

Twin Commander Aircraft Field Notes

NTSB Identification: WPR14LA194

14 CFR Part 91: General Aviation

Accident occurred Saturday, May 17, 2014 in Fort Huachuca, AZ

Aircraft: Aero Commander 500 S, Registration: N40TC

Injuries: 1 Fatal 1 Serious

Wreckage Examination June 24, 2014

Air Transport [REDACTED] Phoenix, AZ

Parties Present:

IIC Dennis J. Hogenson, Senior Air Safety Investigator

Western Pacific Region

John Butler Senior Air Safety Investigator Lycoming Engines

Dave Notalvo Scottsdale Standards District Office

Steve Meisner Scottsdale Flight Standards Office

Geoffrey Pence Twin Commander Aircraft LLC

Observations:

L & R Boost Pump switches in the "OFF" position.

Left fuel shut off switch in the "OFF" position.

Right fuel shut off switch in the "On" position.

L & R Fuel and Hydraulic guarded shut off switches in the on guarded (ON) position.

The landing gear selector handle in the gear up position which is supported by crash scene photos showing the Nose Landing Gear in the retracted position.

The flap selector handle was displaced towards the down position. Damage to the flaps and actuating system prevented determination of actual flap position.

The Left Fuel Filter was removed at the fire wall and some "fuzz" was observed on the outside surface of the filter. There was no fuel present at the fuel filter vapor separator assembly.

The Right Fuel Filter was removed at the firewall and no evidence of contamination noted. There was no fuel present at the fuel filter vapor separator assembly.

Accessed the sump tank located beneath the center fuel cell and observed both the Left and Right shut off valves mounted to the sump in the "OFF" position as indicated by the pointers on the valve. The shut off valves are electrically actuated open or closed.

Accessed the Left and Right Forward and Rear Fuel Cells to check Interconnect continuity and for presence of contamination. Found no foreign debris and inter connects displayed no restrictions.

The Left Fuel vent is damaged but relatively intact and no restriction was noted.

The Right Fuel Vent was not located but the tubing that attached to the vent did not display any evidence of restriction.

Approximately 5 Gallons of fuel drained at the sump low point drain in preparation for removal of the fuel shut off valves.

Fuel shut off valves Left and Right removed for testing.

The left and right fuel boost pumps were removed to visually inspect the interior of the fuel sump. Damage to the wiring to the Right boost pump was noted. The fuel sump assembly was clean and free of debris.

The wire numbers to the fuel shut off valves were identified utilizing the Maintenance Manual wiring diagrams and confirmed as going into the valve connectors installed in the aircraft. The overhead wiring bundle had been cut forward of the connector located at Fuselage Station 100. Wires forward of the cut to the Left Fuel Shut off switches were identified as 5130A-20 for the closed position and 5131C-20 for the open position. Power to the switches from the circuit breaker panel was supplied by wire 5131A-20. Continuity from 5131A-20 to 5130A-20 was confirmed by switch activation on /off. Continuity from 5131A-20 to 5131C-20 was not established. Further examination of the 5131C-20 wire revealed that the wire had separated in the cockpit overhead as a result of possible stresses applied during the crash sequence, during wreckage recovery or for reasons unknown. Wires to the Right Hand Fuel Shut Off switches were identified as 5135C-20 for the open position and 5134A-20 to the closed position. Power to the switches was supplied by 5135A-20 from the circuit breaker panel. Continuity between 5135A-20 and 5135C-20 was established through the shut off switches by switch activation on/off. Continuity between 5135A-20 and 5134A-20 was established through the shut off switches by switch activation on/off. See figure 10-29 and figure 10-19 for wiring details.

A check was made for continuity from the cut aft to the fuel shut off connectors. Wires 5131D-20 and 5130B-20 to the Left Hand valve connector "A" and "B" pins were both open. Wires 5135D-20 and 5134B-20 to the Right Hand valve connector "A" and "B" pins were both open. The wires were followed to the connector at Fuselage Station 100 where a number of wires were observed to have been pulled forward and the pins disengaged from the connector creating an open circuit aft to the shut off valves.

The fuel boost pumps, mounting plate and shut off valves were loosely assembled for functional testing on the table. Using the battery that was recovered in the wreckage power was applied to Pin "A" (Open) of the LH valve and the valve operated normally to the open position. Power was then applied to Pin "B" (Closed) and the valve operated normally to the closed position. Power was then applied to Pin "A" of the RH valve and the valve operated normally to the open position. Application of power to Pin "B" produced normal operation to the closed position.

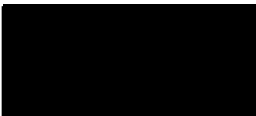
Power was applied to the Black Stripe wire and a Ground applied to the White wire on the LH and RH fuel boost pumps. Both of the pumps operated normally without being submersed in fuel. There was no grinding or binding noises noted. Damage to the wiring to the LH pump did not affect operation. Refer to Figure 10-28 for fuel boost pump wiring detail.

