

service bulletin

M90-13
Technical Portions Are
FAA Approved

16 July 1990

TO: Aircraft Manufacturers, Distributors, Dealers, F.B.O.'s, Overhaul Facilities, Owners and Operators of Aircraft Engines

SUBJECT: **EXHAUST VALVE STEM CORROSION/EROSION**

COMPLIANCE: When performing cylinder/exhaust system maintenance or repair

TCM cylinders are equipped with solid stem exhaust valves made of an exotic alloy, Nimonic 80A. Service history of these valves has been excellent and unparalleled in the industry. TCM Service Bulletin M87-11 recommends 100% replacement at overhaul due to stem wear and/or stem to head corrosion/erosion, or pitting. TCM has become aware that occasionally this condition has progressed at the time of overhaul to the extreme example shown in Figure 2, which undetected could lead to valve failure.



Figure 1.
Normal Wear



Figure 2.
Excessive Corrosion/Erosion

(Continued)

Laboratory tests conducted by the valve manufacturer have shown the condition is caused by chemicals that exist in the exhaust gases while the valves are at operating temperature. The source of the chemicals is a product of combustion of the fuels and oils being used; however, we have not established any correlation between the valve environment of an operating engine and the stem corrosion that resulted in laboratory tests.

It is strongly recommended, therefore, that at any time cylinder/exhaust system maintenance is performed prior to major overhaul, the exhaust valves be examined through the exhaust port for excessive corrosion/erosion or pitting in the head to stem area. If a stem diameter reduction of 10% or more is evident, replacement should be considered prior to major overhaul.