



FALCON 20E



For FSX ACC/SP2 & Prepar3D V4

The Dassault Falcon 20 is a French business jet developed and manufactured by Dassault Aviation. The first business jet developed by the firm, became the first of a family of business jets to be produced under the same name. Both the smaller Falcon 10 and the larger trijet Falcon 50 were direct derivatives of the Falcon 20.

The Falcon 20, initially known as the Dassault-Breguet Mystère 20, was approved to proceed with development of the aircraft during December 1961. It is a low-wing monoplane design, powered by a pair of rear-mounted General Electric CF700 turbojet engines. On 4 May 1963 the prototype made its maiden flight. The first production aircraft was introduced on 3 June 1965.

SOURCE: WIKIPEDIA

INCLUDED LIVERIES



WHITE



***FRENCH AIR FORCE
F-RAEF***



***ROYAL NORWEGIAN AIR FORCE
0125***



***ROYAL NORWEGIAN AIR FORCE
053 MUNIN ECM***



***COBHAM
G-FRAP***



***PRIVATE BUSINESS JET
HB-VDZ***

Three different models are included;

Standard, Electronic Counter Measures, and Cobham Electronic Warfare Training Aircraft.

The Cobham Aircraft is fitted with two pods developed for the NATO Multiservice Electronic Warfare Support Group (MEWSG).





Falcon 20E for FSX Acc./SP2 and PREPAR3D V 1-4

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Thanks to **Mario Noriega** for letting me use his gauges and xml samples for this project.

Mario Noriega Designs / <http://www.mariopilot.heliohost.org/>

Thanks to **Pierre Fasseaux** for the Collins Radio Gauges.

<http://www.fassapi.net/>

Turbo Jet sounds are downloadable from Simvation.com (Ref. Readme.txt) is recommended FMC from Garrett Smith is available from Avsim.com (Ref. Readme.txt)

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TECHNICAL EXTRACT FROM TYPE CERTIFICATE DATA SHEET (FAA)

IV. Model FAN JET FALCON SERIES E (Transport Aircraft), approved 24 February 1970.

The FAN JET FALCON SERIES E differs from the FAN JET FALCON SERIES D mainly by: extension of weight and CG limitations, installation of CF-700-2D-2 engines, new VMC limits, extension of maximum operating speeds VMO-MMO and increased elevator deflection.

(See NOTE 14(c)) - Aircraft modified in accordance with A.M.D. S.B. No. 452 (CF700-2C engines installation)

Engines.

2 General Electric CF-700-2D-2 Turbine Engines.

Engine Limits.

Maximum continuous static thrust, standard day, sea level conditions, lb. (unrestricted) 4,120

Maximum take-off static thrust, standard day, sea level conditions, lb. (5 minutes) 4,390

Maximum take-off static thrust, sea level, temperature below 48°F, lb. (5 minutes) 4,453

The CF-700-2D-2 engine will develop: maximum take-off static thrust, sea level, up to 86°F 4,315

The CF-700-2D-2 engines, when modified according to S.B. GE CF-700-12-128, will develop maximum static thrust, sea level, up to 59°F, lb. 4,500

Engine operation must be in accordance with procedures in D.G.A.C. Approved Airplane Flight Manual

Maximum permissible engine rotational speeds:

Gas generator:	<u>r.p.m.</u>	<u>percent</u>
Take-off	16,700	101.2
Maximum continuous	16,500	100
For two minutes	17,160	104
Transient	17,820	108

Fan:

Maximum continuous	9,000	105
For two minutes	9,300	108.5
Transient	9,700	113

Maximum permissible turbine outlet gas temperature (T5):

Take-off (5 minutes)	740°C
Maximum continuous	724°C
Maximum transient, 10 sec.	782°C
Maximum transient for starting	854°C

Fuel and oil pressure limits:

Fuel: Minimum, 5 p.s.i.g. above true fuel vapor pressure
Maximum, 50 p.s.i.g.

Oil: At idle 5 p.s.i.g. minimum
Operating range 8 p.s.i.g. to 65 p.s.i.g.

