

**CEN21FA320
PIPER PA28-180
N2801T
Muscatine, IA
July 14, 2021**

GRYOSCOPIC INSTRUMENT EXAMINATION NOTES

The vacuum operated directional gyro and the vacuum operated artificial horizon that had been installed in N2801T when the above referenced accident occurred were recovered from the accident scene by the NTSB IIC for examination.



The Artificial horizon, shown in the figure above, was predominately intact with external damage to the setting knob on the front of the instrument.



The instrument was disassembled, as shown above, to determine if any witness marks were present to indicate operation. During disassembly, all parts moved freely and no defects were noted regarding any linkages or hinge points. The brass gyroscope core was still mounted in its housing and all mounting points and bearings were intact. The bearings rotated freely.



There was no damage to the rotor, bearings, shaft, mounting points or the housing which contained the gyroscope core and there were no witness marks on either the core or the housing that contained it. No preimpact defects were found that would have prevented operation.



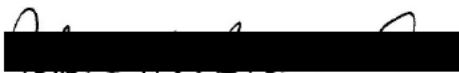
The Directional gyro was predominately intact but did have damage to the external case. Before disassembly, rotation of the setting shaft (knob missing) resulted in rotation of the compass card inside the unit as expected.



Disassembly of the directional gyro required cutting of the outer housing to facilitate removal. Examination of the internal components of the gyro did not reveal any anomalies. Removal of the gyroscope core revealed that the core, shaft, bearings, and core housing were not damaged. The bearings rotated freely.



There were no rotational witness marks on the gyro core or the housing that contained it. No preimpact defects were found that would have prevented operation.


[Redacted signature]

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