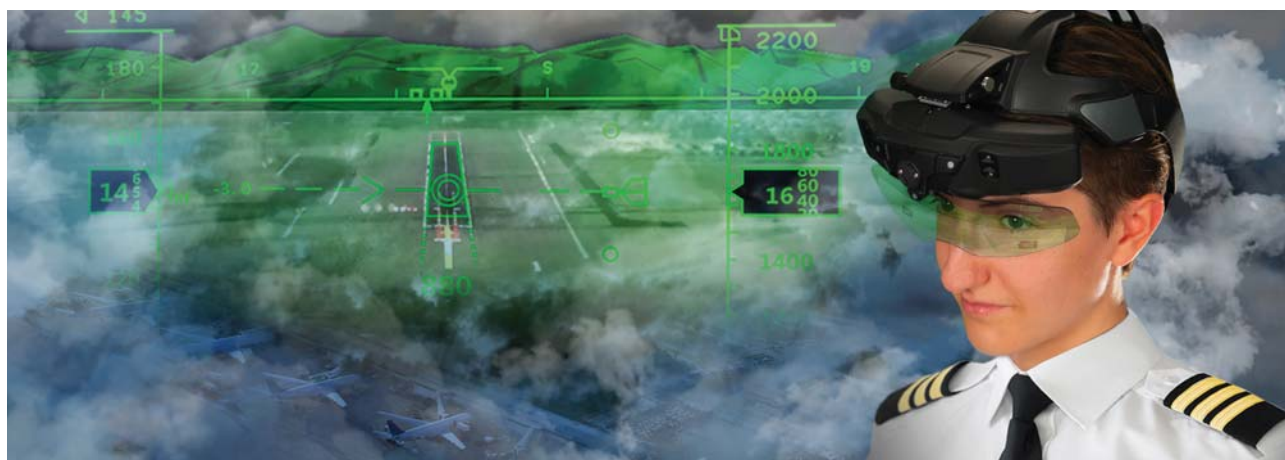


2020 Avionics Update

The coronavirus pandemic all but grounded aviation, but when the skies clear, there will be **no shortage of great new avionics and ideas** for flying blind



UNIVERSAL AVIONICS

BY **MAL GORMLEY** malgormley@gmail

As we were finalizing this year's review of all things avionic, the coronavirus pandemic was rapidly expanding. In response, airframers, avionics makers, MROs and FBOs were squinting to see any positive news and with many also hitting the Pause button.

Almost all the big air shows and industry gatherings were postponed or canceled, including EBACE, Sun 'n Fun and Farnborough's huge biennial event. Business aviation activity was down by 30% or more, and descending further.

Many avionics makers were issuing statements expressing their confidence that despite temporary layoffs or reduced production, things would return to normal when the worst had passed — even if nobody could say when that would be. Universal Avionics was providing a non-profit group with assembly line space at its headquarters in Tucson, Arizona, to manufacture medical face masks and shields. Other aviation manufacturers — Piper, Textron Aviation, Honeywell, CAE and General Electric among the many — were ramping up production of specialized gear to help protect medical

personnel and aid those infected with the virus.

So, we decided the only logical response to those circumstances was to punt with a snapshot summary of the avionics sector just before all hell broke loose in the U.S. in early April. That said, we hold firm to the expectation that eventually goodly numbers of new aircraft will begin rolling off production lines again, all fitted with new avionics, and that operators of existing aircraft will continue to upgrade their flight decks.

Call for Backup

In the opinion of many — including the Aviation Week & Space Technology editorial team that recently awarded it a Laureate — the most consequential event in general aviation avionics in a very long time occurred in October 2019 when Garmin International introduced its Autoland system.

An emergency landing system for light business aircraft, it can be activated by the pilot or passengers by simply pushing a guarded red button. It can also self-activate automatically in

Universal Avionics ClearVision

extreme circumstances. The system takes full control of the aircraft, notifies ATC and then flies to and lands at the most appropriate airport — all automatically.

The system's FAA approval and entry into service seems imminent on several aircraft. It's part of Garmin's newly branded Autonomi package, which includes electronic stability and protection and emergency descent mode. (For more, see "Flying Garmin's New Emergency Autoland," *BCA*, October 2019.)

