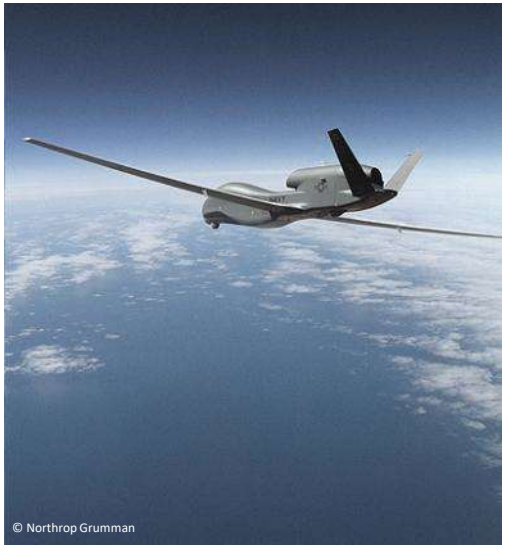
Lift System Overview

Gregg E Pyers

Trusted to deliver excellence

Rolls-Royce

Strong position in all defence sectors



Combat, STOVL, light-attack, trainer, transport, helicopters, maritime reconnaissance and aerial surveillance.

Rolls-Royce

Defence Aerospace

Liftfan

TP400

AE1107C

T56

EJ200

FCAS – Future Combat Air System

CTS800

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Key Technology Challenges – Defence Aerospace

Affordable Readiness

Improved Mission Effectiveness

Designing for the Future

Survivability

Integrated Power Systems

Rolls-Royce

Unmanned Air Systems

Complex landscape – multiple systems in service, and in development and demonstration phases

Key technology challenges in integrated power and propulsion system

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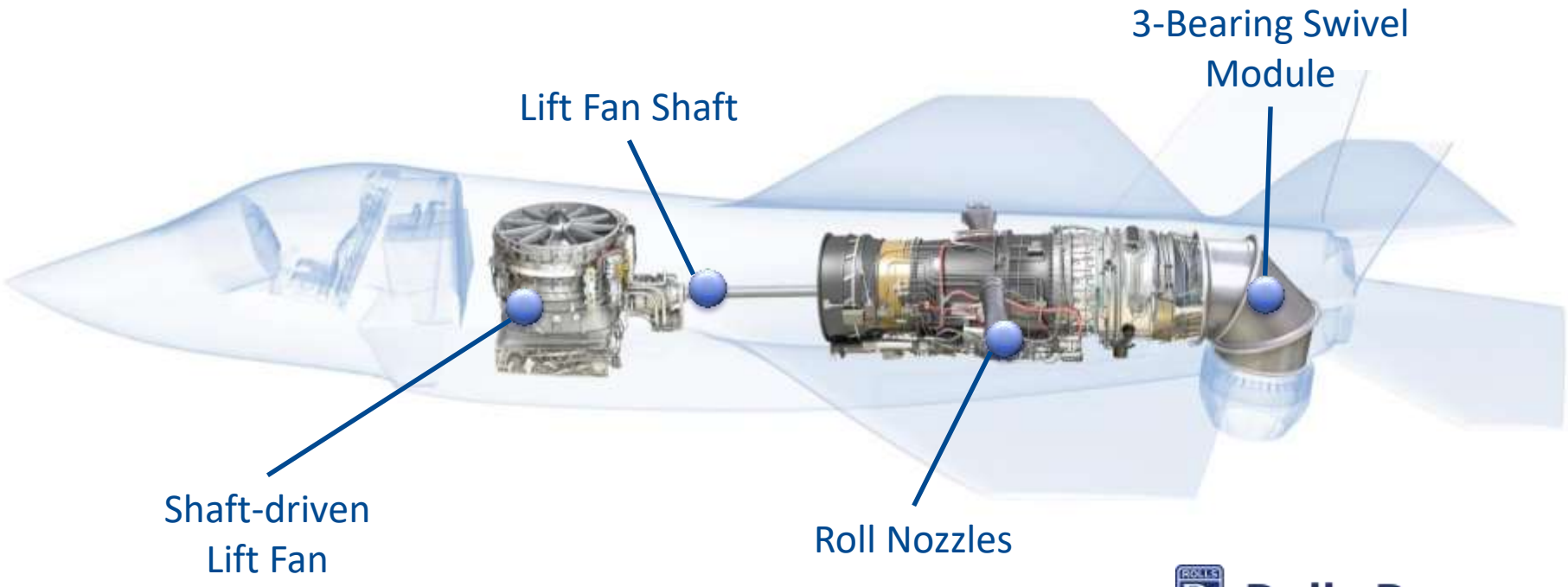
LiftSystem for the F35-B