Maximum oil temperature: 185°C

IV. Model FAN JET FALCON SERIES E (cont'd)

Airspeed Limits (IAS).

V_{MO} (Maximum operating):
350 kts at sea level to 390 kts at 23,000 feet.
Straight line variation between these two points.

M_{MO} (Maximum operating):
23,000 feet and above, M = 0.88

V_A (Maneuvering) 200 kts

V_{FE} (Flap speeds):

Deflection	Kts
40°	180
25°	190
15°	200

V_{LO} (Landing gear operation):
Extend 190 kts
Retract 190 kts

V_{LE} (Landing gear extended): 220 kts

V_{LLO} (Landing lights operation): 220 kts

V_{LLE} (Landing lights extended): 220 kts

V_{WWO} (Windshield wipers operation): 180 kts

V_{MC} (Minimum control speed):
In flight (Flaps 15°) 100 kts
On ground (Flaps 15°) 102 kts

Maximum Weights.

Maximum ramp and take-off weight 28,660 lb.
Maximum landing weight 27,320 lb.
Maximum zero fuel weight 19,600 lb. (See NOTE 17)

Fuel Capacity.

(See NOTE 1 (c) for information relative to unusable fuel and NOTE 7 on use of fuel additives).

The following data is given for full fuel tanks: (See NOTE 22)

Tank	Usable Fuel		Arm (in)
	U.S. Gals.	Pounds	
Left wing	552.0	3,371	25.8
Right wing	552.0	3,371	25.8
Left fuselage	108.5	725	131.5
Right fuselage	108.5	725	131.5
TOTAL	1,321.0	8,912	43.2

Stabilizer Movements.

	Nose-down	Nose-up
Electrical stops	0°	- 7°45'
Mechanical stops	- 10'	- 7°55'
Cruise limits, droop L.E. retracted		
S.B. 480 not incorp.	0°	- 3°30'
S.B. 480 incorp.	0°	- 4°

IV. Model FAN JET FALCON SERIES E (cont'd)

Control Surface Movements.

Elevator	Up 16°	Down 9°
Rudder	Right 30°	Left 30°
Aileron	Up 16°	Down 14°30'
Flaps (total)	Down 40°	
Airbrakes	Up 70°	
Wing droop leading edges	Down 25°	

For detail rigging and tolerances consult Maintenance Manual.

C.G. Range (Gear extended, flaps retracted).

Weight (lb)	Forward Limit % MAC			AFT Limit % MAC		
	Take-off	Flight	Landing	Take-off	Flight	Landing
28,660	20.0	20.0		28.5		
27,320	19.0	19.0	19.0			
23,000	19.0	16.0	16.0			
19,600	19.0	16.0	16.0			
19,000	19.0	16.0	14.0 flaps ext.			

Straight line variation between points.

Nose gear retraction moment (moves CG forward) is 6,000 in-lb.

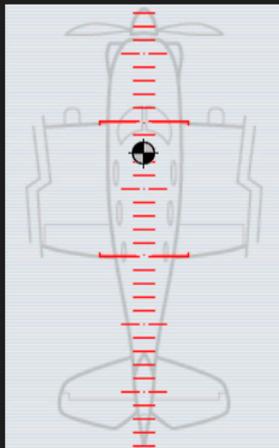
Main gear retraction has no effect on airplane CG.

The aircraft's datum is located at the aircraft's nose.

The main fuel tanks are positioned in the wing, and the feeder tanks in the aft.

Fuel and Payload

Dassault Falcon 20



Display fuel quantity as weight

Empty Weight:	16,600	Pounds
Payload:	1,850	Pounds
Fuel:	1,318.83	Gallons
Gross Weight:	27,286	Pounds
Max. gross weight:	28,660	Pounds
Max. allowable fuel:	1,323.00	Gallons

Change Fuel

TANK	%	GALLONS	CAPACITY
Center	100	109.5	109.5
Center 2	98.73	108.11	109.5
Left	99.75	550.61	552
Right	99.75	550.61	552