Now, there may be another auto concept to consider. Skyryse, a Los Angeles-based transportation startup, has unveiled a new "universal flight automation system." The technology, it claims, can be retrofitted into any aircraft to enable virtually anyone to fly as safely as a crew of professional pilots using the system's intuitive controls — and an iPad.

The aircraft-agnostic system, known as Skyryse FlightOS, introduces a new paradigm in flight safety and capabilities through simplified flight controls. It's quite a claim, and it would be easy

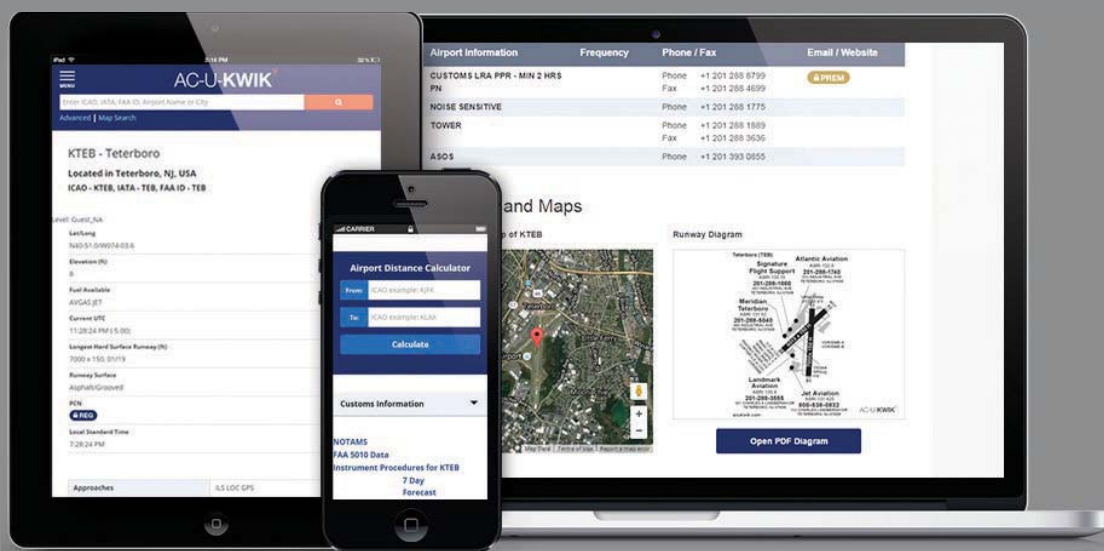
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SKYRYSE



Skyryse FlightOS

to dismiss as vaporware designed by a kid in their basement. The company's video pitch, however, is compelling; the Skyryse folks may indeed be on to something. The company has raised \$38 million from world-class investors, including Bill Ford, CEO of Ford Motor Co., as well as Stanford University and Venrock.

Unlike other companies building autonomous vertical takeoff and landing (VTOL) aircraft from scratch or only for the military, Skyryse refits existing certified aircraft and technologies with as-yet undescribed software and hardware innovations. The Skyryse FlightOS was initially designed for and demonstrated on a Robinson R44 helicopter. Each component of the system works in triplicate with fail-operational technology to ensure that automation functions remain operational at all times, even in the presence of equipment failures.

Skyryse claims it's a year away from FAA certification. Founder/engineer Vance Creighton told *BCA* that Skyryse doesn't see itself as competitive with Garmin's Autoland. "It's important to be distinct as to the different parts of the company and technology. Skyryse as a company has a mission to provide the safest, fastest and most uplifting transportation. Our goal is to democratize the air, by making air transportation accessible for everyone and having a positive impact on the communities we serve.

"To help create this future," Creighton continues, "we've created the Skyryse FlightOS and are now offering FlightOS as the first product from [a] suite of

technologies we are selling. FlightOS is always on and continuously keeps the pilot within the flight envelope and will manage emergencies. FlightOS also differs in that it works with all aircraft while Garmin's technology works with only two types of aircraft. We created FlightOS as an entire industry solution for everything from eVTOLs to a Sikorsky S-80 to unlock the future of urban air mobility." Watch this space for updates.

Got ROAAS?

