SIZING UP YOUR OPTIONS

categorizing business jets isn't easy and it's getting harder all the time_by Stephen Pope

VERY LIGHT JET. Super-midsize. Ultra-long-range. These are just some of the names that manufacturers, analysts and aviation journalists use to try to pigeonhole business jets into market niches. But with so much fragmentation in the field and a blurring of traditional lines, such attempts at classification are becoming harder than ever.

Marketers emphasize a product's best attributes, which may explain why we have "very light jets," not "small slow jets." Analysts and market forecasters need to compare models, so they're more likely to group aircraft by selling price than range or size. Journalists strive for accuracy and simplicity, but as manufacturers continue to add derivative models, easy classification is becoming all but impossible.

There are many ways to categorize today's business jet, including price, weight, cabin size and range, all of which are important. Speed might be considered too, but until supersonic business jets join the fray, we'll leave that off the table. Obviously, no one attribute will be most important to every buyer. Some will give priority to range, others price and still others will demand sleeping quarters or the ability to take off and land on relatively short runways.

Perhaps this helps explain why business jets makers now offer models to fill seemingly every conceivable market segment. Consider that where the Gulfstream IV and V used to suffice, now we have the G300, G450, G500, G550 and the G650. Likewise, where buyers once had the Hawker 800XP, today Hawker Beechcraft sells the Hawker 750, 850XP and 900XP–all are essentially the same airplane, but with different range profiles and prices. Dassault Falcon has split the 900 and 2000 into DX, EX and LX models, while Cessna sells the CJ1, CJ2, CJ3 and CJ4 (in addition to six other Citation models). Embraer, meanwhile, is fast expanding from a stable that includes just one certified business jet, the Legacy 600, to a family of products spanning six models.

INTERIOR VOLUME MATTERS MOST

So just what are the generally accepted categories into which all these business jets are expected to neatly slot? BJT has adjusted the criteria to group jets primarily by interior volume, judging this attribute to be the most important. Personal jets like the tiny Diamond D-Jet are on the bottom rung, compact jets like the Eclipse 500 are next, followed by small, midsize, super-midsize and large-cabin jets and, finally, bizliners. Classifications by weight are used to further define each category, but size is becoming the truest measure for buyers, and for good reason.

Take Grob's composite-construction SPn, for example. By cabin volume, the airplane lands in the middle of the midsize category, but by weight it is a light jet. Increasing use of composites in manufacturing will only blur the lines further, experts say. The new Learjet 85, for example, will have a 657-cubic-foot cabin, putting it well within the range of a super-midsize jet, but its gross weight is expected to be closer to that of a typical midsize airplane.

The Teal Group, an aerospace market research firm based in Fairfax, Va., traditionally has classified business jets based solely on published prices, but that strategy is changing. "It used to be you'd have this cluster of airplanes in the $11 million to $14 million range, and then you'd have a cluster in the $18 million to $22 million range," noted Teal chief analyst Richard Aboulafia, "but now you have all these models within a million dollars of the next one. It's virtually impossible to make a cutoff."

WEIGHT IS A STARTING POINT

To determine where specific models fit in its list of categories, Honeywell's market forecasters work with the Transportation Research Board, a private nonprofit group. The TRB bases its classifications primarily on weight, which generally provides consistent grouping of airplanes. "Weight is a good place to start," said Charles Park, director of market research for Honeywell. "We generally find that maximum takeoff weight correlates with other attributes, such as range, size and price."

But if weight is so important, why are business jets often categorized by cabin size? Anyone who has ever watched potential buyers climb aboard an airplane can answer that. The first thing they do is take a seat and imagine what it would be like to spend several hours in that cabin. Size and comfort aren't the only factors that go into the purchasing decision, of course, but they are often near the top of the list and, as is the case with weight, interior volume also correlates well with other attributes such as price and range.

