



Saab JAS 39D Gripen

Fatigue Test

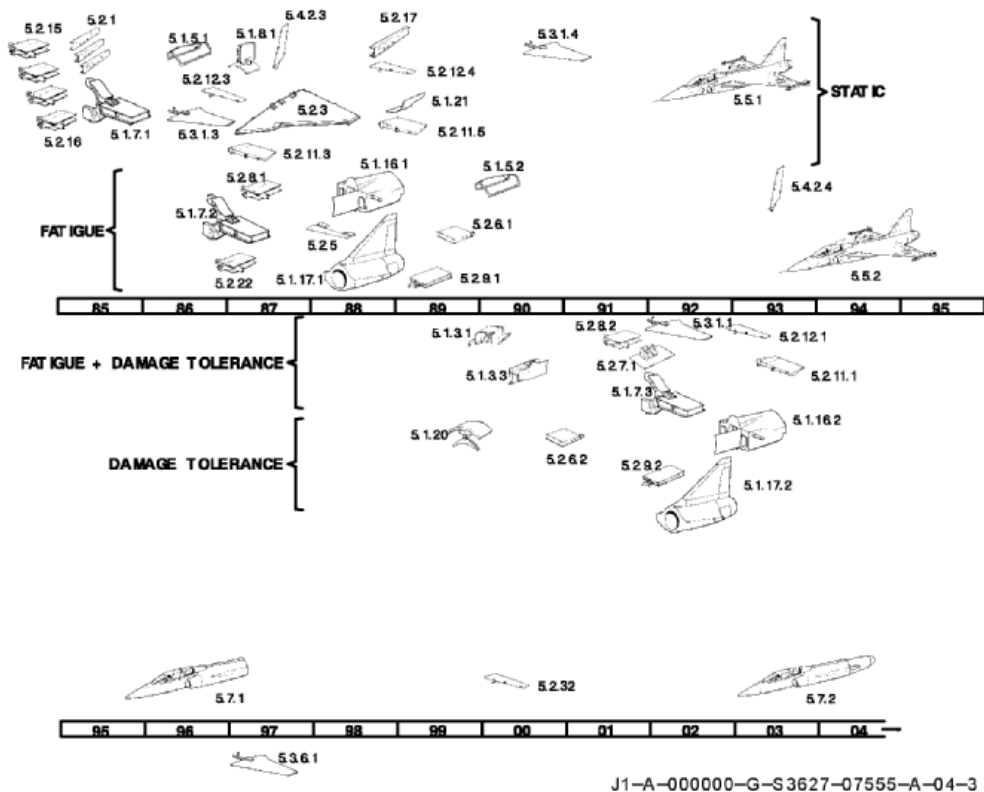


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Aerospace Testing Expo
Hamburg, April 4th, 2006

JAS 39 Gripen Structural Test Overview

JAS 39 GRIPEN: STRUCTURAL VERIFICATION TESTING



55 different static, fatigue and damage tolerance tests have been performed, from small part tests to full scale fatigue tests, over a 15-20 years period.

- Fullscale Static 39A
- Fullscale Fatigue 39A
- Fullscale Fatigue 39B
- Rear Fuselage & Fin
- Canard
- Wing Attachment
- Etc.



Fullscale Tests on JAS 39A

STATIC (1992)

Requirements

- 150% Limit Load (metal)
- 180% Limit Load (composite)

FATIGUE (1993 – 1998)

