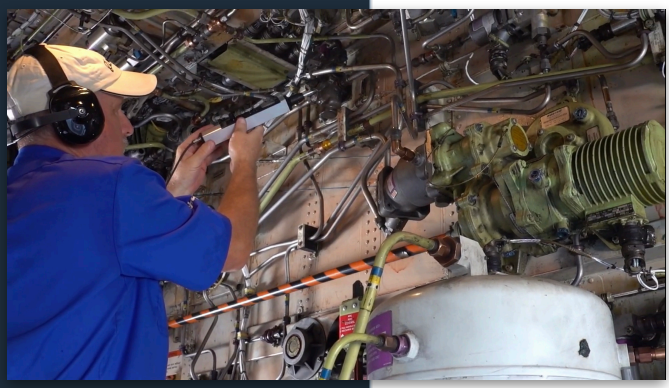
CASE STUDY

Troubleshooting Flap Control Valve and Bypass Valve in Boeing 737-700 Using the UL101 Aviation Troubleshooter Kit (p/n B00033; Boeing Tool Tag SPL-1473)

Scenario

A Southwest Airlines pilot reported that the flaps on a Boeing 737-700 were slow to move, especially coming up. After preliminary inspection, aircraft maintenance technicians decided they would change the flap control valve. This is a time-intensive repair, involving multiple components (control valve and solenoid). Before initiating the repair, a member of Southwest's Maintenance Operations Center (MOC) decided to investigate the aircraft using the UL101 Aviation Troubleshooter Kit.



The MOC team member had been recently trained on the use and application of ultrasound inspection and diagnosis by CTRL Systems, and was eager to apply his knowledge to a new AOG scenario. Using the UL101 receiver with a solid probe, he was able to listen to the control valve and multiple bypass valves. Using a simple method of comparing sound samples through his head set, the MOC team member was able to quickly identify that a good valve produced no ultrasound, while a valve within a bypass fault was unmistakably loud. Based on his inspection, it was determined that replacing the flap control valve (and solenoid) was the incorrect course of action, and would have caused the aircraft to be placed on AOG again in the near future. Instead, the MOC team member determined that the culprit was a faulty bypass valve instead.

INDUSTRY
Commercial Aviation

CTRL EQUIPMENT
UL101 Aviation Troubleshooter (p/n B00033)

PART NUMBER
CTRL Part No. B00033 / Boeing Tool Tag SPL-1473

ROI in a Single Event

The chart to the right shows the time/cost savings in repairing the bypass valve versus the flap control valve and solenoid as originally intended.

In addition to the cost benefits of repairing the correct component, the aircraft was able to be returned to service the same day. Replacing the control valve and solenoid would have resulted in an overnight AOG and delayed return to service.

	Control Valve	Bypass Valve
Hourly Labor Rate	$60.00	$60.00
Hours	11	3
Labor Cost	$660	$180
Total Components	2	1
Total Materials	$9,000	$3,000
Total Cost	$9,660	$3,180
Total Savings	$6,480 USD	
ROI (single incident)	108%	

The information in this case use was supplied by Dan Amos of Southwest Airlines Maintenance Operation Center in Dallas, TX. CTRL Systems thanks Dan and Southwest Airlines for partnering with us to promote the benefit of acoustic ultrasound detection to the aircraft maintenance community. To see (and hear) the UL101 in action on this application, please visit https://youtu.be/keeHwCcht-A .

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