Unique vertical lift technology for the F35-B

Combined STOVL capability of 40,000lbf



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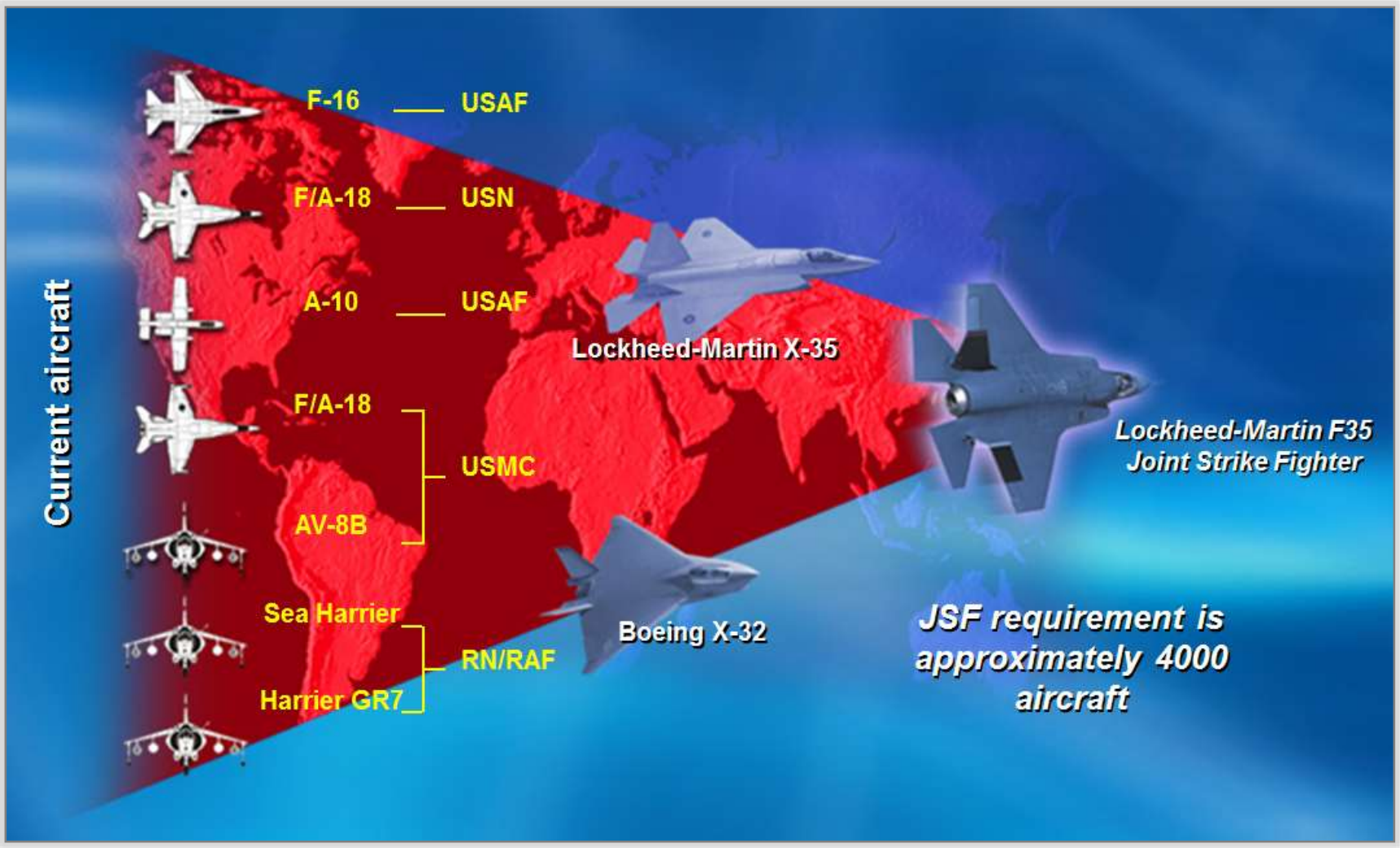
Why was the JSF programme started?



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F35 Joint Strike Fighter Program

Joint Strike Fighter Program

Three Aircraft Variants

•Rolls-Royce provides short take-off vertical landing (STOVL) components to the program.

