



Photo courtesy U.S. Air Force/Airman 1st Class Caleb Worpel



Photo: Isaac Martin photo/Phaedra Loffler



F-35

SUSTAINMENT SERVICES



MOOG F-35 GLOBAL SUSTAINMENT SERVICES

Moog has an outstanding record for providing global sustainment support on the world's current fleet of military aircraft including F-15, F-16, F/A-18, F-2, Typhoon, Gripen, IDF and AMX. Through our expanding Global Sustainment operations we ensure the needs of domestic and international operators are met through a network of support facilities and regional experts. We offer a wide range of services from complete turnkey solutions to discrete services with flexible commercial options.

We believe our most valuable offering is customer support, and we are committed to delivering a superior level of sustainment services for all of our customers. Moog is continuing this tradition, supplying the following services for the new 5th generation F-35 aircraft equipped with Moog's advanced systems.

- Turnkey Sustainment Services
- Technical Support and Training
- Forward Stocking of Assets
- Dedicated Engineering, Manufacturing, Repair and Overhaul Support
- Agile Responsive Global Logistics Support
- Public-Private Partnerships including Joint Depot Operations

FLIGHT CONTROLS INTEGRATOR & SUPPLIER

Moog has a rich history in the F-35 Joint Strike Fighter as an OEM supplier and system integrator / prime contract holder for system design and development of the Primary Flight Control Actuation System (PFCAS). In addition to the PFCAS, which is comprised of the Electrohydrostatic Actuation System (EHAS) and Leading Edge Flap Actuation System (LEFAS) component systems, Moog also developed and is the OEM supplier for the F-35C CV Wing Fold Actuation System (WFAS) and F-35B STOVL Lift System Actuation Controls.



ELECTROHYDROSTATIC ACTUATION SYSTEM (EHAS) OVERVIEW

Eliminating the traditional tie to aircraft generated hydraulic power, the electronically controlled and driven Electrohydrostatic Actuators (EHA) provide fully integrated precision motion control of the primary flight control surfaces (flaperon, horizontal tail & rudder). Actuation system software and Electronic Control Units (EU's) provide the system interface to the aircraft electrical drive power and command/control functions of the aircraft Vehicle Management Computer (VMC). Integration of these components provides complete system control.



LEADING EDGE FLAP ACTUATION SYSTEM (LEFAS) OVERVIEW

Utilizing similar Electronic Control Units (EU's) from the EHAS system, the Leading Edge Flap Actuation System (LEFAS) provides fully integrated precision motion control of the leading edge flap flight surfaces. System components include electronically controlled and driven rotary Power Drive Units (PDU), Asymmetry Brakes, and Outboard Position Sensors (OPS). F-35C CV aircraft also include a Foldbox Assembly to act in conjunction with the Wingfold Actuation System.



WINGFOLD ACTUATION SYSTEM (WFAS) OVERVIEW

This fully integrated, electronically controlled and driven rotary transmission system acts as powered hinge to either fold or spread the outer wing tips on the F-35C CV aircraft.



LIFT SYSTEM ACTUATION CONTROLS




The hovering ability of the F-35B STOVL aircraft is provided by the lift system, which combines a thrust vectoring nozzle that directs main engine exhaust downward to generate aft vertical lift and a centrally mounted lift fan to counterbalance forward vertical lift. Moog is the OEM supplier of several key system components which include the Three-Bearing Swivel Module (3BSM) and the Lift Fan Variable Area Vane Box Nozzle (VAVBN) & Variable Inlet Guide Vane (VIGV) actuation controls. These complex electronically controlled hydraulic and fuelhydraulic servoactuators are specially designed for operation in extreme temperature and vibration environments.