Meanwhile, runway overruns are a leading cause of incidents and accidents. In response to customer input, optional avionics upgrades for Embraer's new Phenom 300E now include predictive wind-shear awareness and an Embraer-developed runway overrun awareness and alerting system (ROASS) to warn pilots if the aircraft's approach is too steep or too fast.

The alerting system, which engages at 1,000 ft. AGL, warns the crew through primary flight display messages, aural alerts and data recorder, prompting a go-around. The upgrade also includes a standard new weather radar, ADS-B In, an emergency descent mode, graphical weight and balance, VFR approach, coupled go-around and other items.

Helo TAWS

Over the past two decades, the U.S. helicopter fatal accident rate has been halved, from 1.27 per 100,000 flights

to 0.63, according to the U.S. Helicopter Safety Initiative's figures. However, the crash that killed Kobe Bryant and eight other people in late January has put a new focus on rotary-wing safety. Accordingly, U.S. Rep. Brad Sherman (D-Calif.) has introduced legislation to require terrain awareness and warning systems (TAWS) on all helicopters.

In a press release accompanying the announcement of the "Kobe Bryant and Gianna Bryant Helicopter Safety Act," Sherman declared, "Had this [TAWS] system been on the [accident] helicopter, it is likely the tragic crash could have been avoided."

The press release didn't provide any evidence for the claim. In February, Vanessa Bryant filed a wrongful death lawsuit against Express Helicopters and Island Express Holding Corp. for dis-



LUNA COPTER

patching the Sikorsky S-76 helicopter in which her husband and 13-year-old daughter and seven others were killed. The suit alleges that Ara Zobayan, the lone pilot, failed "to use ordinary care in piloting the subject aircraft" and was "negligent" when taking off Jan. 26 for the fatal flight.



HENSOLDT

Hensolt drone detection

Talk to Me

Switzerland's RUAG has developed a Controller-Pilot Data Link Communications (CPDLC) upgrade kit for Embraer Legacy 600/650 aircraft. Operators are free to decide if they prefer to opt for CPDLC as outlined by Mandate 2020 from both the European Union Aviation Safety Agency (EASA) and the FAA.



Hensoldt detect-and-avoid radar

The upgrade requires five days' downtime for the implementation.

Meanwhile, German sensor and avionics tech companies Hensoldt and Diehl are developing a radar and camera system that can reliably detect objects in the flight path of UAVs. The recognition of such obstacles is one of the essential requirements for deploying the unmanned aircraft in controlled airspace.

The Manufacturers

What follows is a summary of significant product and service developments since last June.

Aspen Avionics

Albuquerque, New Mexico-based Aspen Avionics has added new features and functions for its Evolution E5 Electronic Flight Instrument (EFI). New features include traditional horizontal situation indicator (HSI), outside air temperature (OAT), true airspeed (TAS), wind direction and speed, and WAAS GPS mode annunciations. Starting at \$4,995, the E5 EFI is approved for both IFR and VFR flight.

When introduced in 2018, the Evolution E5 EFI combined an attitude indicator plus DG/CDI into a single display. After receiving feedback from operators and installers, Aspen responded with a new software release for those who prefer a more traditional HSI. Aircraft owners who already own the Evolution

E5 can update their current display through an Aspen authorized dealer who will note the change with a logbook entry. New E5 displays are now shipping with the HSI feature.

The Evolution E5 EFI is approved for IFR flight when installed with a panel-mounted IFR GPS. When installed without a panel-mounted GPS, the E5 EFI is approved for VFR flight only. The new optional software features including TAS, OAT, wind direction and speed, and WAAS GPS mode annunciations are available for \$495.

Astronautics

Astronautics Corp. of Anaheim, California, is readying its wireless Airborne Communication System (wACS) for various Airbus Helicopter models, beginning with the H145. The wACS will enable operators to connect their aircraft to the Airbus Helicopters data link via the Airbus Helionix avionics suite to use the Airbus HCare analytics services.

Benefits include increasing operational safety and faster performance computation when preparing for a flight. In addition, the system helps ease maintenance decision-making for future flights, facilitates flight debriefings, speeds defect location and helps to prioritize troubleshooting.

And wACS enables secure transfer of operational and maintenance data to onboard repository, over Wi-Fi or cellular connection, with cybersecurity ensured via encryption, among other features.

