop, pushrods, carb linkage) and away from direct exhaust blast. Use the supplied unshrunk heat-shrink segments to set your own strain-relief and support points once the routing is finalized, then shrink them in place.
- Verification: Confirm the connector is fully seated at the AeroKore TS module or Spektrum RX temp port, and that the reading changes when you warm the tip by hand before first flight.



Saito 90 FG3 Example

The Orange arrow points to the thermistor on the side of the engine between the fins and right below the exhaust. This example is from the test bench and it has not been held in with High Temp Red RTV. Note, if you add sensors for all cylinders, mount them in the same location on all three cylinders!



DLE55 Example

This is representative of any other 2 cycle single or multi-cylinder engine. The arrows point to the thermistor placed down near the spark plug boss. It is held in place with High Temp, Red RTV. Note that you want to try and keep the RTV over the top, not between the element and the metal of the cylinder head.

Summary

- **Contact quality first:** Mount on bare metal, using hardware or temperature safe adhesive that won't drift or lose contact.
- **Best default location:** Spark plug boss or the shielded side of the cylinder head, chosen for repeatability, not peak temperature.
- **Avoid:** The front of the cylinder, where prop-wash cooling makes the reading inconsistent and unrepresentative.