Park agreed that cabin volume is a top attribute, and said it will become even more important as additional composite-construction airplanes enter production. Honeywell forecasters, in fact, would tend to put a light, composite airplane that has a large cabin in the higher category even though it might technically meet the definition for the lower weight group, he said. Likewise, Dassault's fly-by-wire Falcon 7X is lighter than other airplanes it competes with, but Honeywell puts it into the higher category because of its cabin size and range. "Like most things in life, this isn't cookie-cutter work," Park said. "A bit of art and judgment goes into everything we do." ■

Category (Range of cabin volumes)	Manufacturer	Model[2,4]	Cabin Volume (cu ft)	Max Passenger[2] Seats	Max takeoff[6] Weight (lb)
Personal Very Light Jets[1,3,5]	Eclipse	ECLIPSE 400	n/a	3	n/a
	Epic	VICTORY	n/a	4	5,500
	Cirrus	CIRRUS JET	n/a	6	n/a
	Piper	PIPERJET	n/a	6	n/a
	Diamond	D-JET	165	4	5,690
	Excel-Jet	SPORT-JET	179	3	5,000
Compact Very Light Jets[3,5]	Epic	ELITE	n/a	7	7,700
	Eclipse Aviation	ECLIPSE 500	160	5	5,995
	Cessna	MUSTANG	210	5	8,645
	Embraer	PHENOM 100	305	7*	9,700
Small-cabin (Light) Jets (190 to 359 cu ft)	Honda	HONDAJET*	n/a	6*	n/a
	Sino Swearingen	SJ30*	191	6*	13,950
	Cessna	CITATION CJ1+*	198	7*	10,700
	Cessna	CITATION I/ISP*	205	7*	11,850
	Cessna	CITATION JET	208	6	10,400
	Spectrum	S-33 INDEPENDENCE*	235	8*	7,500
	Cessna	CITATION CJ2+*	246	7*	12,500
	Dassault	FALCON 10/100	251	9	18,740
	Cessna	CITATION II/IISP	263	11	14,100
	Bombardier	LEARJET 31A	268	10	15,500
	Bombardier	LEARJET 31A/ER	268	9	17,000
	Bombardier	LEARJET 35A	268	10	18,300
	Bombardier	LEARJET 36A	268	8	18,300
	Bombardier	LEARJET 24E	270	8	12,700
	Bombardier	LEARJET 25D	270	10	15,000
	Cessna	CITATION BRAVO	278	11	14,800
	Cessna	CITATION CJ3	283	6	13,870
	Cessna	CITATION V	292	11	15,900
	Hawker Beechcraft	BEECHJET 400A	305	9	16,100
	Hawker Beechcraft	HAWKER 400XP	305	9	16,300
	Hawker Beechcraft	PREMIER IA*	315	7*	12,500
	Hawker Beechcraft	PREMIER II*	315	7*	13,800
	IAI	WESTWIND	323	10	23,500
	Embraer	PHENOM 300*	325	8*	n/a
	Sabreliner	SABRE 40A	330	5	19,612
Midsize Cabin Jets (360 to 619 cu ft)	Bombardier	LEARJET 40	363	6	20,350
	Bombardier	LEARJET 40XR	368	7	21,000
	Gulfstream	G100	375	7	24,650
	IAI	ASTRA SP	375	9	23,500
	Cessna	CITATION CJ4	398	6	n/a
	Sabreliner	SABRE 60/65/80	400	10	20,200
	Grob	SPN	405	9	13,889
	Bombardier	LEARJET 55/55B	407	10	21,500
	Bombardier	LEARJET 45	410	10	19,500
	Bombardier	LEARJET 45XR	410	9	21,500
	Cessna	CITATION III	438	13	22,000
	Cessna	CITATION VI	438	13	22,000
	Cessna	CITATION VII	438	13	23,000
	Bombardier	LEARJET 60	453	10	23,100
	Bombardier	LEARJET 60XR	453	9	23,500
	Cessna	CITATION EXCEL/XLS/XLS+	461	11	20,200
	Gulfstream	G150	465	8	26,100
	Spectrum	S-40 FREEDOM*	540 (est)	10*	9,550
	Hawker Beechcraft	HAWKER 400	545	7	23,300
	Cessna	CITATION X	593	11	36,100
	Hawker Beechcraft	HAWKER 600/700	604	10	24,800
	Hawker Beechcraft	HAWKER 750	604	14	27,000
	Hawker Beechcraft	HAWKER 800XP	604	15	28,000
	Hawker Beechcraft	HAWKER 900XP	604	15	28,000

