

TURBINE ENGINE HOT STARTS . . .

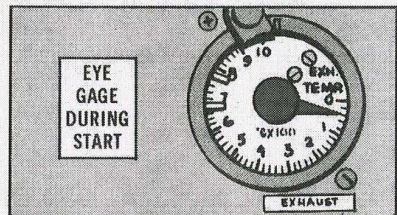


Too much pride can cost you your hide, hot pilots.

Like—when hot starts are not written up . . . and the engine folds up!!

Focus in on the T-53 in a Huey (UH-1C/M), for example.

The operator's pub says that during starting the maximum allowable exhaust gas temperature is 760-degrees C. If the EGT goes over 760 for any period of time or over 650 (L-11 engine) or 675 (L-13 engine) for more than 5 seconds, record it on the DA Form 2408-13. Give the temp reached and the duration in seconds.

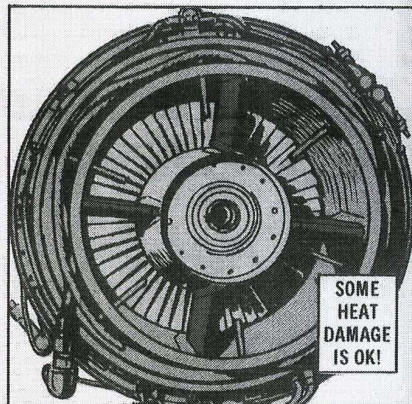


Fact is, chopper drivers, write up all temps over the yellow line to assist crew chiefs in their troubleshooting chores.



Here's why. Not all parts damaged by heat in the combustor turbine assembly

are replaced during a routine hot end inspection.



TB 55-2800-200-30/1 (Jan 69) paras 56 thru 115 give acceptable crack limits on the nozzle assembly, combustion chamber and turbine wheel. Parts that pass inspection stay put.

The crack limits apply throughout the normal operating life of the engine until overhaul.

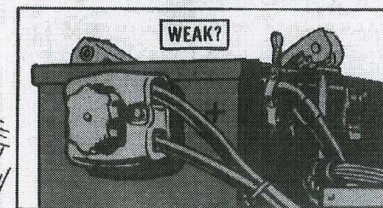
There is nothing "normal" about a hot start. You don't have a gradual heating and expansion of metal.

Instead, rapid heating distorts metal. Cracks open up and expand beyond limits which, of course, can lead to engine failure during flight. Which can give you a hairy situation, to say the least.

CREW CHIEF TO THE RESCUE

A hot start write-up in the log book calls for a look-see at the special inspection section of TM 55-1520-220-20 (Nov 68) by crew chiefs and mechanics.

weak battery, faulty fuel control, starting fuel solenoid valve that fails to shut off, dirty air inlet, or even by strong winds blowing up the tail pipe.



Just take the corrective action given in the troubleshooting table, page 5-24, of the organizational maintenance pub, birdmechs.

INDICATION OF TROUBLE	PROBABLE CAUSE	CORRECTIVE ACTION
6. Hot start; exhaust gas temperature limits exceeded.	Internal engine binding. Weak battery.	Refer to item 2. Replace battery.
	Wrong starting procedure. Starting fuel solenoid valve fails to shut off.	Use correct procedure. Check operation: Disconnect starting fuel line from manifold. Manually engage with main fuel switch on, starting fuel switch off. If fuel flows, replace valve.
	Air inlet obstructed. Fuel air control.	Clear air inlet. Replace fuel control.

The above-normal temperatures listed in the inspection checksheets mean an engine malfunction or instrument problem which you can handle. No need for the hot end to be pulled.

'Course, hot starts can be caused by a

When the write-up shows that the temp went over 760-degrees C any time and over 650 or 675 on the Charlie or Mike models for more than 5 seconds, tho, the hot end has to be inspected by Support for internal damage.