F-35A/B PRIMARY FLIGHT CONTROL AND LEADING EDGE FLAP SYSTEM

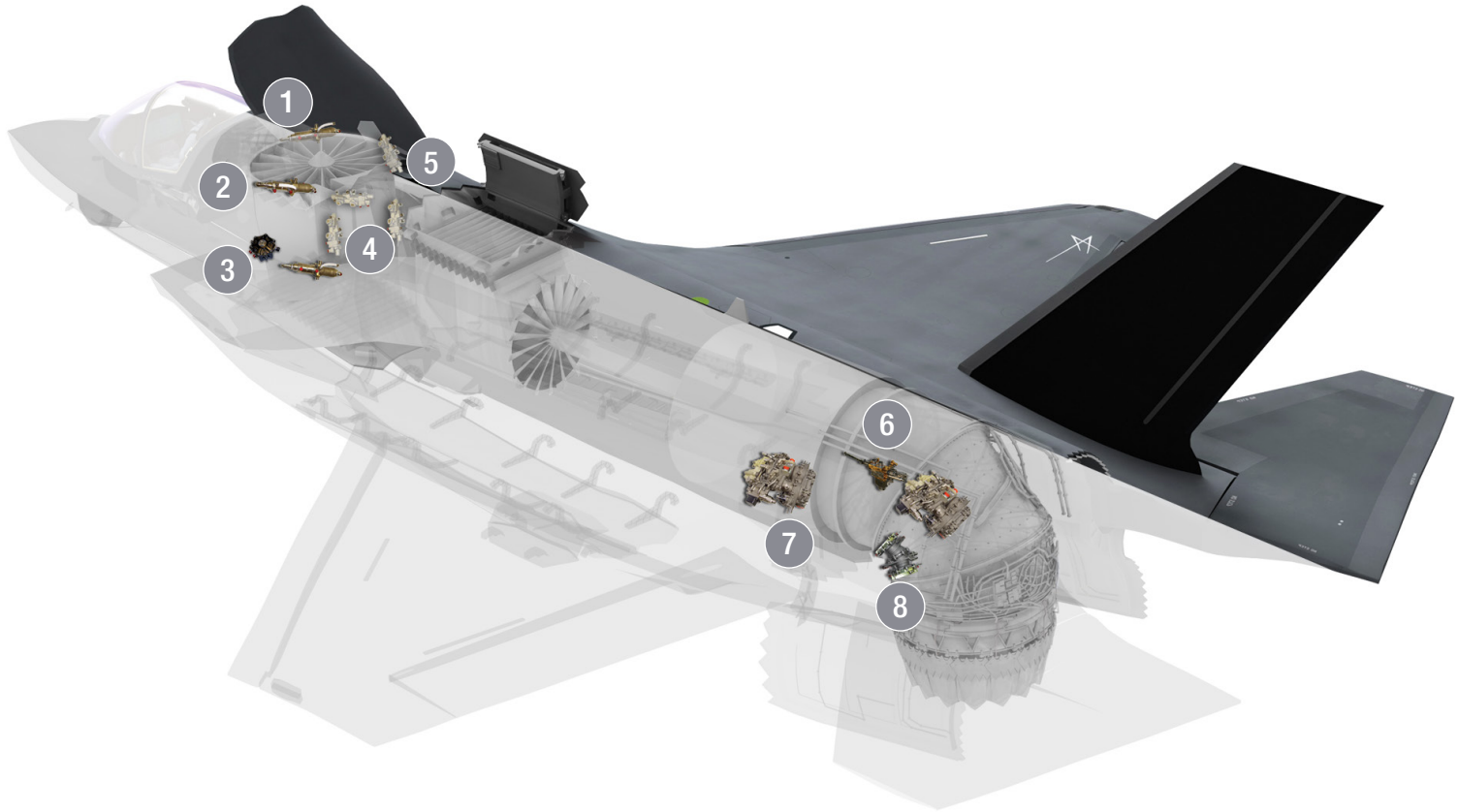


*Part location is approximate

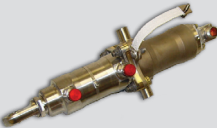


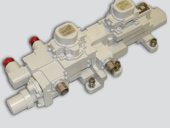
1		Leading Edge Flap Control Unit
2		Leading Edge Power Drive Unit
3		Asymmetry Brake

