

D-JET



THE VIEW FROM FL 250



Overview

- **VLJ – Definition**
- **VLJ – Diamond's Approach**
- **D-Jet – General**
- **D-Jet – Impact on Safety**
- **VLJ – The Future**



What defines a VLJ?

- **No of Seats:** 2, 4, 5, 6, 7, 8 ?
- **Weight:** 5100 lbs, 6000 lbs, 8500 lbs, 9600 lbs?
- **Thrust:** 1500 lbs, 1800 lbs, 3000 lbs, 3800 lbs?
- **No of Engines:** single, twin ?
- **Cruise Speed:** 300kts +, 370 kts, 420 kts, 500 kts ?
- **Certified Ceiling:** 25,000', 35,000', 41,000', 45,000'?
- **Price:** US \$1.4 M, \$2 M, \$3 M, \$4.5 M ?

So far, VLJ's are all of these . . .



What defines a VLJ?

The VLJ category definition is not clear.

Common features are:

- **powered by new generation of turbofans, Williams FJ-33 series, P & WC 600 series and the GE-Honda HF120**
- **equipped with advanced Glass Cockpits and AFCS**
- **redefining jet acquisition and operating cost**



What defines a VLJ?

- It is important not to “broadbrush” VLJ’s!**
Not all VLJ’s are the same:

	Weight	Total Thrust	Seats	Ceiling
	lbs	lbs		ft
Diamond D-JET	5,110	1,570	5	25,000
Eclipse 500	5,950	2 x 900	5/6	41,000
ATG Javelin	6,900	2 x 1,750	2	45,000
Piper Jet	TBD	2,400	6/7	35,000
Cessna Mustang	8,480	2 x 1,460	6	41,000
Adam A700	8,600	2 x 1,350	7/8	41,000
Honda Jet	9,200	2 x 1,880	7/8	43,000
Embraer Phenom 100	est. 9,600	2 x 1,615	6/7	41,000



What defines a VLJ?

2. It is important not to “broadbrush” VLJ’s!

Not all VLJ’s are the same:

- Weight: 5100 to 9600 lbs
- Operating Altitude: FL 250 to FL 450
- Vref: 85 kts to 110+ kts (+30%)
- Cruise Speed: M 0.52 to M 0.87 (+67%)
- Application: private, commercial, Part 135
- required piloting skill: from “H.P. single +” to BizJet



What defines a VLJ?

3. It is important not to “broadbrush” VLJ’s!

Not all VLJ’s are the same:



Cessna Mustang



Diamond D-JET



Piper Jet



Adam Aircraft



Eclipse



Embraer



ATG Javelin



Important Message ! ! !

It is likely that the proliferation of designs will continue even further, both upward and downward

If, **Certification standards,**
Operating regulations,
Insurance requirements, and
Pilot qualifications

are not appropriate for the different types of aircraft within the VLJ category, a great opportunity will be missed -

the opportunity to significantly increase safety by providing advanced and highly reliable technology to private GA airplanes and the pilots that fly them.



VLJ – Diamond's Approach

- Introduce turbine performance, reliability and convenience to personal aircraft
- Make the aircraft attainable wrt acquisition cost, operating cost, insurance requirements, and skill level
- Design the airplane to suit existing skill levels for the target customers, vs training them up to a “bizjet” standard.
- Maintain a familiar operating envelope
- Focus on system simplicity
- Offer Optimum combination of Safety, Performance and Value for private owners
- Leverage these values for commercial applications



VLJ – Diamond's Approach

Question:

How many non-professional Pilots are currently flying Single Pilot at FL410?