Astronics Max-Viz

Sikorsky and Astronics have worked together to install and certify the Max-Viz 2300 enhanced vision system (EVS) on a new Sikorsky S-76D helicopter; the system is now certified and being delivered with new production aircraft or can be upgraded on existing helicopters.

The 2300 also had received an amended FAA and Transport Canada Supplemental Type Certificate (STC) approvals for multiple Textron and Leonardo helicopter models, including the AW109 and AW119.

Offered by the Buffalo, New York, avionics maker's Max-Viz subsidiary, the 2300 can now present images on multifunction displays (MFDs), primary flight displays (PFDs) and standalone displays. Approximately 40% of the over 3,000 installed Max-Vis EVS systems are in helicopters.

Avidyne

The new Atlas "multifunction" FMS by Avidyne is designed for installation on fixed-wing turbine aircraft. The touchscreen displays present moving



Avidyne Helios TerrainAlert

maps, weather, traffic, geo-referenced approach charts, airport diagrams, radar and video, as well as integrated Wi-Fi connectivity and extensive I/O resources including the company's unique GPS Legacy Avionics Support (GLAS) technology.

Dzus-mounted, Atlas includes a satellite-based augmentation system (SBAS) GPS navigator with required navigation performance (RNP) and area navigation (RNAV) capability. This includes

Avidyne Atlas Hawker panel



localizer performance with vertical guidance (LPV), lateral navigation/vertical navigation (LNAV/VNAV), LNAV-only and approach procedures with vertical (APV) information.

The system also features a QWERTY keyboard, with Avidyne's "Page & Tab" and hybrid touchscreen user interface, allowing crews to get to any function with only one or two button pushes. This would be a great upgrade for operators who previously chose to do a compliance-only ADS-B Out upgrade, as Atlas will provide them with the full benefits that SBAS has to offer.

The Melbourne, Florida, manufacturer's GLAS provides a direct interface to legacy Collins Pro Line 21 and Honeywell Primus EFIS systems for vertical guidance during approach operations. This integration enables an EFIS certified before the availability of LPV approaches to have coupled guidance on these and other SBAS approaches.

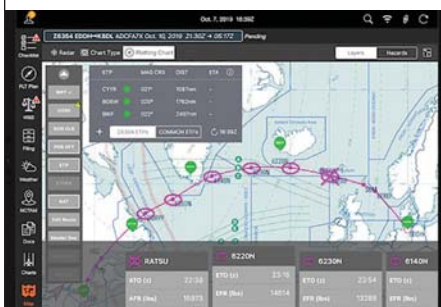
Atlas boasts a variety of features. These include traffic display from TCAS or ADS-B, display of Jeppesen approach plates and airport diagrams with aircraft position shown on the charts, Wi-Fi and Bluetooth connectivity, integration with ForeFlight and other EFBs, and built-in USB charger. An integrated 16-watt VHF COM, VOR, localizer and glide slope radio is also available.

Avidyne's multifunction Helios provides many of those same features for rotary-wing operators. Its options include 16-watt VHF NAV/COM with ILS, HTAWS, GLAS, radar control/display capability, NVIS (near vertical incidence skywave) compatibility and an RS-170 video input. The system features

a built-in moving map with 3 arc-second terrain and powerline data, plus charts, and VHF NAV/COM, video, NVIS and radar options.

Collins

Collins is redefining flight operations for business aviation with a new digital Oceanic Plotting Chart for pilots. Available on the company's ARINC Direct iPad app, it eliminates the paper plotting charts and manual processes commonly used today for navigating oceanic airspace.



Collins plotting chart

Free to ARINC Direct flight-planning subscribers, the chart plotter includes Live ETPs (equal time points), a feature that updates bearing, distance and arrival time constantly throughout the flight. Live ETPs are computed and updated for any scenario addressed with the flight plan including engine failure, depressurization and a medical emergency, thereby completely eliminating the need for manual computations.

Esterline CMC Electronics

DAC International and CMC Electronics have obtained FAA approval of their latest ADS-B Out STC for aircraft equipped with Honeywell Primus II avionics, thus providing an alternative to upgrading existing onboard Honeywell equipment.