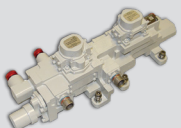

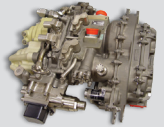

4		Outboard Position Sensor
5		Flaperon EHA
6		Horizontal Tail Electronic Control Unit

F-35B LIFT SYSTEM

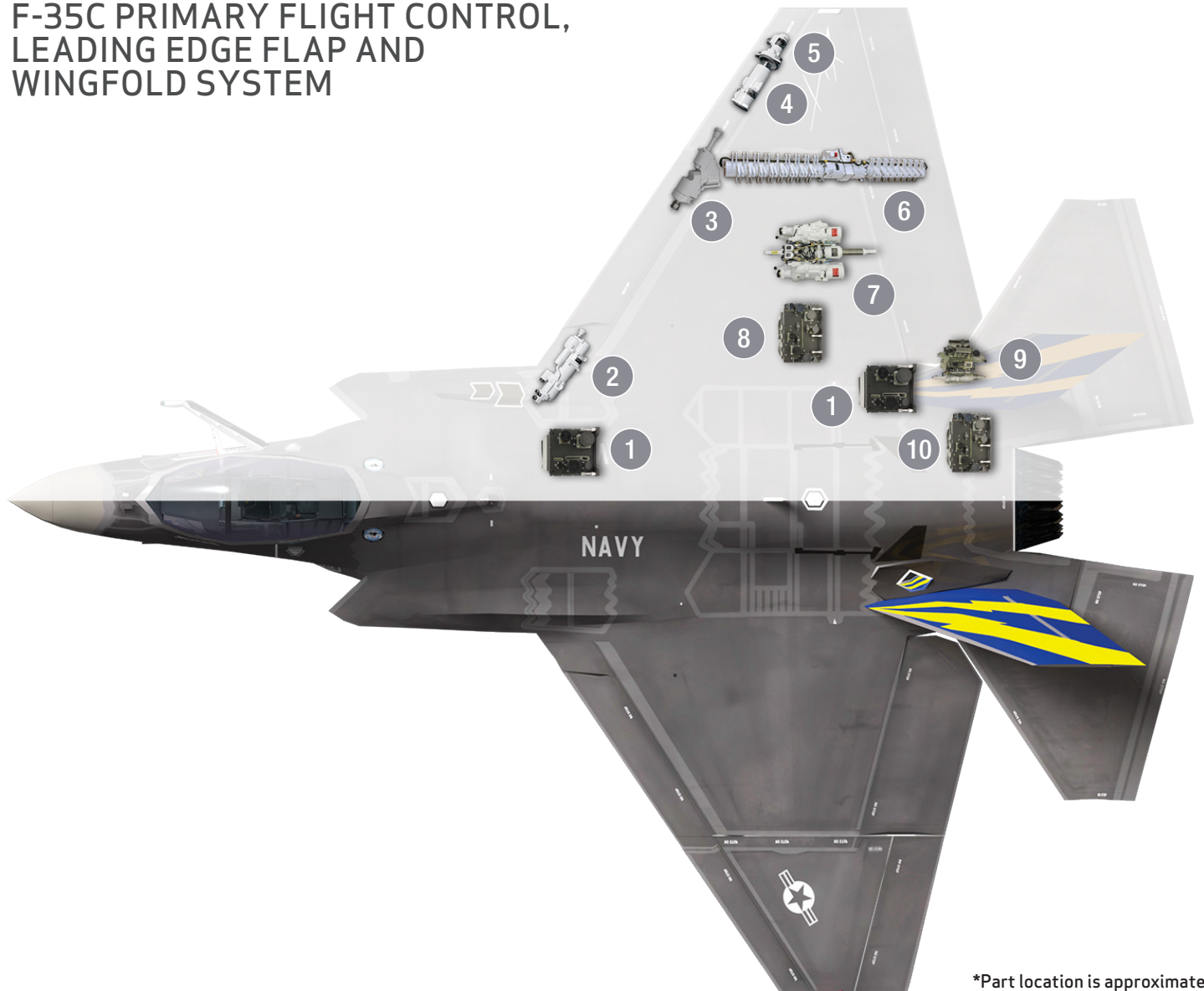


*Part location is approximate




1		Variable Inlet Guide Vane Linear Actuator
2		Variable Area Vane Box Nozzle Linear Actuator
3		Variable Area Vane Box Nozzle Rotary Actuator
4		Variable Inlet Guide Vane Control Valve Block

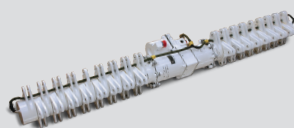


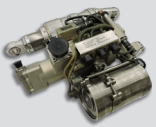

5		Variable Area Vane Box Nozzle Control Valve Block
6		Nozzle Cooling Valve Actuator
7		3 Bearing Swivel Module
8		Transfer Gearbox

F-35C PRIMARY FLIGHT CONTROL, LEADING EDGE FLAP AND WINGFOLD SYSTEM



*Part location is approximate

1		Leading Edge Flap and Rudder Electronic Control Unit
2		Leading Edge Flap Power Drive Unit
3		Fold Box
4		Asymmetry Brake
5		Outboard Position Sensor

6		Wingfold Transmission
7		Flaperon EHA
8		Flaperon Electronic Control Unit
9		Rudder EHA
10		Horizontal Tail Electronic Control Unit

HARDWARE FOR F-35 VARIANT SYSTEMS

Nomenclature	Qty Per S/S	A Variant	B Variant	C Variant
		Moog P/N	Moog P/N	Moog P/N
Primary Flight Control System				
Leading Edge Flap Electronic Control Unit	2	CB43802-002	CB43802-002	CB43804-001
Horizontal Tail Electronic Control Unit	2	CB43800-001	CB43800-001	CB43800-001