Rolls-Royce LiftSystem®

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How did we get there?

Concept Demonstrator (1996)

Development (2001)

Production (2008)

Entry into Service (2012)

Initial Operational Capability (IOC)

(2015 – US)

(2018 – UK)

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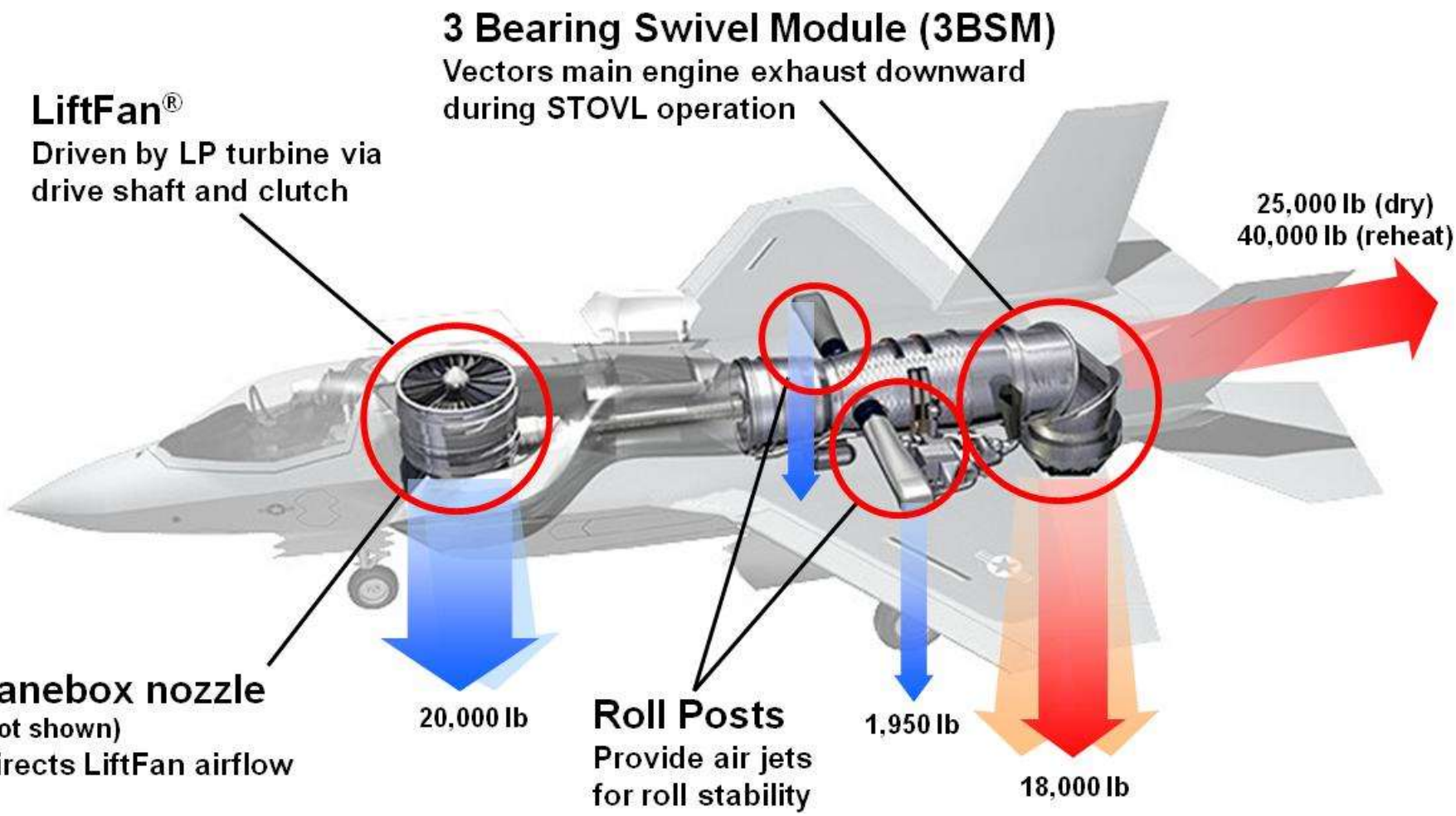
Rolls-Royce LiftSystem®



