DASSAULT FALCON

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Aircraft Specification

Falcon 900LX

DGAC-DMF8002C

July 2010

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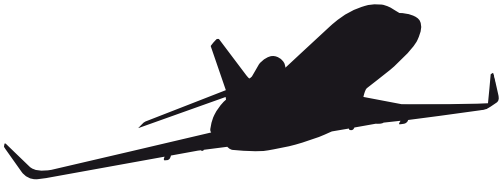

Aircraft Specification

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Note:

Dassault Aviation reserves the right to substitute equipment in lieu of that specified herein, whenever such substitution is deemed necessary to prevent delay in delivery, improve the product, or meet the requirements of the appropriate airworthiness authorities.

TOPIC	PAGE

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GENERAL

The FALCON 900LX is a long range, high-performance, large cabin business jet designed and produced by Dassault Aviation of France. The aircraft is powered by three Honeywell TFE731-60 turbofan engines. It is configured to hold 12 passengers in a standard configuration. Its Type III emergency exits qualify it to hold up to 19 passengers.

CERTIFICATION

The FALCON 900LX is certified to Transport Category Aircraft Standards by the European Aviation Safety Agency (EASA) and by the United States Federal Aviation Administration (FAA).

The FALCON 900LX meets EASA CS-25 and FAR Part 25 Transport Category Aircraft requirements.

The FALCON 900LX is approved for the following kinds of operations:

- Day/night VFR
- IFR and automatic approaches down to Category I and II.
- Flight into known icing conditions
- Extended overwater and uninhabited terrain flight.

The FALCON 900LX meets EASA CS-36, ICAO Annex 16 Vol1 Chapter 4 and FAR Part 36 Stage 4 with the following noise levels (EPNdB):

Flyover	78.2
Lateral	90.3
Approach	92.1

The FALCON 900LX and all systems are capable of the following types of operations: Minimum Navigation Performance Specifications (MNPS) and Reduced Vertical Separation Minimums (RVSM) standards operations in the North Atlantic (NAT), Domestic US and Europe Airspace Regions, B-RNAV/RNP 5, P-RNAV, RNP 0.3, RNP-10 and GPS Non-Precision approach requirements.

LAYOUT

The FALCON 900LX is built from metal alloys and composite materials. It relies on a double-swept, Mach-optimized profile wing with the addition of advanced blended winglets designed by Aviation Partners Inc. Its tail assembly features a movable tail plane at the lower third of the fin. The aircraft's avionics cabinets are located in the nose cone and under the floor in the entryway area. The main entry door is located on the left-hand side of the aircraft behind the flight deck. An emergency exit is located in the mid-cabin on the right-hand side. A stand-up lavatory and a large baggage area with in-flight accessibility are located in the aft cabin.

The aircraft's three engines are mounted at the rear of the fuselage with an "S" duct intake for the center engine located forward of the vertical fin. The center engine includes a thrust reverser. Fuel is contained in structural tanks in both wings, the center wing box and two (front and aft) fuselage tanks and one rear tank.