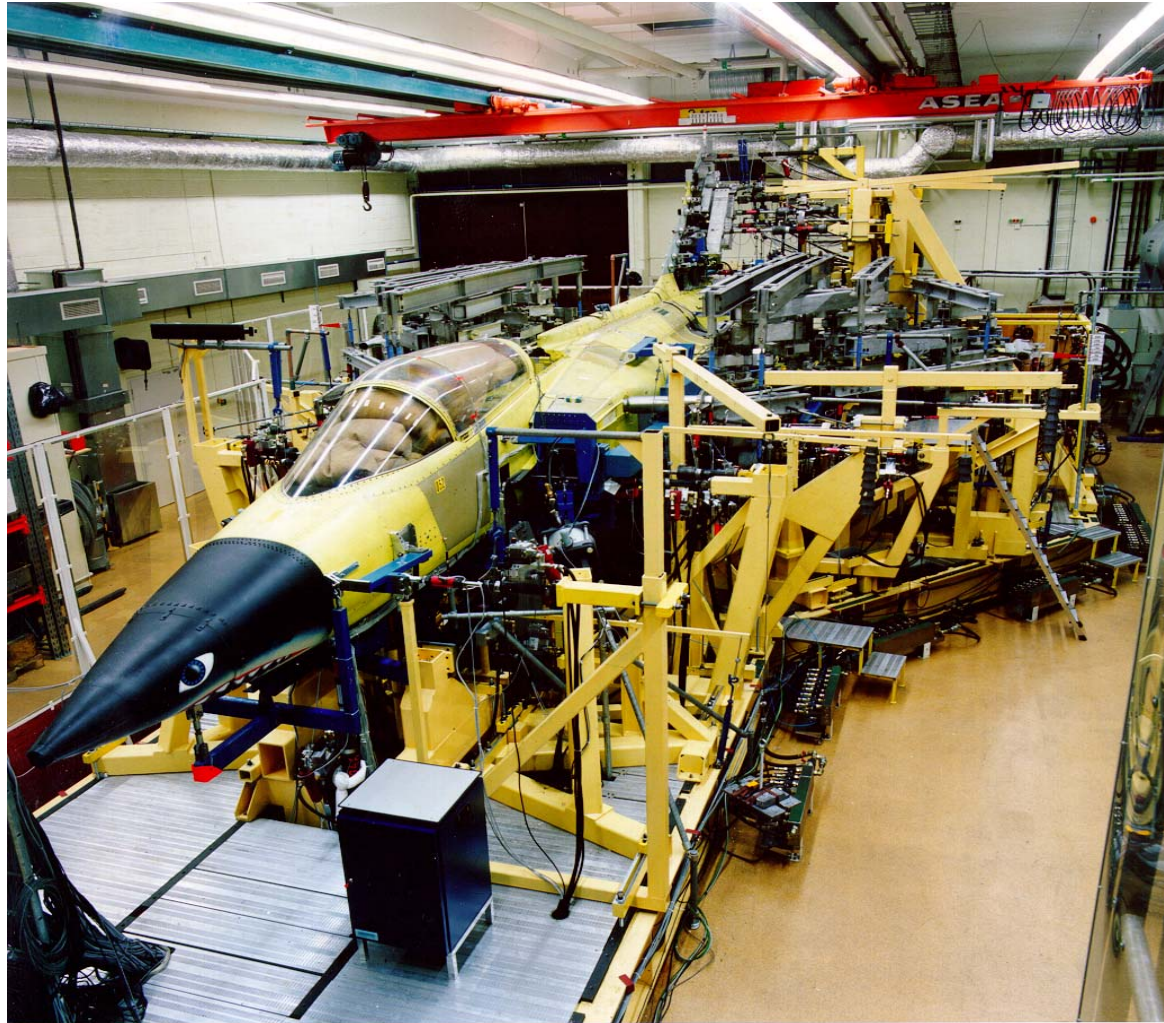
Requirement

- 16 000 flh

Cont'd test (1999 – 2007)

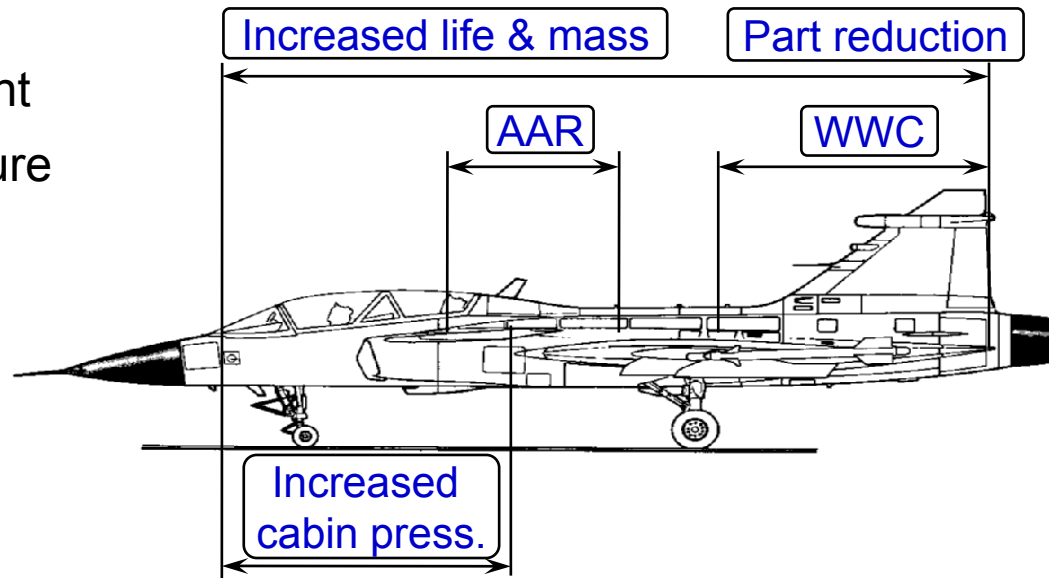
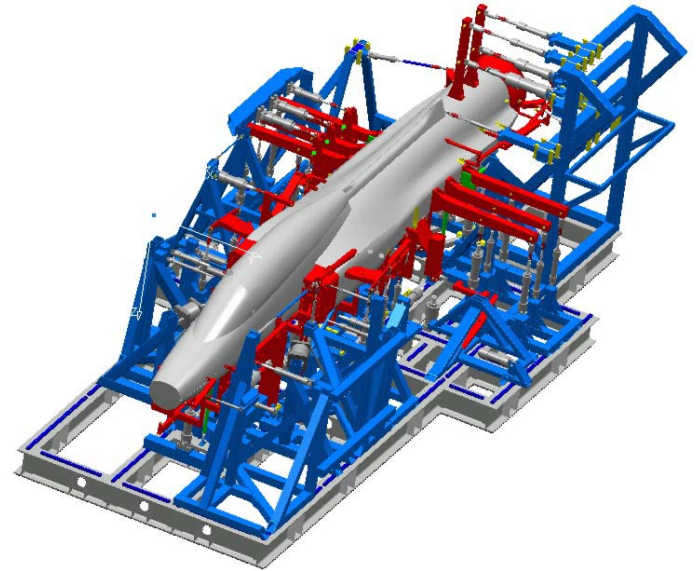
Aim