Change Payload

STATION	POUNDS
Pilot	170
Co-Pilot	170
Passenger_1	170
Passenger_2	170
Passenger_3	170
Passenger_4	170
Passenger_5	170
Passenger_6	170
Passenger 7	170

Cancel
OK

MAIN PANEL



1. PILOT'S PANEL

- AIRSPEED
- RMI NAV2 - ADF1
- TURN COORDINATOR
- ADI
- HSI
- ALTIMETER
- VSI
- RADAR ALTIMETER
- AOA
- CLOCK
- OMI LIGHTS
- DME
- NAV/GPS SWITCH

2. PARK BRAKE

3. FMC (Must be downloaded)

4. COLLINS AUTOPILOT AND RADIOS

5. THROTTLE 1 & 2 + FUEL CUT 1 & 2

6. CENTER PANEL

- FIRE PANEL
- WARNING PANEL
- TRIM & FLAPS PANEL
- GPS
- HYDRAULIC PANEL (PRESSURE ONLY)
- ENGINE CLUSTER
- FUEL GAUGES
- FUEL TOTAL
- ALTITUDE SELECTOR
- LANDING GEAR PANEL
- CABIN AND ENVIROMENT (NOT FUNCTIONAL)

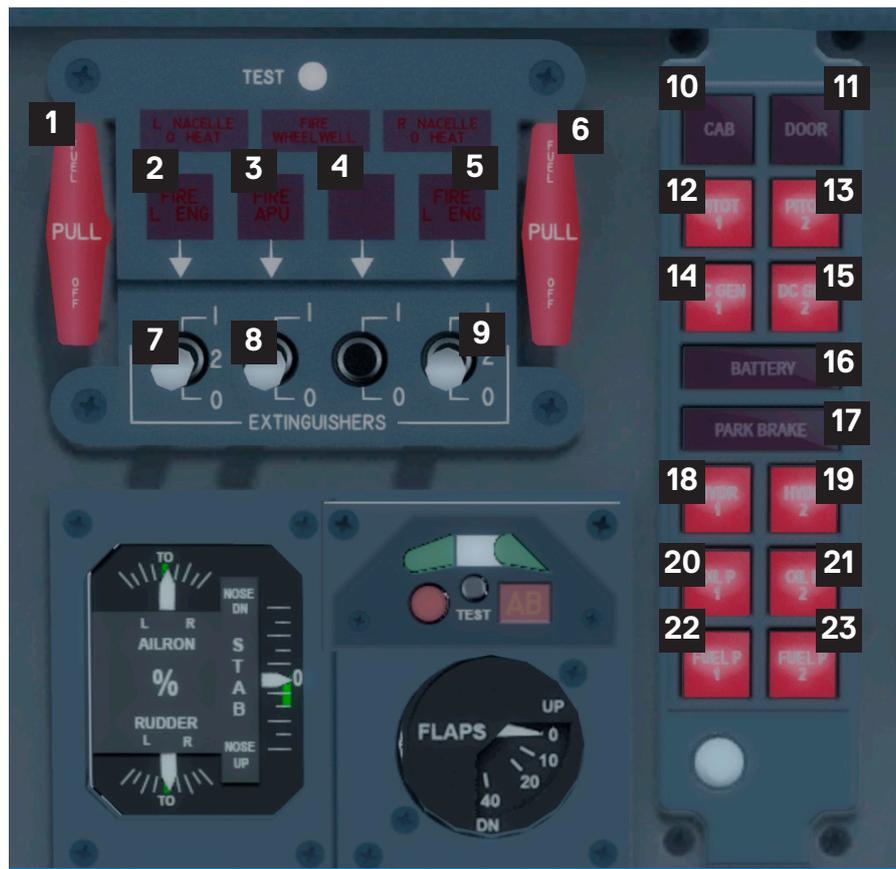
7. CO PILOT'S PANEL

- AIRSPEED
- RMI NAV2 - ADF1
- ADI
- HSI
- ALTIMETER
- VSI
- CLOCK

8. AIR BRAKES