Standard exterior items

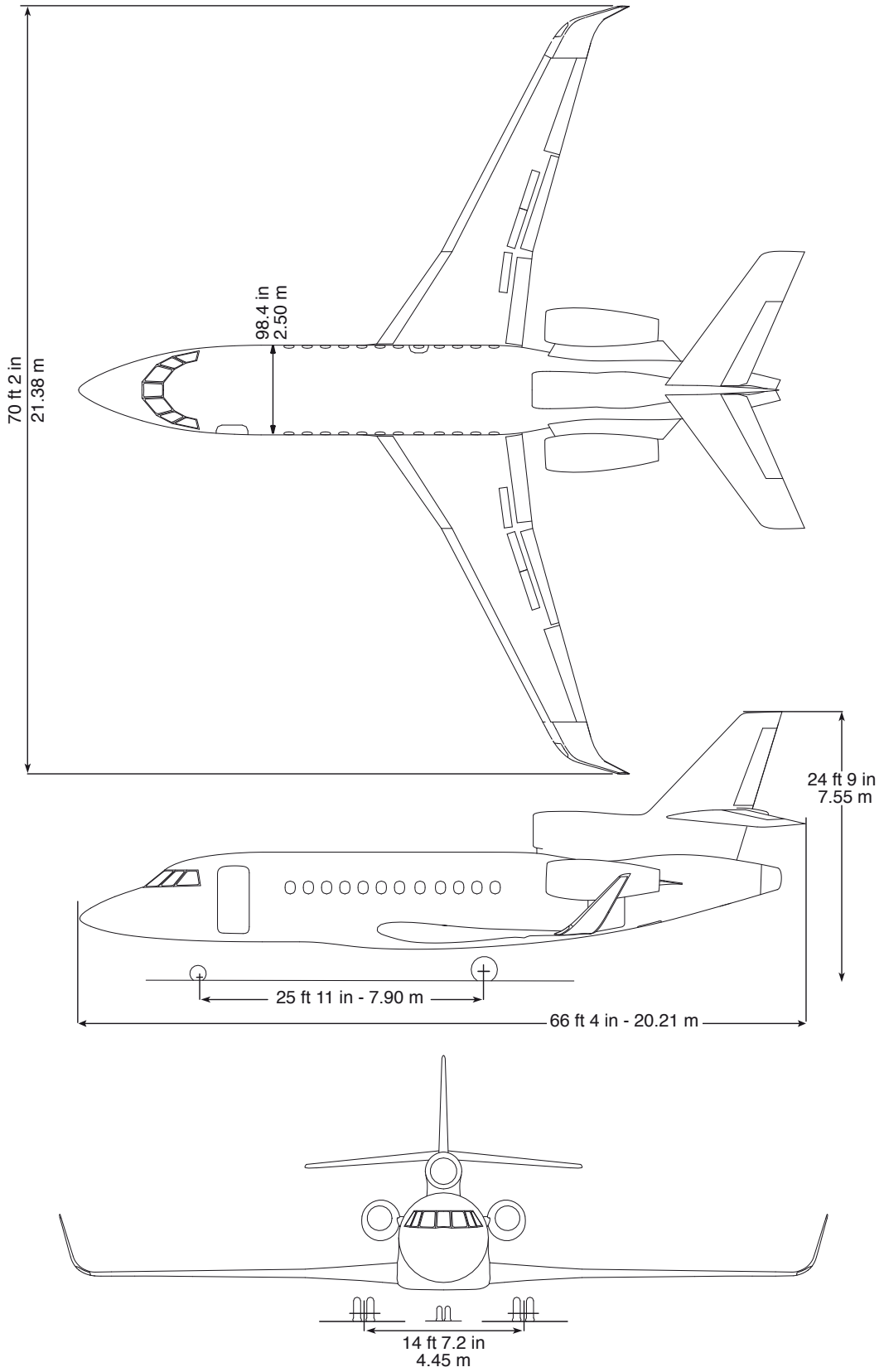
- White paint with two color stripes
- Single-point pressure refueling/defueling
- Dayton-Granger static discharge system
- Pulsed wing root landing lights
- Red upper and lower anti-collision lights
- Wing ice detection lights
- Wing tip and tail navigation position lights
- External baggage and internal servicing lights
- Three white light strobe system (wings and tail)
- Taxi light on the nose gear

STRUCTURE

The FALCON 900LX employs mainly high-strength aluminum alloys in its structure. The structural design is based on fatigue and damage tolerance requirements.

Wing planks are manufactured from solid blocks of aluminum. Kevlar or glass composites are selected for nose cone, horizontal stabilizer (carbon and titanium), rear cone, fillets and similar secondary structure components.

