DIAMOND J, INC.

SUPERIOR AIRCRAFT INSTRUMENTS

SMART TORQUE
for BELL 212 & 412

- PLUG & PLAY - NO CHANGE IN AIRCRAFT WIRING
- NO RECALIBRATION OR ADJUSTMENT REQUIRED FOR THE LIFE OF THE INSTRUMENT
- ACCURACY OF 0.5%
- ALL DIGITAL INSTRUMENT WITH SMOOTH ANALOG POINTERS AND A DIGITAL TOTAL TORQUE DISPLAY
- EXCEEDANCE MONITORING
  - DATA STORED IN NON-VOLATILE MEMORY
  - DOWN-LOAD DATA THRU IR PORT TO PDA
- MICRO-PROCESSOR CONTROLLED STEPPER MOTORS
- MTBF 20,000 HOURS
- CONTINUOUS SELF-DIAGNOSTICS
- SUNLIGHT READABILITY
- NVG AVAILABLE

FOR ADDITIONAL INFORMATION CONTACT JASON HARRIS

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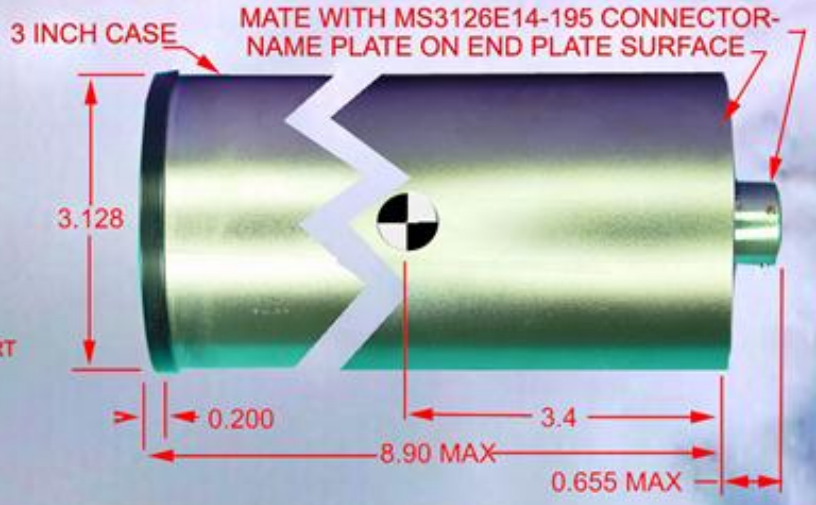

DISPLAY
The smart torque analog display. The two inner pointers are for engine 1 and engine 2 torque and longer third pointer is for transmission torque.

The digital display is a multi function display. During normal operation, the three least significant digits indicate transmission torque in %. The fourth digit is used to indicate an over-torque event and the severity of the event. In data play back mode, the digital display indicates the over-torque events recorded by the smart torque indicator. In the calibration mode, the digital display indicates the calibration status.

POINTERS
The two inner pointers provide a continuous reading of the engines (1 & 2) output shaft torque in %. The system uses the two existing syncro pressure transducers. The % of transmission torque is calculated by adding engine 1 and engine 2.torque together. The resultant transmission torque is indicated by the longer pointer The width between the edges of the long pointer where the tips of the short pointers intersect the edges of the long pointer represents 4% engine torque. 4% engine torque is the maximum torque split allowed between engines.

EXCEEDANCE MONITORING
The smart torque indicator monitors the following torque limits (exceedances): (100% - 104%), (104% - 112%), (112% - 118%) and above (118%). When the transmission torque goes above 100%, the digital display flashes two times per seconds until the transmission torque drops below 100%. The leading digit in the digital display also displays a letter to indicate the severity of the over-torque event. For torque exceedance of 104% and below, the lead digit is an "A", exceedances between 104% and 112% the lead digit is a "b", exceedances between 112% and 118% the lead digit is a "C".and exceedances above 118% the lead digit is a "d".

The over torque indication (flashing digits) will continue until one minute after the torque drops below 100% or a more severe over-torque event is recorded. The one-minute delay is to help insure that the flight crew is aware of the over-torque event. In each of the exceedance ranges the smart torque indicator can record 100 exceedance events. The indicator also records the total number of transmission torque events over 100% and the accumulated time (in seconds) that the transmission torque exceeded 100%.

DAYLIGHT READABILITY
The four-digit digital display is made from .225 inch incandescent seven-segment digits. During daylight operation, the back-lights and/or night vision lighting are off. The smart torque indicator senses these signals and turns the display on full bright making the display daylight-readable. Night Vision (NVG) is an available option.

ELECTRICAL POWER
The indicator receives power via pins A and B of the indicator connector. The indicator functions with input voltages from 22.5 Vrms to 28.5 Vrms and power supply frequencies from 375Hz to 425 Hz at 7.5 volt amps nominal.

BACK LIGHT POWER
The indicator is internally back-lit via 5 VDC lamps. Pins D and E of the indicator connector are connected to the smart torque's internal back lights. 2.3 watts are required to drive the back-lights when 5VDC is applied to pins D and E.

RETRIEVE OVER-TORQUE DATA VIA INFRARED DATA PORT
The infrared data port is located on the dial face. The over-torque data stored in the indicator may be down-loaded to a Personal Digital Assistant (PDA) via the indicators infrared data port. The torque data may be transferred to a PC database

INDICATOR RESET
During reset mode, the smart torque indicator clears all over-torque data recorded since the last time the indicator was cleared. There are two ways to clear the smart torque indicator of over-torque data. The first method is the infrared (IR) data port located on the dial face. The second method is accomplished by using a memory reset module.

MEMORY RESET MODULE
The memory reset module is a cylindrical device about 1 inch in diameter by 4 inches long. The module has connectors on each end. One connector mates with the indicator and the other mates with the aircraft connector. The module is connected to the two connectors and power is applied to the indicator to clear all exceedances