Rolls-Royce LiftSystem®

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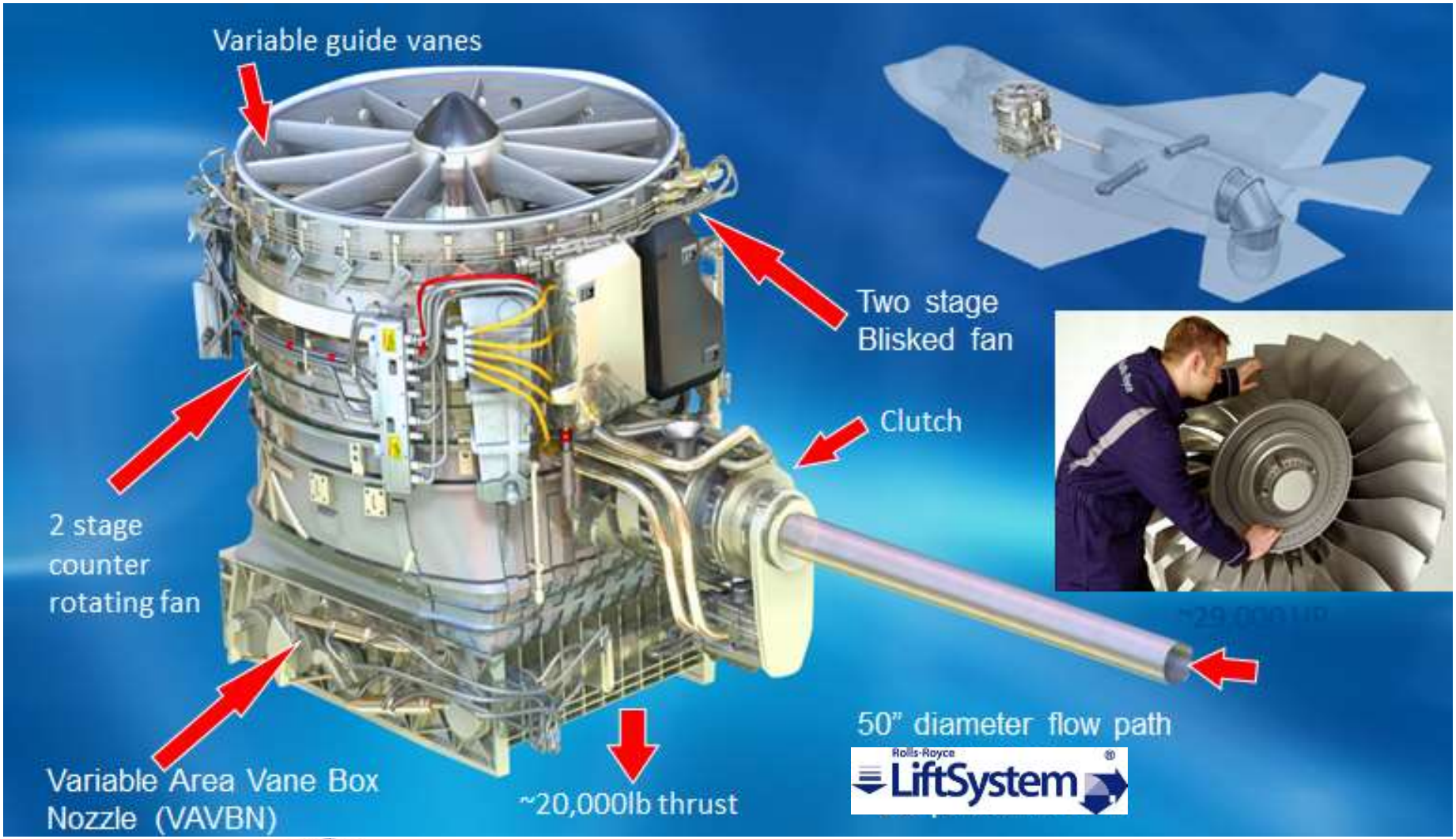
Carrier Trials Video