Three view drawing



DIMENSIONS

Airframe

Overall length	66 ft 4 in	20.21 m
Overall height	24 ft 9 in	7.55 m
Overall height with optional fin tip radome	25 ft 2 in	7.67 m
Span	70 ft 2 in	21.38 m
Sweep at quarterchord	29°/24° 50’	
Gross wing area	527.4 ft^2	49.00 m^2
Aspect ratio	7.66	
Mean aerodynamic chord	113.7 in	2.89 m
Cross Section (external)	98.4 in	2.50 m

Cabin

Cabin height	74 in	1.88 m
Cabin width (maximum)	92 in	2.34 m
Cabin width (floor)	75.2 in	1.91 m
Cabin length (cockpit separator to baggage door)	33 ft 2 in	10.11 m
Cabin volume (cockpit separator to baggage door)	1,264 ft^3	35.80 m^3
Cockpit volume	132.4 ft^3	3.75 m^3
Baggage volume (internal/external access)	127.0 ft^3	3.60 m^3
Entry door size	31.5 in x 67.7 in	0.80 m x 1.70 m
Emergency exit size (Type III)	21.0 in x 36.0 in	0.53 m x 0.92 m
Cabin window size	15.1 in x 11.8 in	0.38 m x 0.30 m
Baggage door size	37.4 in x 29.5 in	0.95 m x 0.75 m

Landing Gear

Wheelbase	25 ft 11 in	7.90 m
Track	14 ft 7.2 in	4.45 m
Minimum turning radius (with nose wheel steering at 60°)	47 ft 9.0 in	14.55 m

LIMITATIONS

Weights

Maximum ramp weight.....	49,200 lb	22,315 kg
Maximum takeoff weight	49,000 lb	22,225 kg
Maximum landing weight	44,500 lb	20,185 kg
Maximum zero fuel weight	30,864 lb	14,000 kg
Equipped empty weight*	24,740 lb	11,220 kg

* Based on standard configuration including unusable fuel, engine oil, basic interior, standard avionics and paint.

CG location

CG limits: From 31% of Mean Aerodynamic Chord (MAC) aft to 13% of MAC forward.

Fuel Quantity

The approximate total usable fuel capacity is 20,905 lb (9,482 kg) or, at a 6.7 lb/US gallon (0.803 kg/l) fuel density, 3,120 US gallons (11,808 l).

Speeds

Maximum Operating Speed (VMO) ...	370 - 350 kias
Maximum Operating Mach (MMO)....	.87 - .84
VFE: SF1 (Slats + flaps 7°)	200 kias
VFE: SF2 (Slats + flaps 20°)	190 kias
VFE: SF3 (Slats + flaps 40°)	180 kias
VLO: Landing gear operating	190 kias
VLE: Landing gear extended	245 kias
Airbrakes operating or extended.....	no limitation

Altitude and Temperatures

Maximum operating altitude.....	51,000 ft
Airport pressure altitude (maximum) ..	14,000 ft
Operating temperatures at sea level	-54°C to +50°C
.....	-65°F to +122°F

GUARANTEED PERFORMANCE

Takeoff Distance

Balanced Field Length
(Maximum Takeoff Weight, Sea Level, ISA)

49,000 lb (22,225 kg) ..... 5,360 ft (1,633 m)**

Range

Basic Operating Weight
(6 passengers, 2 crew, Sea Level, full fuel, NBAA IFR reserves LRC*, ISA, no wind)

25,815 lb (11,710 kg) ..... 4,750 nm (8,800 km)**

Approach Speed (Vref)

(FAR 91, 6 passengers, 2 crew, Sea Level, NBAA IFR reserves)

28,960 lb (13,136 kg) ..... 110 kias*

Landing Distance

44,500 lb (20,185 kg) ..... 3,670 ft (1,118 m)**
(Maximum landing weight) (sea level, ISA)

28,960 lb (13,136 kg) ..... 2,415 ft (736 m)**
(FAR 91, 6 passengers, Sea Level, NBAA IFR reserves)

* Guaranteed Performance (±3%)