The STC meets the DO-260B ADS-B Out worldwide mandate by replacing the existing non-compliant Primus II transponder with the Becker BXT6553 Diversity Transponder, paired with CMC Electronics' CMA-3024 GPS/SBAS (GNSSU) receiver.

Further, it extends the operating life of a broad range of aircraft such as Bombardier's Challenger 600 series, Hawker 800/800XP, Learjet 45, Gulfstream GIV/G450, Textron Cessna Citation II and V, and many more. The CMA-3024 sensor provides ADS-B-compliant SBAS/GPS primary means navigation and is fully compatible with all SBAS signals worldwide. With SBAS coverage, differential corrections are incorporated to provide RNP 0.1. Full installation kits, including the CMA-3024 and STC package, are provided by DAC.

In March, TransDigm Group of Ohio acquired Montreal-based CMC Electronics Esterline Technologies for approximately \$4 billion.

FreeFlight Systems

Mexico's Civil Aviation Federal Agency has validated FreeFlight Systems' AML STC for the company's Avail ADS-B. The package is intended to help turbo-prop and light jet owners in Mexico and Central America comply with ADS-B requirements.

Next, the Irving, Texas, company's RA-4500 plug-and-play radar altimeter now comes with digital-to-analog converter capabilities, making the system a replacement for legacy altimeters like the KRA-405/405B. According to the manufacturer, the RA-4500 is ideal for TCAS I, single-install aircraft, like Citations and Learjets.

Also, FreeFlight recently joined the ACR Group's portfolio of aviation companies, which includes ARTEX, Flight Data Systems, Latitude Technologies and SKYTRAC Systems, but it will continue to operate as an independent subsidiary.

Garmin International

In addition to the unveiling of its Auto-land system, Garmin has received FAA

approval for the installation of the GTN 650Xi and GTN 750Xi for select helicopter models. Designed as a direct slide-in upgrade to the previous generation GTN 650/750, the all-in-one GPS/NAV/COMM multifunction display can integrate with new or existing remote-mount equipment such as a transponder or audio panel.

Preserving the same form factor as its predecessor models, the 6-in.-tall GTN 750Xi and the 2.65-in.-tall GTN 650Xi offer an intuitive touchscreen design with a dedicated direct-to button and dual concentric knob that ease interfacing with the display.

Helicopters currently approved for installation of the GTN Xi series include: Airbus AS350B2, AS350B3, EC120B, EC130B3 and EC130T2; Bell 206B, 206L, 206L-1, 206L-3, 206L-4 and 407; Enstrom F-28F, 280FX and 480B; and MD Helicopters 369E, 369F and 369FF.

Meanwhile, Garmin's new G1000 NXi integrated flight deck upgrade for the King Air C90 offers a new capabilities and, when moving from the G1000, requires minimal aircraft downtime.

Flight Stream 510 and Connex technology within the G1000 NXi integrated flight deck enables the wireless transfer of aviation databases from the Garmin Pilot app on a mobile device to the G1000 NXi. Additional features include two-way flight plan transfer, and the sharing of traffic, weather, GPS information, back-up attitude information and more, between the NXi and Garmin Pilot, FltPlan Go and ForeFlight Mobile apps.

Visual approach guidance and map overlay within the HSI further enhance the NXi feature set. Within the HSI map, pilots can overlay NEXRAD, Flight Information Service-Broadcast (FIS-B) weather, weather radar, Safe-Taxi airport diagrams, traffic, terrain and more. A split-screen view is also available on the MFD, offering a simultaneous view of maps, sectional and IFR low/high en route charts, checklists, flight plans and more on a single screen.

The G1000 NXi also supports the display of ADS-B In traffic and FIS-B weather. The addition of SurfaceWatch runway monitoring provides visual and aural cues to help prevent pilots from taking off or landing on a taxiway, on a runway that is too short or on the wrong runway based on performance data entered during preflight. Visual and audible runway distance remaining

annunciations are also available.

This upgrade adds to the growing portfolio of aircraft eligible for the G1000 NXi integrated flight deck upgrade, including the King Air 200/300/350, Daher TBM 850/900, Cessna Citation Mustang, Piper PA-46 and soon, the Embraer Phenom 100. Upgrades to the G1000 NXi require little aircraft downtime or panel disruption because the displays preserve the same footprint and connectors.