Answer:

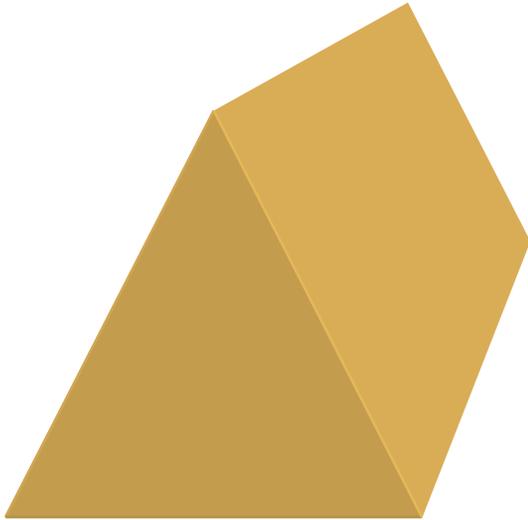
I don't know either... ☹️

...but it is relatively few and there are certainly many more who regularly and competently fly at FL250 and below.



VLJ – Diamond's Approach

Flying at very high flight levels requires special skill and proficiency – like walking along a ridge



High FL = lower margin for error

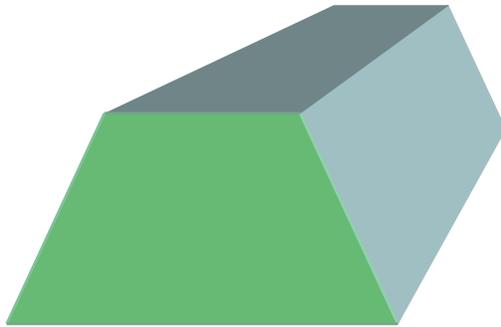
High Altitude Considerations:

- Sudden cabin pressure loss
- Lower aerodynamic stability
- Conflicting traffic
- Increased Airplane Complexity
- Harsher environment
- Higher level of training
- Higher level of Proficiency
- Higher level of currency



VLJ – Diamond's Approach

Flying at lower flight levels requires less skill and proficiency – like walking along a plateau



FL 250 = higher margin for error

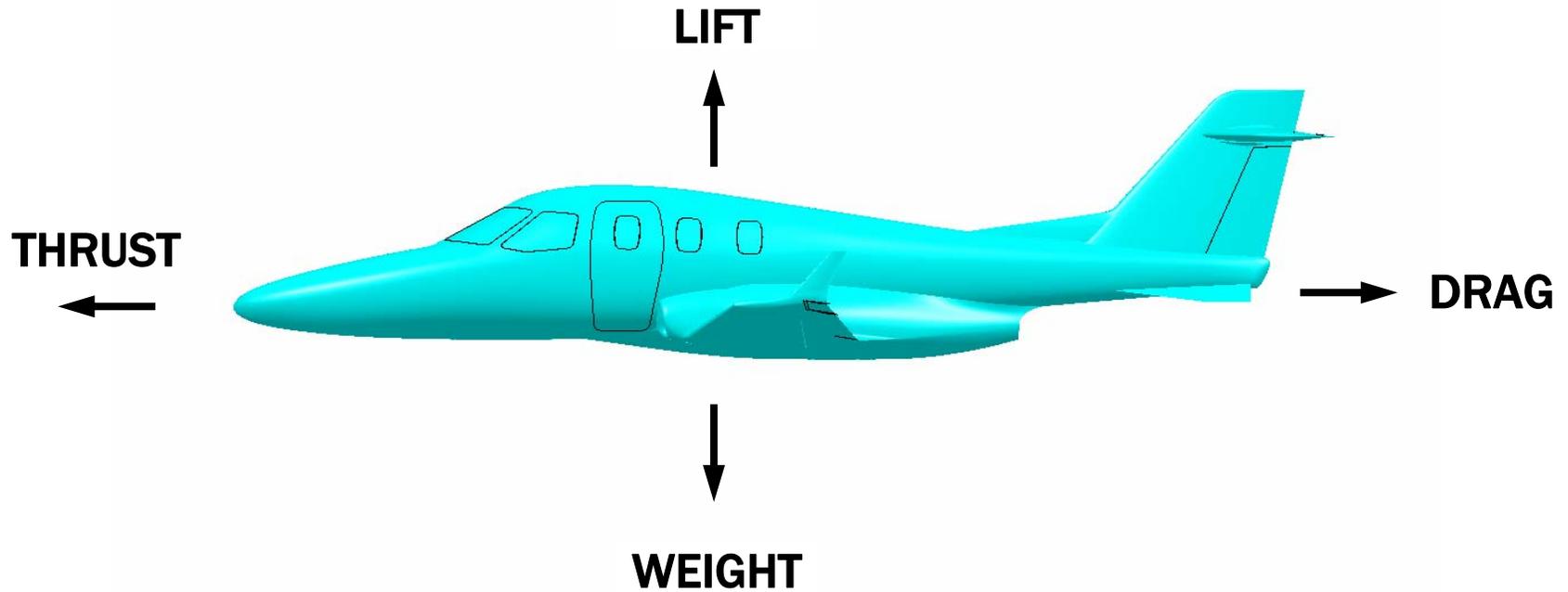
Lower Altitude Benefits:

- Cabin pressure loss less critical
- Higher aerodynamic stability
- Less Traffic Density
- Lower Airplane Complexity
- Moderate level of training
- Moderate level of Proficiency
- Moderate level of currency



VLJ – Diamond's Approach

How the airplane behaves is mainly due to aerodynamic design, less so because it has a jet engine



z
x



VLJ – Diamond's Approach

We expect that smaller VLJ's will spend most of their time at lower altitude:

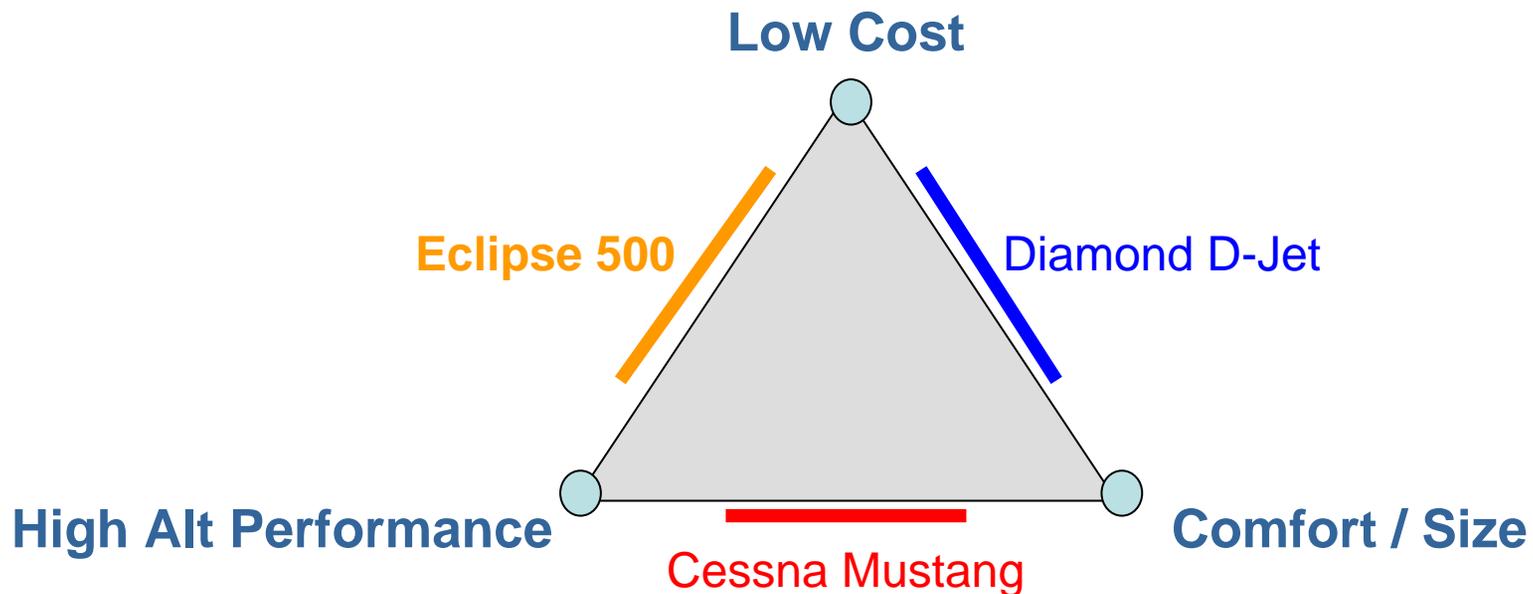
- Short mission distances
- Restricted climb and descent profiles
- Restricted Altitudes

The D-Jet airfoil is optimized for lower Mach numbers, consistent with its intended operating profile.