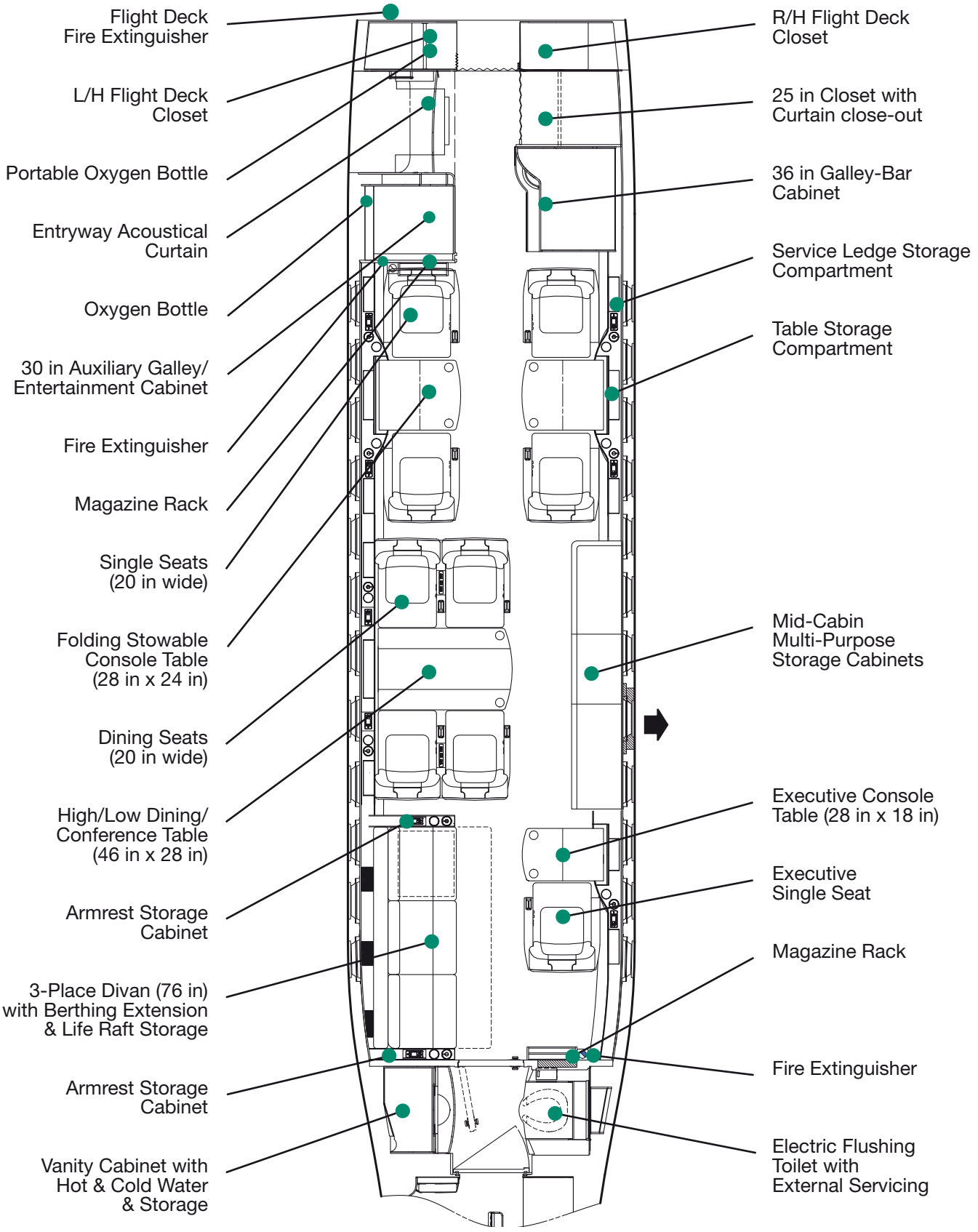
** Guaranteed Performance (±5%)

Assumptions

The performance data are based on these conditions:

- Equipped empty weight: 24,740 lb (11,220 kg) with standard configuration including paint.
- In accordance with EASA CS-25 and FAR Part 25 Transport Category Aircraft requirements, takeoff and landing performance data are calculated on the basis of a smooth, hard, dry-surfaced runway with zero wind, no slope, and an anti-skid system in operation.
- Range is determined by using the NBAA IFR fuel reserves performed in still air at standard atmosphere. Includes climb, cruise at three flight levels (maximum), and descent.
- The fuel quantity allows (in addition to the planned distance flown): 10 minutes of taxiing, 1 minute of takeoff, and NBAA IFR reserves [(one approach, one go-around, holding for five minutes at 5,000 ft (1,524 m), a flight of 200 nm (370 km) to an alternate airport, and holding for up to 30 minutes at 5,000 ft) (1,524 m)].
- The fuel is assumed to have a heating value of 18,400 BTU/lb (42,800 kN/kg) and a density of 6.7 lb/US gallon (0.803 kg/l).