Notes prepared on July 1, 2014 by:

Geoffrey Pence

Technical Service Manager

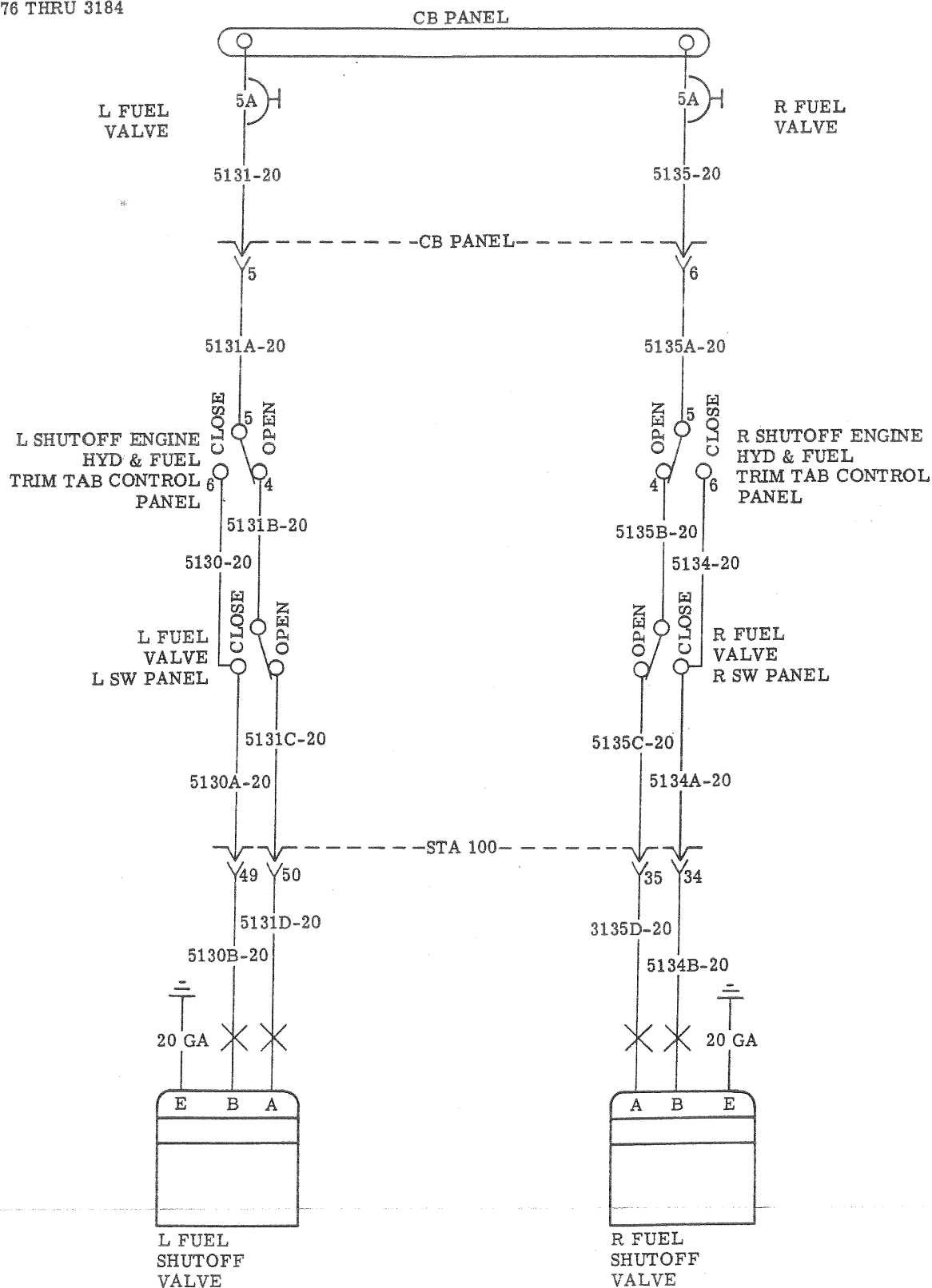
Twin Commander Aircraft LLC



Arlington, WA 98223



EFFECTIVE SERIAL NUMBERS
3076 THRU 3184



BN(34)

Figure 10-29. Fuel Shutoff Valves (Sheet 2 of 2)