Genesys Aerosystems

Remote-mounted and software-definable, Genesys Digital Radio (GDR) products feature combined VOR/localizer/glideslope and marker beacon nav and VHF comm with a frequency range of 118-136 MHz or 118-156 MHz and 25 or 8.33 kHz channelization with transmit power of 16 or 25 watts. Embedded UHF 225-400 MHz comm is optionally available. The radio is designed to interface to a host controller/displays.

The Mineral Wells, Texas, manufacturer specializes in cockpit integration. As an example, its IDU-680 EFIS display now integrates with the PAC45G digital audio controller from PS Engineering. The PAC45G is a TSOed audio management system that offers Multi-Talker, a patented technology providing up to nine unique positions so that each radio has its own location within a stereo headset.

The Genesys IDU-680 EFIS displays feature a variety of PFD and MFD formats that can be configured to show flight instruments, moving map, HSI, flight planner, traffic, terrain, weather radar, data link, video, radio/audio management and engine displays. The IDU-680s also feature a built-in FMS and integrated Class-A TAWS.

Meanwhile, the company's unique OASIS (Open Architecture System Integration Symbolology) platform allows flexibility to display engine information, CAS messages and special-mission equipment. Its GPS and ADAHRS round out the offering.

Honeywell Aerospace

PJ18 4D Trajectory Management, a Honeywell project that's part of the SESAR 2020 initiative, is intended to modernize air traffic management in the EU. SESAR (Single European Sky ATM Research) is now in its second phase.

The company says the system will enhance safety, efficiency and situational

awareness for flight crews and passengers. It analyzes available weather and aeronautical data, sends updates to the aircraft via data link and displays the information graphically using the pilot's EFB app.

PJ18 is one of several dozen SESAR projects in which Honeywell is involved and 4D Trajectory Management will help ATM authorities and operators handle greater volumes of future air traffic.

Meanwhile, with the introduction of Honeywell's new Forge data-driven analytics platform, business aviation customers can have an ostensibly easy-to-use, integrated dashboard that sends real-time alerts on connectivity issues and flight plan changes. With full visibility into their services, customers can use the platform to tap into data that helps flight departments troubleshoot and fix issues as soon as they arise.

The next evolution of what was formerly known as Honeywell's GoDirect portfolio, Forge is designed to improve passenger connectivity, help manage costs and give flight departments a better understanding of their fleet's status in real time. It provides a full suite of mission-management capabilities in the areas of flight operations, nav databases and maintenance.

And for operators looking to access more airports, increase safety, reduce crew workload or meet the changing regulatory and airspace requirements, the Honeywell FMZ-2000 FMS version 6.1 upgrade contains significant improvements. The upgrade is required for the 2020 Future Air Navigation System (FANS) 1/A mandate on the Embraer Legacy 600/650, Dassault Falcon 900A/B/C/EX (non-EASy), Embraer Legacy 600/650, Gulfstream IV/IV-SP/V and Cessna Citation X.

Also, BendixKing's AeroVue Touch PFD is now available for 353 aircraft types on the Approved Model List STC. The display has the highest-resolution EFIS on the general aviation market and features Honeywell's SmartView SVS, terrain awareness, a moving map, a vertical situation display, aeronautical charts, and traffic and weather information. These are consolidated within a near-4K high-resolution, 10.1-in. touchscreen display. Every safety-critical function is accessible within two pilot touches on the display and all functions are available within four touches or less.

For owners upgrading to a digital cockpit, AeroVue Touch offers a modular and compact unit that comes with Wi-Fi and Bluetooth connectivity as standard.



Universal Avionics is assisting the local Tucson community in protecting healthcare workers and first responders.

It allows pilots to seamlessly upload flight information in under 4 min. and software updates in less than 10 min. and also has self-contained architecture, which allows the system to be easily expanded to two or three displays.

BendixKing has obtained an STC for the AeroFlight KA 310 autopilot adapter, enabling the KI 300 to be used as a sole-source, three-axis attitude reference and flight director for BendixKing KAP 100, 150 and 200 and KFC 150, 200 and 225 autopilots. The company says that with the upgrade, owners save the typical \$4,000 to overhaul mechanical gyros every 800 hr., while also having much of the same information available in a PFD at a much lower cost.