Interior layout



GENERAL DESCRIPTION

The passenger cabin is soundproofed and insulated, and measures 33 ft 2 in (10.11 m) in length including an aft lavatory. It is configured with 12 passenger seats. Each individual passenger seat is provided with an ashtray and cupholder module, a cold air outlet and a reading light. A stowable, folding console table is installed for each pair of facing seats and the aft right-hand single seat.

Two indirect lighting systems provide general lighting throughout the cabin. Table lights are also provided.

Emergency equipment, including a first-aid kit, smoke hood, life jackets vests and life rafts, are provided on the aircraft. Oxygen masks are installed for all passengers and in the lavatory.

A maintenance ladder is installed in the baggage compartment.

Entryway - Galley

The aircraft main entry door is located on the forward, left-hand side of the fuselage. Two crew closets, one left-hand and one right-hand, are installed forward of the door.

A 36-in galley-bar cabinet and a 25-in main cabin closet are located on the right-hand side of the cabin and opposite the entry door. It offers adequate work surfaces and includes:

- an automatic cappuccino/espresso coffee machine with hot/cold water spigot and dedicated remote water tank,
- an extra wide high temperature oven
- two chests (ice and cold)
- storage drawers
- a trash container
- a sink supplied with hot and cold water supply
- glass storage racks.

On the left-hand side, beside the door, is a 30 in auxiliary galley/entertainment cabinet which includes:

- Entertainment equipment
- Microwave oven
- Storage drawers
- 4 Atlas tray carriers

Forward Cabin

The forward lounge features four (20 in wide) individual seats arranged in facing pairs on the left and right-hand sides of the cabin.

Each seat includes floor tracking, base tracking, side tracking, swivel, full flat recline (berthing), integral headrests and retractable armrests, electrically controlled lumbar.

Each pair of seats is provided with a folding, stowable 28 in x 24 in console table.

Mid cabin

On the left-hand side is a lounge including two pairs of 20-in seats separated by a 46 in x 28 in folding and electrically hi-lo operating coffee/dining table. On the right-hand side are multipurpose storage cabinets.

Aft Cabin

On the left-hand side is a three place divan convertible for berthing. On the other side is a 20-in seat, identical to those in the forward lounge, with a folding stowable 28 in x 18 in console table.

Lavatory

The lavatory is equipped with an electric flushing toilet on the right-hand and a vanity cabinet on the left-hand side of the compartment. The vanity cabinet includes a sink with hot and cold running water.

The external toilet-servicing connector is located on the right-hand side of the compartment. The galley and the lavatory are supplied through a centralized water system, which can be drained externally. It also has an internal filler cap and gauge.

To ensure privacy, the lavatory compartment is separated from the cabin by a door.

Baggage Compartment

The compartment's volume is 127 ft^3 (3.6 m^3). Access to the baggage compartment is available from inside or outside the aircraft. The compartment is lined and features garment hanger racks in the forward area and folding shelves to maximize baggage storage.

Interior Finishing

The cabin provides generous proportions for comfort and ease of movement during lengthy flights. Each interior is finished with:

Headliner, Flight deck: ..... Ultra Leather/suede
Headliner, Main Cabin: ..... Ultra Leather/suede
Window Panels, Shades: ....Fabric/Ultra Leather/suede
Service Ledges, Main Cabin: ..... Leather
Lower Sidewalls, Main Cabin: .....Leather/Fabric
Carpet: ..... High-Quality, 100% Wool
Bulkheads & Doors: .....Wood Veneer
Cabinetry: ..... Wood Veneer & Laminates
Metal Finish: ..... Brushed Aluminum
Tables: .....Composite with Wood Veneer
Seats: .....Fabrics or Leather
Closet/Baggage Compartment Lining: ..... Grospoint

ENGINES

The FALCON 900LX operates with three Honeywell TFE731-60 engines with 5,000 lb uninstalled thrust (at sea level, up to 32°C) each. The engine is a two-spool turbofan with a front mounted single stage fan.