- 32 000 flh
Verify Export wing & fin
- Passed 27500



New Fullscale Fatigue Test

- Part reduction program
- World Wide Climate (WWC)
- Air to Air Refueling (AAR)
- Radar Cross Section (RCS) reduction
- Increased service life
- Increased design weight
- Increased cabin pressure



Test Specimen

Serial production fuselage

Two-seater

Dummies for:

- Wings
- Fin
- Canard
- AAR probe
- Etc.



Technical data

Load control: 78 channels

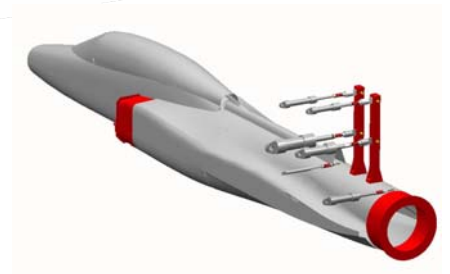
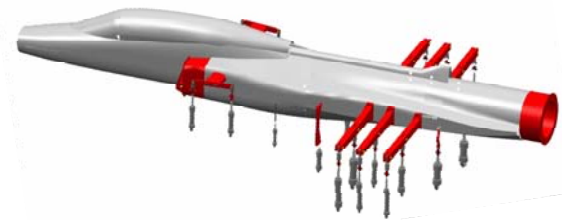
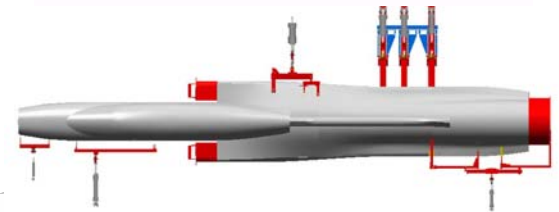
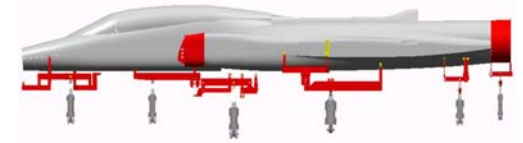
Air pressure: Cockpit, Air duct and 3 fuel tanks

On/off: 2 channels. Maneuvering actuators

Monitor: 6 channels. Fix points.

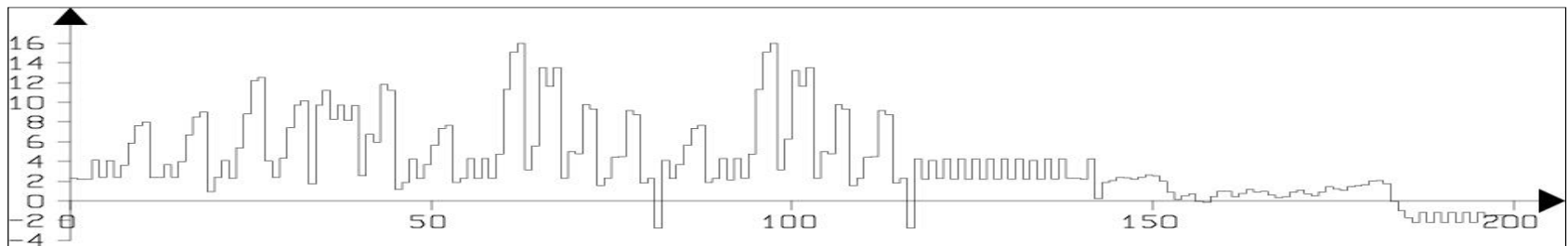
Data acquisition of 1250 channels of strain, load and displacement. 128 of these at all

Load conditions



Testing

- Start december 2003
- "Flight-by-flight" spectrum
- Testing 24 hours a day
- Test sequence of 500 hours containing 200,000 load conditions repeated.
- Inspections every 2000 flh including NDT
- About 8000 flh life per year including schedules inspections
- Now 16000 flh design lives. Aim is 32,000
- Expected to finish 2009.



Current Testing at Saab Aerostructures

JAS 39A Fullscale Fatigue Test
JAS 39D Fullscale Fatigue Test
JAS 39 NATO Pylons
JAS 39 Twin Store Carrier
Saab 2000 Fullscale Fatigue Test
UAV Helicopter Rotor
UAV "Ugglan" Payload Chassis
JAS 39 Pilot boots and g-suit
Airbus A400M Crew Entrance Door Endurance Test
Boeing 787 Cargo Doors Development Tests
Boeing 787 Bulk Cargo Door Static, Fatigue and Damage Tolerance



Other customers are car and truck manufacturers and their suppliers.

www.saabgroup.com