VLJ – Diamond's Approach

Designing a VLJ is a balancing act – ideal is all 3



VLJ – Diamond's Approach

Like our piston aircraft, the D-Jet is designed with:

- Forging handling characteristics
- Low approach and stall speed
- Simple systems
- Advanced avionics and Flight Control Systems

The FADEC controlled turbine offers:

- Far higher reliability than piston or even turboprop
- Simple powerplant management



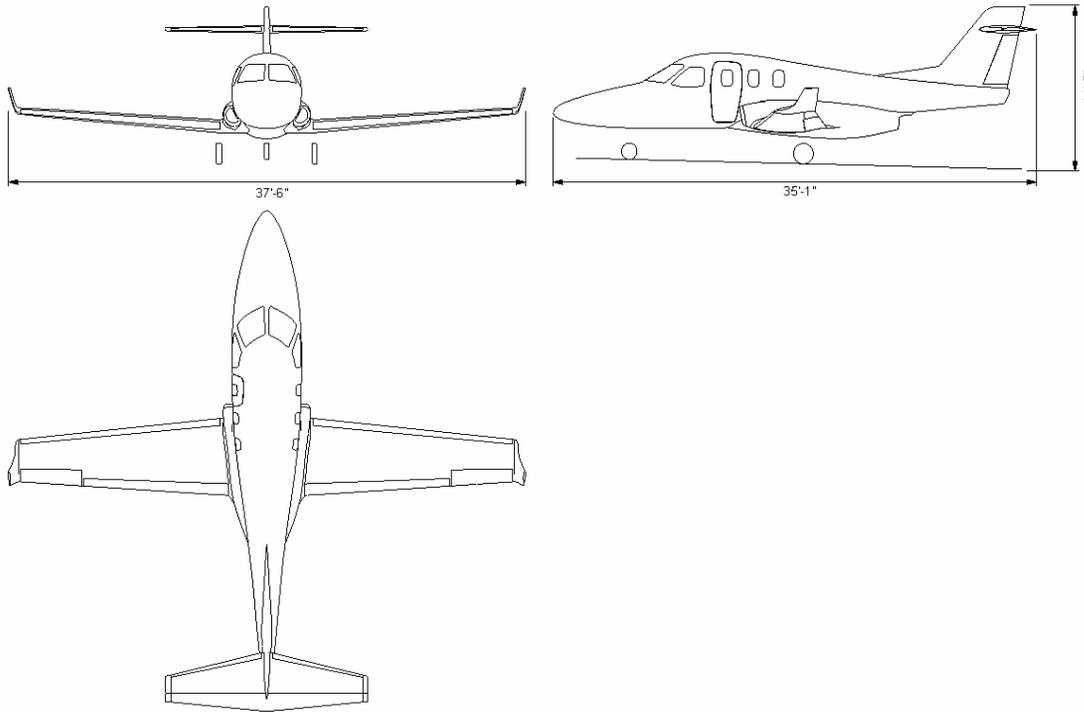
VLJ – Diamond's Approach

- The D-Jet attributes make it especially suitable for private pilots
- These qualities also increase the safety margin for commercial and air-taxi operators
- We prefer to think of it as a **Personal Light Jet –**

PLJ



D-Jet - General



- 5 seat, single pilot
- 5,100 lbs
- 315 ktas cruise
- FL 250
- 1250 m range
- Williams FJ33
- Garmin G1000
- composite construction

Very Spacious!