The FALCON 900LX's three engines are controlled by a digital electronic engine computer (DEEC) in normal mode. In manual mode, hydromechanical control provides overspeed protection. The engines meet EPA Part 87 requirements for emissions. Engine parameters are displayed on each Primary Display Unit and into a dedicated synoptic on a Multifunction Display Unit.

Autothrottle function is provided.

THRUST REVERSER

The center engine is fitted with a hydraulically operated "Clam Shell" thrust reverser for ground use only.

The thrust reverser is designed to be used down to full stop without reingestion. It can be used also for backing-up.

FUEL SYSTEM

The fuel system consists of three distinct subsystems that control the front and aft fuselage tanks, center section tanks, wing tanks, and rear tank.

The lateral engines are supplied from their respective wing tank plus a half of the center section tanks. The center engine is supplied from the front, aft and rear fuselage tanks. The rear tank is automatically and fully transfered into the center tank as soon as an equivalent volume is available, by gravity and through a permanently activated jet pump. Fuel flows from pressurized tanks to the engines by brushless booster pumps installed in a sump, supplied by jet pumps. Pressurizing the fuel tanks permits the engine to continue drawing fuel if the booster pumps fail during maximum demand on takeoff. Interconnecting the wing tanks enables fuel levels to balance. FALCON jets are designed so any fuel tank can feed any engine.

The total usable fuel capacity is 20,905 lb (9,482 kg) or, at a 6.7 lb/US gallon (0.803 kg/l) fuel density, 3,120 US gallons (11,808 l).

HYDRAULIC SYSTEM

The hydraulic system provides power to operate flight controls, landing gear, brakes and thrust reverser. The FALCON 900LX operates with two main independent and simultaneous hydraulic systems for added safety. The hydraulic system operates with MIL-H-5606 hydraulic fluid under a working pressure between 2,750 psi (19 MPa) and 3,100 psi (21.4 MPa).

- The No. 1 system is powered by Engine 1 and Engine 3 hydraulic pumps
- The No. 2 system is powered by the Engine 2 hydraulic pump and by an electrically driven stand-by pump.

When powered by the stand-by pump, the N° 2 system operates between 1,400 to 2,250 psi (9.5 to 15.5 MPa). The stand-by pump assists in flight, in case of pressure drop or replaces in case of failure, the right system hydraulic generation. The stand-by pump can be operated by a mechanically operated valve to supply either of the dual hydraulic systems and to operate flight controls, landing gear and the brakes, for maintenance operations on the ground.

FLIGHT CONTROLS

The FALCON 900LX is controlled in flight using conventional flight control surfaces:

- Two ailerons for roll.
- Two elevators and a movable horizontal stabilizer for pitch.
- A rudder for yaw.
- Four mobile leading edge slats and four double-slotted Fowler flaps for takeoff, approach and landing.
- Six airbrakes for aerodynamic braking.

The airplane's primary flight controls incorporate an AFU (Artificial Feel Unit) on each axis.

On the aileron and pitch controls, feel force return to pilot's control is variable:

- In the aileron control system, a fully electrical "Arthur Q" unit causes the artificial feel system to vary with the airspeed.
- In the elevator control system, an "Arthur Q" unit slaved to the horizontal stabilizer position is used to maintain the stick force per "g" to a nearly constant level throughout the flight envelope.

In the event of failure, the aileron and elevator feel systems are returned to their lowest values to ensure safe surfaces displacement whatever aircraft speed.

The elevator, rudder and ailerons are controlled by push-pull rods that drive dual-barrel hydraulic servo-actuators.