Rolls-Royce

LiftFan Overview



Rolls-Royce LiftSystem

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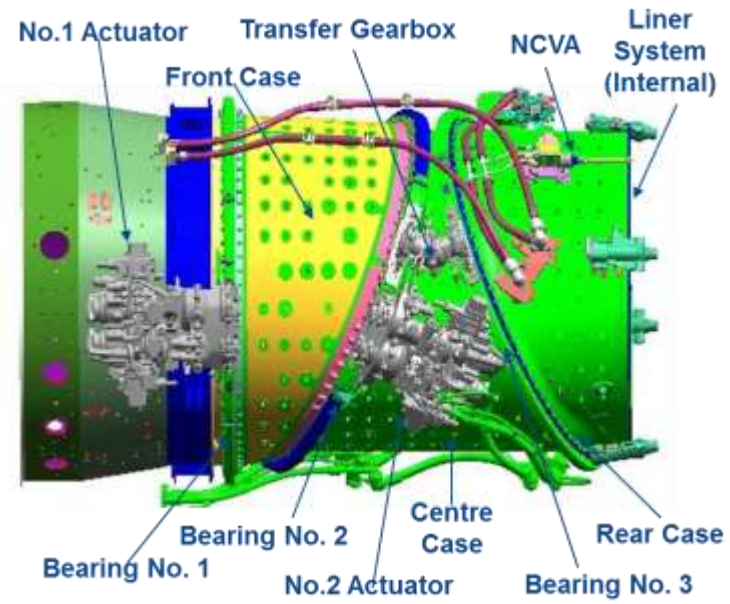
3BSM Overview

A single vectoring nozzle provides thrust between 0-95º pitch and ±11º yaw

- Providing STOVL and Supersonic flight
- 43,000lbf (Afterburner)
- 18,000lbf (STOVL)



3 bearings are mounted at different angles in four casings

- Bearing rotation changes jet vector

3 actuators provide control over thrust vector

Rolls-Royce LiftSystem

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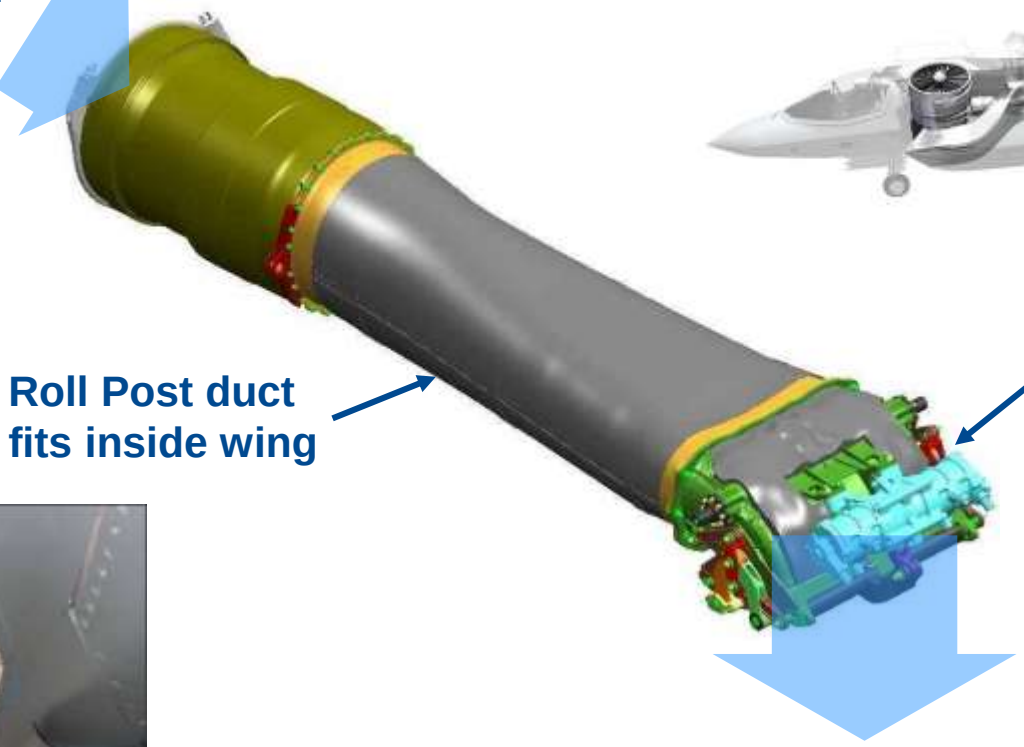
Roll Post Overview

Bleed air from main engine bypass duct



Roll Post duct fits inside wing

Nozzle with actuator

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Program Overview

- Development Completed (Jul 2016)
  - 21,000 test hours
  - 20,000 clutch engagements
  - 1,600 Short Take-offs
  - 1000 Vertical Landings

- Delivering Low Rate Initial Production
  - Dedicated LiftSystem Assembly Facility
  - 70 production LiftSystems delivered to date

- Providing Depot MRO Service

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