

FEVA 2.1™ Exhaust Valve Condition Screening Report
N47815 - LEFT - PA-34-200T Seneca II - TSIO-360

We have attached an Exhaust Valve Condition Screening Report for your aircraft based on data from your recent flights on [08/25/2021](#), [08/25/2021](#), [08/24/2021](#), [08/22/2021](#), [08/21/2021](#), [08/21/2021](#), [08/15/2021](#), [08/13/2021](#), [08/13/2021](#) and [07/28/2021](#). Results appearing in the report are based on Savvy's FEVA 2.1 machine learning predictive model.

Recommendations:

Valve failure is a relatively rare event. We estimate that only about 2% of the exhaust valves in service are in the process of failing at any given time.

If one or more of your exhaust valves is in the "elevated concern" category, don't panic! Failure is still unlikely because valve failure is rare to begin with. We do recommend heightened vigilance in monitoring the valve's condition, however. Borescoping is a simple procedure, and for valves in the "elevated concern" category we recommend performing it no later than your next oil change or other scheduled maintenance.

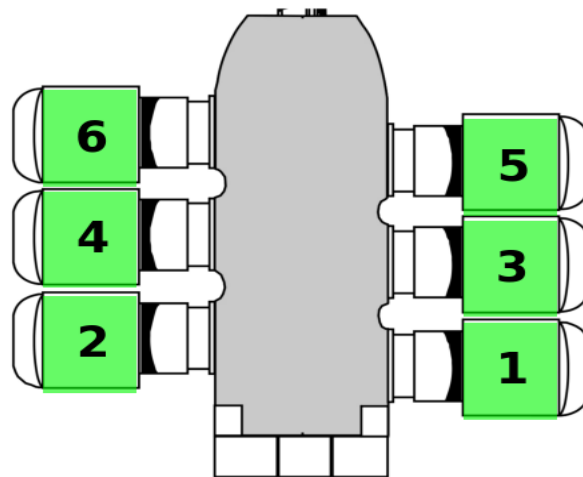
We also recommend borescoping all of your exhaust valves at each annual inspection, even valves in the "low concern" category. Such valves are not guaranteed to be healthy, although we predict they will be about 99.5% of the time.

About Valve failure and the FEVA 2.1 predictive model

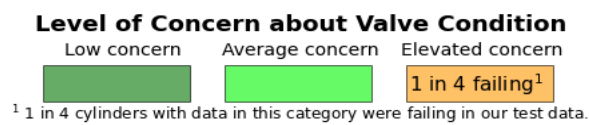
A frequently asked question is "What was it in my data that caused the elevated concern?" It's a very good question, but hard to answer satisfactorily. The current FEVA 2.1 machine-learning predictive model uses 34 variables, mostly from engine monitor data, and combines them in a complex function that cannot be expressed in a simple formula.

We do know that variables related to oscillations in EGT with a period of approximately one minute (which is the time it takes an exhaust valve to make one complete revolution at cruise RPM) have a relatively high "importance" in the prediction. However, not all exhaust valve failure modes exhibit such EGT cyclicity, which is why the FEVA 2.1 predictive model considers many other factors as well.

When an exhaust valve failure does occur, Savvy's clients often ask us "What did I do wrong? How could I have prevented the failure?" The answer is: "Probably nothing." We have found that exhaust valve failure is caused primarily by factors outside the control of pilots and owners, such as variations in assembly tolerances and materials of cylinder assemblies. However, if you would like us to review your powerplant management technique using data from a specific flight, simply request analysis of the flight in the normal way and note that you would like us to focus on your operating technique.



Savvy recommends borescoping all cylinders at every annual inspection.



For more information about this Savvy FEVA 2.1 chart and how to interpret it, please see the [FAQ](#).