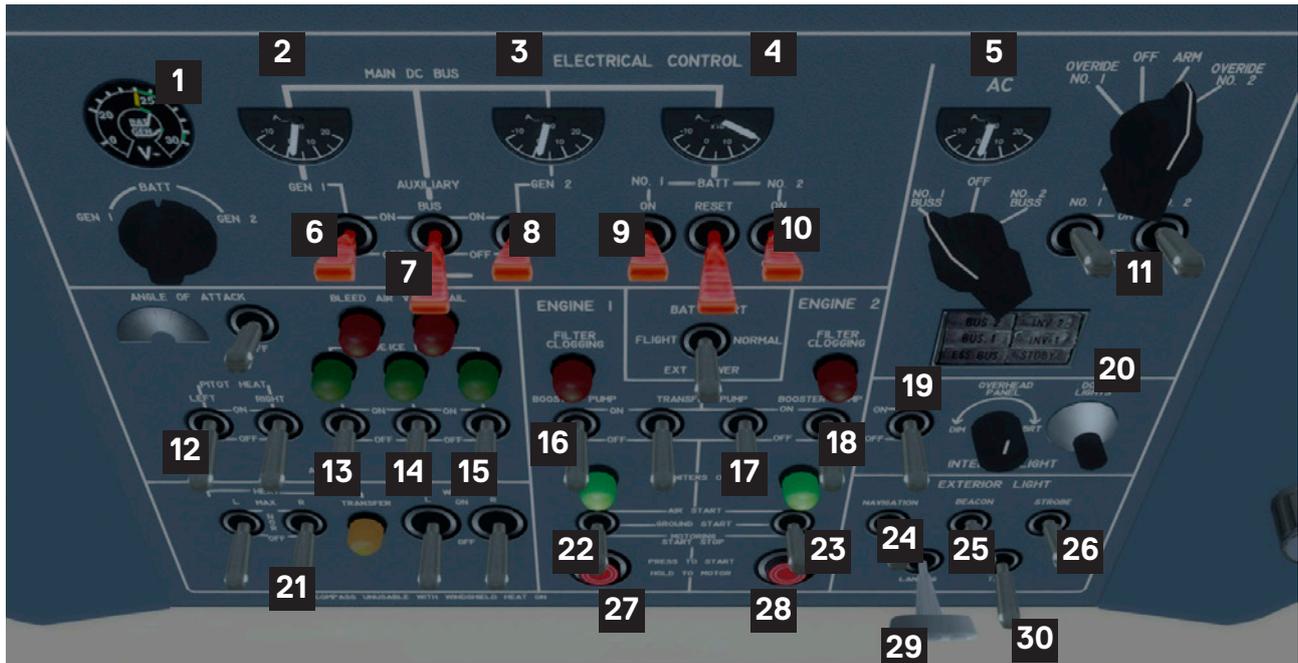
9. FLAPS

FIRE PANEL & WARNING LIGHTS



1. ENGINE 1 FUEL CUT
2. ENGINE 1 FIRE WARNING
3. APU FIRE WARNING
4. NOT OPERATIONAL
5. ENGINE 2 FIRE WARNING
6. ENGINE 2 FUEL CUT
7. ENGINE 1 FIRE RETARDANT
8. APU FIRE RETARDANT
9. ENGINE 2 FIRE RETARDANT
10. CAB - WARNING CABIN PRESSURE ABOVE 12000 FT
11. DOOR- WARNING MAIN EXIT OPEN
12. WARNING - PITOT HEAT CIRCUIT
13. WARNING - PITOT HEAT CIRCUIT
14. WARNING - GENERATOR 1 CIRCUIT
15. WARNING - GENERATOR 2 CIRCUIT
16. WARNING - BATTERY LOW
17. HYDRAULIC RESERVOIR LOW/LEAK - NO PARK BRAKE
18. WARNING - HYDRAULIC PRESSURE ENGINE 1 LOW
19. WARNING - HYDRAULIC PRESSURE ENGINE 2 LOW
20. WARNING - OIL PRESSURE ENGINE 1 LOW
21. WARNING - OIL PRESSURE ENGINE 2 LOW
22. WARNING - FUEL PRESSURE ENGINE 1 LOW
23. WARNING - FUEL PRESSURE ENGINE 2 LOW