D-Jet - General



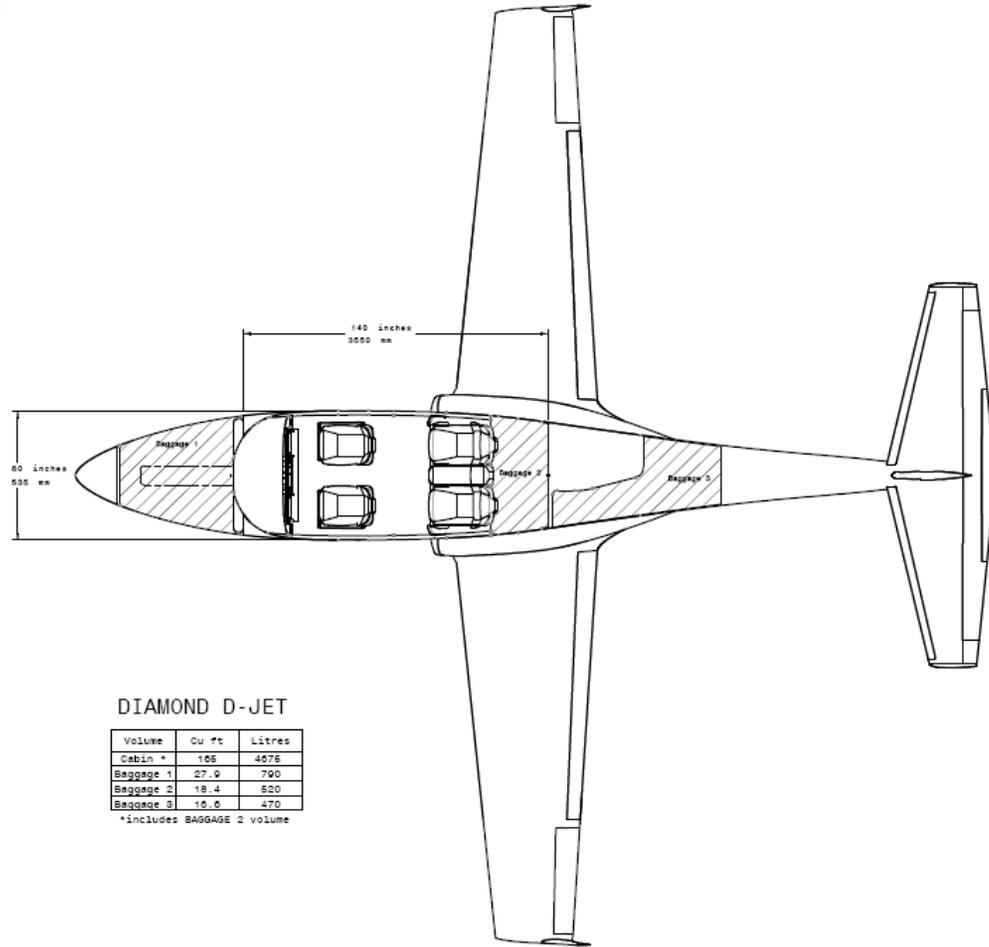
First flight April 18, 2006



D-Jet - General



D-Jet - General



DIAMOND D-JET

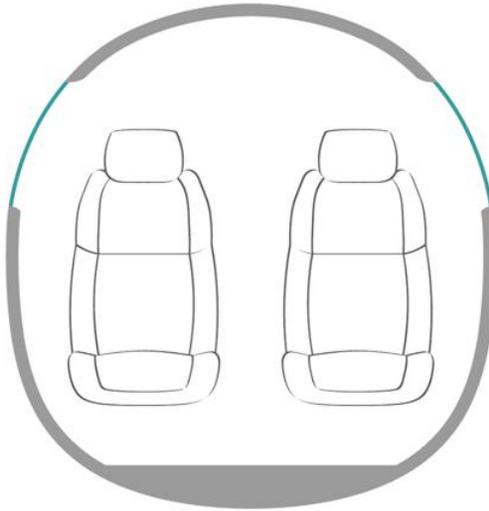
Volume	Cu ft	Litres
Cabin *	166	4676
Baggage 1	27.9	790
Baggage 2	18.4	520
Baggage 3	15.6	470