The rudder and ailerons can be trimmed using electrical actuators that adjust the neutral position of the AFU on the respective linkages. To accomplish pitch trim, two electric motors drive a jackscrew that displaces the stabilizer around a hinge point.

The airbrakes and slats are hydraulically actuated. The flaps may be operated in increments by a jackscrew powered by a hydraulic motor.

At high angles of attack, automatic extension and/or retraction of outboard and inboard slats is actuated by two angle of attack transmitters.

Airbrakes feature an automatic extension control device upon landing.

LANDING GEAR

The landing gear is a retractable tricycle-type with dual wheels on all landing gear. It is electrically controlled and hydraulically actuated.

The main gear retracts by swinging laterally inward. It is fitted with 29 x 7.7 - 15 in. - 225 mph radial tires (tire pressure: 200 psi/1,380 MPa).

The main landing gear is equipped with a brake heating system.

The nose gear retracts by swinging forward. Before retraction, the nose wheels are mechanically centered. The nose gear is fitted with 17.5 x 5.75 - 8 in. - 225 mph conventional tires (tire pressure: 151 psi/1,042 MPa).

The hydraulic system powers the nose wheel steering, which is electrically controlled from the left-hand pilot's station. In the event of failure, a shimmy damper maintains nose wheel directional stability, steering is obtained through differential braking.

The standby landing gear extension, with an emergency hydraulic extension handle on the front panel, operates hydraulically and does not include electrical sequencing. Manual override handles in the flight deck allow the landing gear to free fall into a down and locked position in an emergency.

The landing gear's carbon disk brakes are powered independently by two hydraulic systems. Both systems incorporate an anti-skid system. The N° 2 hydraulic system provides back-up braking with an accumulator for parking and emergency braking. A temperature sensor is fitted on each brake. The braking system also provides a signal for automatic airbrake activation upon touchdown or landing.

ELECTRICAL SYSTEM

The FALCON 900LX's electrical system is a 28-Volt DC system. Electrical generation is provided by three 9 kW engine-driven starter generators (one on each engine), a 9 kW starter generator driven by the APU (Auxiliary Power Unit, on ground only), by external power and by two batteries.

Sources available in flight are:

- Three engines-driven starter generators
- Two batteries

Batteries will provide electricity for a 73 minutes flight in case of electrical starter generators total loss.

A 28-Volt DC ground power receptacle with over-voltage protection enables electricity to be supplied from an external power source for routine maintenance purposes and as an alternate method for starting engines. The two 36 A/h nickel-cadmium batteries provide for on ground APU and in-flight engine starts.

The three engine-driven starter generators supply power to three independent bus bars (LH, RH and starting bus), which serve as a conduit to distribute power to the aircraft's various systems. The LH and RH buses can be tied or untied by a switch located on the overhead panel.

PNEUMATIC SYSTEM

The pneumatic system relies on LP (low-pressure) and HP (high pressure) bleed air drawn from the three engines or from the APU, which it supplies to the cabin, engine inlets, S-duct and the leading edges of the wings. HP bleed is regulated by an electrical valve controlled by the bleed air system computer (BASC).

The air conditioning system supplies the cabin with a mixture of cool and warm air on demand. Cool air is provided by a two-wheel bootstrap air cycle cooling unit connected to primary and secondary heat exchangers and a condenser. A turbofan provides circulation through the exchangers when the aircraft is on the ground or flying at low speed.

Temperature in the passenger and crew compartments can be controlled by automatic and independent temperature control systems and by a back-up manual control system.

The pressurization system can maintain cabin and baggage compartment pressures up to the rated pressure differential of 9.3 psi (642 hPa) for all flight altitudes below 51,000 ft (15,545 m), ensuring a maximum cabin altitude of 8,000 ft (2,438 m). Cabin pressure is controlled by two outflow valves. The nose cone is also pressurized from the cabin air.

The pneumatic system also controls pressurization of the fuel tanks.

A catalytic ozone-removal system is installed.