Category (Range of cabin volumes)	Manufacturer	Model[4]	Cabin Volume (cu ft)	Max Passenger[2] Seats	Max takeoff[6] Weight (lb)
Super-midsize Cabin Jets (620 to 999 cu ft)	Dassault	SMS	n/a	n/a	n/a
	Cessna	CITATION SOVEREIGN	620	8	30,300
	Bombardier	LEARJET 85	675	8	n/a
	Hawker Beechcraft	HAWKER 1000	680	15	31,100
	Dassault	FALCON 20	700	10	29,100
	Dassault	FALCON 200	700	10	32,000
	Dassault	FALCON 50EX	712	10	39,700
	Hawker Beechcraft	HAWKER 4000	762	14	39,500
	Lockheed	JETSTAR II/731	850	10	43,750
	Bombardier	CHALLENGER 300	860	9	38,850
	Gulfstream	G200	868	10	35,450
	Embraer	LEGACY 450	918	8	n/a
Large-cabin Jets (1,000 to 1,499 cu ft)	Cessna	CITATION COLUMBUS	1,040 (est.)	8	n/a
	Embraer	LEGACY 500	1,098	9	n/a
	Bombardier	CHALLENGER 600/604	1,150	19	47,600
	Dassault	FALCON 2000DX	1,240	10	41,000
	Dassault	FALCON 2000LX	1,240	10	42,200
	Dassault	FALCON 900DX	1,264	16	46,700
	Dassault	FALCON 900EX	1,264	16	48,300
	Gulfstream	GII	1,269	19	64,800
	Gulfstream	GIII	1,345	19	69,700
	Embraer	LEGACY 600	1,413	14	49,604
Large-cabin (Heavy) Jets (1,500 to 2,499 cu ft)	Gulfstream	GIV-SP	1,525	19	74,600
	Gulfstream	G350	1,525	16	70,900
	Gulfstream	G450	1,525	16	73,900
	Dassault	FALCON 7X	1,552	15	69,000
	Bombardier	CHALLENGER 850	1,625	15	53,000
	Gulfstream	G500/V	1,669	18	85,100
	Gulfstream	G550	1,669	18	91,000
	Bombardier	GLOBAL 5000	1,882	17	92,500
	Gulfstream	G650	2,138	18	99,600
	Bombardier	GLOBAL EXPRESS XRS	2,140	19	98,000
Bizliners (>2,500 cu ft)	Embraer	LINEAGE 1000	4,085	19	120,150
	Airbus	A318 ELITE	5,300	18	149,913
	Boeing	BBJ	5,390	18	171,000
	Airbus	CORPORATE JETLINER (ACJ)	5,900	19	168,652
	Boeing	BBJ2	6,695	19	174,200
	Airbus	A320 PRESTIGE	6,820	19	169,724
	Boeing	BBJ3	7,290	19	187,700

Notes:

1. All personal very light jets have one engine. All other jets listed have two engines.
2. All personal very light jets, compact very light jets and other jets marked with an asterisk (*) are approved or planned to be approved for operation by one pilot. The maximum passenger seating of these aircraft therefore includes one passenger in the right seat in the cockpit. Seating for all other aircraft assumes a two-pilot crew and maximum "typical" executive seating. In corporate shuttle configurations, the Airbus and Boeing bizliners may be configured with many more seats than indicated in the table.
3. The cabin volumes of the personal and compact very light jets includes the cockpit, because their small sizes preclude having fixed divider between cockpit and cabin.
4. Aircraft are listed in order of cabin volume first, followed by max takeoff weight, if cabin volumes are equal.
5. By convention only, very light jets have max takeoff weights under 10,000 pounds.
6. By FAA certification rules, all airplanes with maximum takeoff weights above 12,500 pounds are considered "heavy airplanes" and must be certified to stricter FAR Part 25 air transport category rules. Airplanes weighing less than 12,500 pounds are considered "light airplanes" and may be certified under less-stringent FAR Part 23 rules, though by manufacturer choice, some are certified to Part 25. With FAA approval, a company may apply to certify a multi-engine airplane weighing up to 19,000 pounds using Part 23 commuter category rules. The Sino Swearingen SJ30 and Hawker Beechcraft Premier II fall into this group.