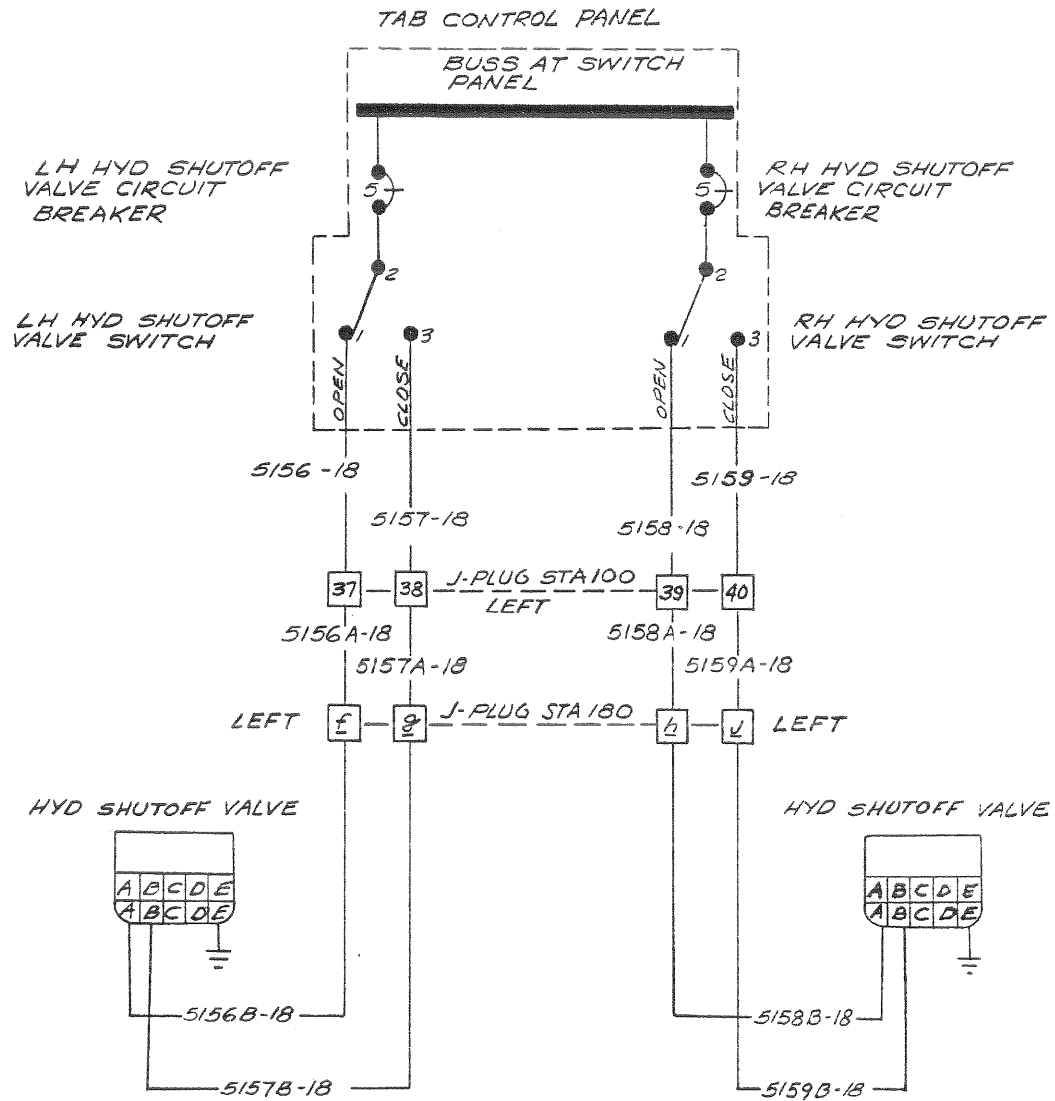
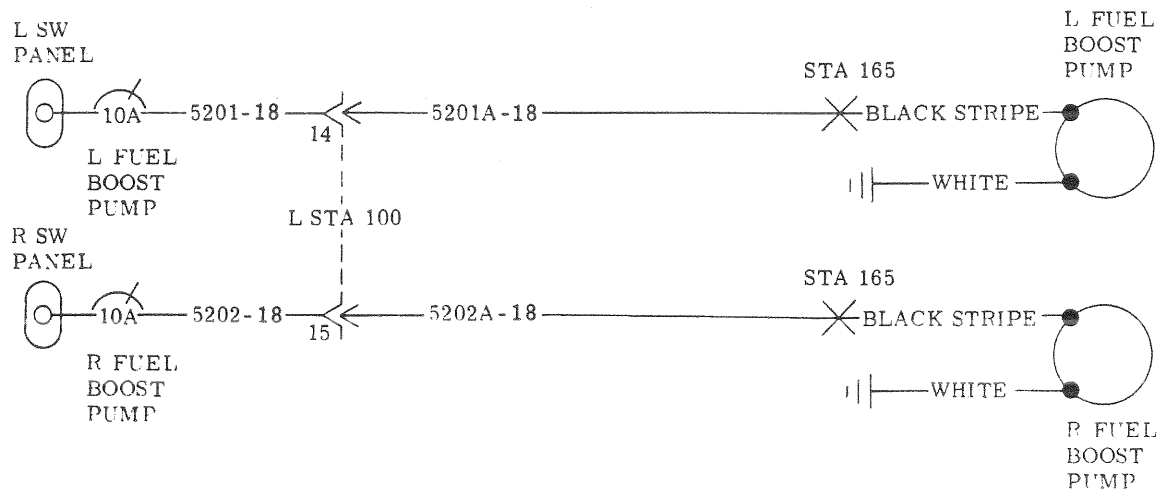
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Figure 10-19. Hydraulic Shutoff Valves (Sheet 2 of 2)

EFFECTIVE SERIAL NUMBERS
3152 THRU 3184



BH(27.2, 30)

Figure 10-28. Fuel Boost Pumps