AUXILIARY POWER UNIT

A self contained APU (Auxiliary Power Unit) is installed in the aft fuselage. It is designed for ground operation and is used to assist the batteries for engine starts and to deliver bleed air to the air conditioning system when the aircraft is on the ground. A 9 kW starter generator starts the APU itself and also supplies power to aircraft systems and is fitted with an APU Fault Detection Panel.

ICE AND RAIN PROTECTION

The ice-protection system is intended to permit safe flight into and through intermittent or continuous maximum icing conditions.

Hot bleed-air from the engines is used to anti-ice following items:

- Engine air inlets
- S-duct Engine 2
- Heat exchanger RAM air intake
- Wing leading edges

The windshield, pitot probes, temperature probes, static ports and angle-of-attack sensors are electrically heated for ice protection. The inner surface of the windshield panels can be defogged using air from the air conditioning system. The side windshield panels and the pilot's sliding window are electrically defogged. The cabin windows can be kept free of fog by preventing moisture from accumulating in the airspace between the window panes.

Independent, electrically operated wipers help keep the front windshields free of rain.

FIRE PROTECTION SYSTEM

The FALCON 900LX is equipped with a fire-detection system that includes audio and visual warnings. Fire detectors are located in Zones 1 and 2 of each engine area, in the APU shroud and in the main landing gear wheel wells.

Five fire extinguishers are provided and dedicated to the following:

- Engine 1, 2 and 3: two shots each
- APU: one shot
- Baggage compartment: one shot

In addition, two portable fire extinguishers are located in the passenger cabin as well as one in the flight deck. A smoke detector is installed in the baggage compartment.

OXYGEN SYSTEM

In case of depressurization, drop-down masks are automatically released (or can be manually released) so passengers can breathe low-pressure oxygen from a 77.7 ft^3 (2,200 l) bottle.

Oxygen flow is regulated by cabin altitude.

The oxygen system is fitted with an electronic computer capable for an airport pressure altitude up to 14,000 ft (4,267 m).

Oxygen is continuously provided to the crew on demand. The flight deck is equipped with quick-donning masks with built-in regulators.

AVIONICS

The FALCON 900LX is equipped with the FALCON EASy Flight Deck which is based on the Honeywell Primus EPIC platform. The avionics system encompasses:

Description	Quantity	Vendor
EASy/Honeywell Primus EPIC Platform		
Modular Avionics Unit	2	Honeywell
Electronic Display and Management, inc.: • 4 each 14.1" LCD Display Units • 2 each Multifunction Keyboards • 1 each Reversionary Controller • 2 each Cursor Control Devices • 2 each Checklist Controllers	1	Honeywell
Electronic Checklist	1	Honeywell
Automatic Flight Control System	2	Honeywell
Auto throttle System	1	Honeywell
Communications		
VHF Communications system	2	Honeywell
HF Communications system	2	Rockwell Collins
Flight Deck audio system • inc. Radio, Intercom and SELCAL functions	2	Honeywell
Microphone	2	LEM
Headset	2	Telex
Emergency Locator Beacon (Tri-frequency)	1	Elta
Navigation		
VOR / ILS / Marker Navigation System	2	Honeywell
ADF	2	Honeywell
Global Positioning Systems (GPS)	2	Honeywell
Flight Management Systems (FMS)	2	Honeywell
Pulse		
Weather Radar	1	Honeywell
DME	2	Honeywell
Mode S Transponder	2	Honeywell
Radio Altimeter	1	Honeywell
TCAS II	1	ACSS

Reference Sensors		
Air Data System	2	Honeywell
Standby Magnetic Compass	1	Smiths
Secondary Flight Display	1	Meggitt
Micro Inertial Reference Unit	2	Honeywell
Recording		
Cockpit Voice Recorder	1	Honeywell
Solid-State Flight Data Recorder	1	Honeywell
Complementary Systems		
Central Maintenance Computer	1	Honeywell
Enhanced Ground Proximity Warning	1	Honeywell
Rechargeable Flashlight	2	DME
Cabin		
FALCON Cabin Management System	1	Rockwell Collins

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ENGINEERED WITH PASSION

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