OVERHEAD PANEL



1. BATTERY VOLT METER
2. GENERATOR 1 AMP METER
3. GENERATOR 2 AMP METER
4. BATTERY AMP METER
5. MAIN CIRCUIT AMP METER
6. GENERATOR 1 ON/OFF
7. APU BUS ON/OFF
8. GENERATOR 2 ON/OFF
9. MAIN BATTERY ON/OFF
10. MAIN BATTERY ON/OFF
11. AVIONICS MASTER SWITCH (INVERTERS NOT SIMULATED)
12. PITOT HEAT ON/OFF
13. ENGINE 1 ANTI ICE ON/OFF
14. AIRCRAFT DEICE ON/OFF
15. ENGINE 2 ANTI ICE ON/OFF
16. ENGINE 1 BOOST PUMP ON/OFF
17. TRANSFER PUMP ON/OFF (CORRECT FUEL MANAGEMENT NOT IMPLEMENTED)
18. ENGINE 2 BOOST PUMP ON/OFF
19. PANEL LIGHTS ON/OFF
20. DOME LIGHTS ON/OFF
21. BLEED AIR ON
22. ENGINE 1 IGNITION ON/OFF
23. ENGINE 2 IGNITION ON/OFF
24. NAV LIGHTS ON/OFF
25. BEACON LIGHTS ON/OFF
26. STROBE LIGHTS ON/OFF
27. TURBINE ENGINE 1 START (SOLENOID IS BROKEN, PUSH AGAIN TO TURN OFF WHEN STARTED)
28. TURBINE ENGINE 2 START (SOLENOID IS BROKEN, PUSH AGAIN TO TURN OFF WHEN STARTED)
29. LANDING LIGHTS ON/OFF
30. TAXI LIGHTS ON/OFF

CENTER CONSOLE



1. FMC PILOT SIDE (OPTIONAL) TEXTURE ONLY IF THE GAUGE IS NOT INSTALLED
2. FMC COPILOT SIDE (OPTIONAL) TEXTURE ONLY IF THE GAUGE IS NOT INSTALLED
3. COLLINS AUTO PILOT
4. COBHAM AUDIO PANEL
5. COLLINS ADF 1
6. COLLINS TRANSPONDER
7. COLLINS NAV 1
8. COLLINS COM 1
9. COLLINS NAV2
10. COLLINS COM 2

NOTES:

FMC's must be installed and activated in the panel.cfg file
 Functional buttons for Auto Pilot and Audio Panel are marked in red.
 Radios work as expected.



TAKE OFF TRIM - LOWER GREEN RANGE, FLAPS 10

FLYING THE AIRCRAFT

The Falcon 20 is described as a docile aircraft with very good flight handling characteristics. All three flight controls systems have artificial feel units to provide control feedback and each has an electrically controlled trim system. An electro-hydraulic yaw damper is provided but its failure imposes no restriction to airplane operations. The stall is benign and it will most likely mush, instead of an aggressive wing drop.

The aircraft has a moving tailplane and elevators. The elevator is easily trimmable with the electric trim. Take off requires elevator trim to the lower range of the green. Pull back and rotate at 118-120 Kts, and it will fly off nicely.

Bring up the gears, and retract the flaps before max flap speed. Activate yaw damper and trim for the desired climb speed. Adjust throttle and manage speed with pitch and re-trim as required.

During descend, remember that the fuselage and wing shape is made of aluminium sheets beaten to submission. It is a fast and sleek design that require some planning during descend. You can also use the speedbrake to manage your descend. Deploying the speed brakes cause a very slight, but easily controllable, nose-up tendency.

Coming in for landing, it is desirable with a stable approach. If you are capturing the ILS, capture from below and stabilize speed. Full flaps when stable and committed to land. Aim for 120 kts over the threshold. Adjust descend rate with throttle.

A light flare will set the airplane softly. Deploy the speed brake and lower the nose slowly. The Falcon 20E does not have reversers, so taking advantage of aerodynamic braking is OK when the runway allows for it.