*includes BAGGAGE 2 volume

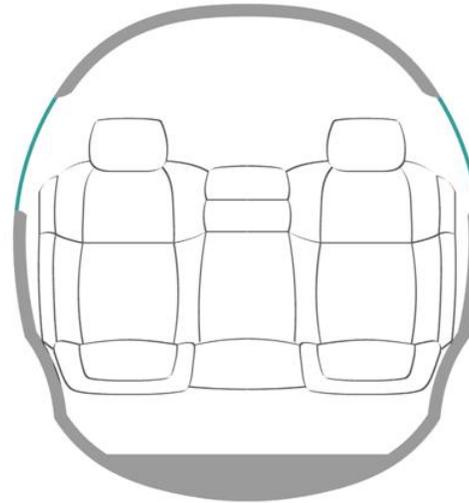


D-Jet - General

DIAMOND D-JET
(Cockpit)



DIAMOND D-JET
(Aft seats)



Max. cabin width: 57" / 1448 mm
Max. cabin height: 54" / 1372 mm

King Air Cabin Comfort



D-Jet - General

Program Milestones

- S/N 001 First Flight: April 18th, 2006
- S/N 002 First Flight: July 2007
- Transport Canada TC target date: Q2 2008
- FAA TC and first US deliveries: Q3 2008
- 2008 deliveries: 50 units
- 2009 deliveries: 125 units
- 2010 deliveries: 200 units



D-Jet – Impact on Safety

The potential positive impact on safety is significant:

- Forging flight characteristics
- Low circuit, approach and stall speeds
- Higher situational awareness
- More capable automatic flight control systems
- Highly reliable powerplant
- Reduced pilot workload through automation and simplified operation

Compared to high performance single pistons, classic twin pistons, and even turboprops, a very high level of safety can be expected.



VLJ's / PLJ's - The Future?

ACTIVE PILOTS BY TYPE OF CERTIFICATE

AS OF	PRIVATE	COMMERCIAL	AIRLINE TRANSPORT
DEC. 31			
Historical*			
2000	251,561	121,858	141,598
2005	228,619	120,614	141,992
Forecast			
2006	224,500	118,600	141,800
2010	218,240	125,900	142,400
2014	221,430	144,500	144,100
2015	221,530	148,100	144,200
2016	222,640	151,000	144,400
2017	223,750	154,000	144,500
Avg Annual Growth 2005-2017	-0.2%	2.1%	0.1%

ACTIVE G.A. AND AIR TAXI HOURS FLOWN

(In Thousands)

CALENDAR YEAR	FIXED WING			
	PISTON		TURBINE	
	SINGLE ENGINE	MULTI- ENGINE	TURBO PROP	TURBO JET
Historical*				
2000	18,089	3,400	1,986	2,755
2005E	16,794	2,363	1,967	3,008
Forecast				
2006	17,035	2,390	1,996	3,238
2012	18,347	2,553	2,154	6,563
2017	19,471	2,696	2,265	9,606
Avg Annual Growth 2005-2017	1.2%	1.1%	1.2%	10.2%*

* The forecast 10.2 % per year growth is accompanied by a doubling of the jet fleet from 2005 to 2017 to a total of 17,200 aircraft. Flight Training is an issue!



VLJ's / PLJ's - The Future?

- Growth upward to challenge light jets
- Growth downward to challenge HP pistons as suitable powerplants become available
- Enhanced Avionics / Flight Guidance / Automation
- Powerplant developments (efficiencies; emissions)
- Operated privately, commercially, in air-taxis / Part 135, flight training
- Movement from high end Pistons and some Turboprops to VLJ's
- Highest unit growth rate in GA
- Less “hype” about VLJ's – they will become common high-end private GA aircraft and simply integrate into the fleet



Thank You !



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