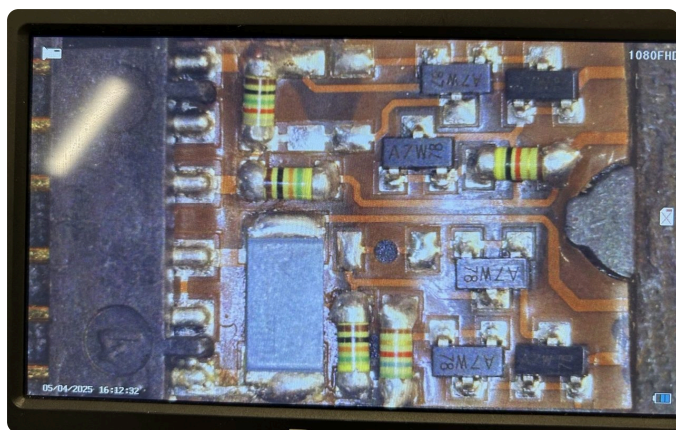


COCKPIT CONTROLS · AIRBUS A320 FFS

From repair to replacement: building a simulator-compatible Korry-style switch

Reverse engineering, PCB redesign and low-volume production of illuminated pushbuttons, validated in a customer A320 full flight simulator.



BEFORE Original switch internals under magnification during failure analysis.



AFTER Finished Simura switch module, produced for A320 FFS installation.

PLATFORM	ASSET	SCOPE	OUTCOME
Airbus A320 FFS cockpit panels	Korry-style illuminated pushbutton	Reverse engineering, redesign, low-volume production	Delivered April 2026, installed and operational

01 The challenge

The simulator needed five Korry-type cockpit switches. The existing units had faults in their internal switching and contact mechanisms, and exact replacements were difficult to source, expensive or unavailable in the required configuration.

02 What we did

Earlier component-level repairs kept individual switches in service but exposed a dependence on obsolete internal parts. Using the original switch as a functional reference, we designed a new PCB, produced custom 3D-printed mechanical parts, and assembled and tested the units in-house.

03 The result

Two new A320 Korry-style switches and a repaired A320 EFIS pushbutton were delivered in April 2026. The new switches were installed and operated successfully in the customer's full flight simulator, and the design can be reproduced for further units.

Symptoms and constraints

Failing switch mechanisms

Faults in the internal precision microswitch and contact mechanism.

Scarce replacements

Exact units hard to source, costly or unavailable in the needed configuration.

Obsolete subcomponents

Compact three-terminal switching elements (marked 311P501) and a spring-loaded ball-plunger snap-action mechanism.

Panel integration

Fit, pushbutton travel and cockpit-style illumination had to be preserved.

Development method

- 1 Repair and learn**
Restore failed units, including a temporary flexible-wire fix
- 2 Failure analysis**
Separate repairable faults from ageing and unavailable parts
- 3 Reverse engineering**
Map how PCB, switching element, actuator and housing interact
- 4 Define requirements**
Mechanical fit, electrical interface, illumination, maintainability
- 5 Electronic redesign**
New PCB with Gerber data, layer information and board specs
- 6 Source economically**
Prototype-capable manufacturers; cheaper sources for hard-to-find parts
- 7 Mechanical development**
3D-printed parts for fast iteration with correct geometry and actuation
- 8 Assemble and test**
Final assembly and functional testing in the production workflow
- 9 Validate in the simulator**
Installation and operation in the customer's A320 FFS

THE RESULTING SOLUTION

A purpose-built illuminated pushbutton

A newly designed PCB, custom mechanical parts and replaceable electronic and switching components, configured for an A320 FFS cockpit panel.

Less dependence on scarce parts

A repeatable path to produce more units or adapt the platform to related switch configurations.

VALIDATION

- Functional testing built into the production workflow
- Installed in the customer's A320 full flight simulator
- Operated successfully in the intended environment
- Commercially supplied, not a bench prototype

Lessons for simulator operators

SMALL PART, BIG IMPACT

One unavailable pushbutton can affect panel function, training availability and maintenance planning.

REPAIR TEACHES DESIGN

Component-level repair reveals exactly which internal parts limit long-term support.

ENGINEER THE SPARE

When supply channels fail, a validated low-volume replacement can be faster and cheaper.

Repair work that led to the redesign

AREA	WORK PERFORMED
Contact path	Restored Korry-switch operation with a temporary flexible-wire solution.
Switching element	Diagnosed precision microswitch and contact-mechanism problems; investigated compact three-terminal elements, including one marked 311P501.
Actuation	Examined the spring-loaded ball-plunger snap-action mechanism inside the assembly.
EFIS panel	Repaired A320 EFIS-panel pushbuttons using component-level techniques.
Parts sourcing	Identified more economical sources for difficult-to-find internal parts.



Production unit with serial and QC label.



Module body and rear terminals.



A320 FFS main instrument panel.



A320 FFS overhead panel pushbuttons.

Result and value delivered

OBSOLESCENCE SOLVED

Hard-to-source switches replaced with newly produced compatible units

PROVEN IN THE FFS

Installed and operating in a customer full flight simulator

REPEATABLE SUPPLY

A temporary repair capability turned into a production solution

MULTI-DISCIPLINE

Electronics, PCB design, 3D printing, assembly and validation

FUTURE VARIANTS

A foundation for other Korry-style and cockpit-control projects

Simura capability

- Korry-style switch diagnosis
- Component-level pushbutton repair
- Reverse engineering
- Replacement PCB design
- Prototype production
- 3D-printed mechanical parts
- Low-volume assembly & testing
- Simulator-compatible replacements

**When a cockpit switch is no longer available,
the replacement can be engineered.**

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These units were developed for flight-simulation equipment and are not presented as certified or airworthy aircraft components. Customer identity and configuration details are omitted and remain in the controlled record.