Flaperon Electronic Control Unit (C Variant Only)	2	N/A	N/A	CB43800-001
Rudder Electronic Control Unit (C Variant Only)	2	N/A	N/A	CB43806-001
Flaperon EHA	2	C89242-010	CA27227-010	CA43882-010
Rudder EHA (Left Hand) (C Variant Only)	1	N/A	N/A	CA38695-011
Rudder EHA (Right Hand) (C Variant Only)	1	N/A	N/A	CA40860-011
Leading Edge Flap Drive System				
Electronic Power Drive Unit	2	C35321-002	C35321-004	C64873-006
Asymmetry Brake	2	C35199-002	C64845-002	C35255-002
Outboard Position Sensor	2	C35261-001	C35261-001	C64905-001
Fold Box (C Variant Only)	2	N/A	N/A	C64891-002
Lift System (B Variant Only)				
Variable Inlet Guide Vane Linear Actuator	2	N/A	P601A0001-03	N/A
Variable Inlet Guide Vane Control Valve Block	1	N/A	P602A0001-03	N/A
Variable Area Vane Box Nozzle Linear Actuator	2	N/A	P633A0001-01	N/A
Variable Area Vane Box Nozzle Rotary Actuator	2	N/A	P630A0001-01 P631A0001-01	N/A
Variable Area Vane Box Nozzle Control Valve Block	3	N/A	P632A0001-02 P634A0001-01 P635A0001-01	N/A
Transfer Gearbox	1	N/A	P648A0001-01	N/A
Nozzle Cooling Valve Actuator	1	N/A	P639A0001-01	N/A
3 Bearing Swivel Module	2	N/A	P646A0001-05 P647A0001-05	N/A
Wingfold Actuation System (C Variant Only)				
Wingfold Transmission	2	N/A	N/A	C64843-003

MOOG

AIRCRAFT GROUP

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