And the BendixKing AeroCruze 230 touchscreen autopilot is also now available for certified aircraft. A slide-in replacement for the KFC 150, the AeroCruze 230 reuses the servos already in the aircraft, dramatically cutting down on installation cost. Purchase of the AeroCruze comes with a new two-year warranty on those servos.

IS&S

The FAA has awarded a first-of-its-kind STC to Innovative Solutions & Support for technology to protect against one-engine-inoperative (OEI) loss-of-control accidents. Authorities suggest such mishaps are responsible for as many as 90 fatalities annually.

The IS&S autothrottle upset protection system automatically adjusts power

in the operating engine to provide the maximum safe thrust, preventing severe yaw that can catastrophically upset the aircraft. The system is available for rapid retrofits.

Meanwhile, the Exton, Pennsylvania, manufacturer has received the first FAA STC for its patented ThrustSense autothrottle for retrofit in King Airs. The system provides FADEC-like engine protection and is a full regime autothrottle, from takeoff to landing phases of flight, including go-around. Accordingly, it allows the pilot to automatically control the power setting of the engine. ThrustSense computes and controls appropriate power levels, reducing pilot workload while providing a new level of convenience and safety.

L3Harris Technologies

Express Readout, L3Harris Technologies' new automated aircraft recorder validation service, provides detailed reports about recorder functionality. Global aviation authorities require aircraft operators to provide annual compliance for FDRs and CVRs, including those with data link capabilities, to prove they are functioning correctly. Express Readout allows operators to upload the recorder files to a secure server for validation, without manually removing the device.

According to the Melbourne, Florida, manufacturer, Express Readout's patented algorithms also identify unusual parameter patterns and highlight these to the user for inspection. Interactive charts allow users to inspect every parameter in detail and assess up to 50 flight hours of data, across multiple flights, within the same readout. Users

can download the report files in various formats and the results are stored indefinitely on the secure platform, exceeding regulatory requirements.

Express Readout is available as an automated self-service solution or as a full-service validation, which includes an expert assessment on the recorded data.

Universal Avionics

Universal Avionics has obtained EASA certification for its ClearVision enhanced flight vision system (EFVS) with SkyLens head-wearable display (HWD).

ClearVision provides head-up operations combined with enhanced vision (EVS), synthetic 3-D terrain display (SVS), and a unique and optimized combined vision system (CVS). For greater flexibility, it interfaces with a variety of display options: traditional fixed head-up display (HUD) systems, head-down flight display systems or wearable devices like the "near-to-eye" SkyLens HWD. All these options offer pilots unprecedented



UNIVERSAL AVIONICS

situational awareness, enhancing what they can see with "natural vision" in degraded visual environments and adverse weather conditions, day or night.

Universal says ClearVision can provide relief to approach bans under FAR Part 121 operations and allows operators to use its enhanced flight visibility to meet the flight visibility required to depart to a destination or begin an instrument approach.

To Our Health

How well business aviation weathers the coronavirus crisis is anybody's guess at this point. But while we're all while practicing personal distancing, and complying with stay-at-home requests, catching up on sleep, enjoying our families and exercising more, we suggest checking your aircraft's avionics maker's website for some terrific online webinars and training programs. **BCA**

Congratulations to Our Very Own William Garvey!

On his induction into the
“Living Legends of Aviation”



BCA Editor-In-Chief William Garvey has been inducted into the Living Legends of Aviation.

Garvey is part of the Class of 2020 inductees, which includes Apollo 13 Commander Jim Lovell, Gulfstream’s Larry Flynn and Sergei Sikorsky. Past inductee recipients include more than 100 men and women from every corner of aerospace.

During a career that has already spanned 50 years, Garvey has established himself as a well-known, highly respected ambassador for aviation and shaped **BCA** into the leading, essential “how-to” business aviation publication within the industry.

“For the past five years, I have been honored to work alongside Bill. His writing never fails to amaze me, and his knowledge and innate understanding of our industry is unparalleled. He is simply the best story teller I know. Congratulations to Bill on this outstanding recognition.”

— Frank Craven,
Managing Director
Business Aviation

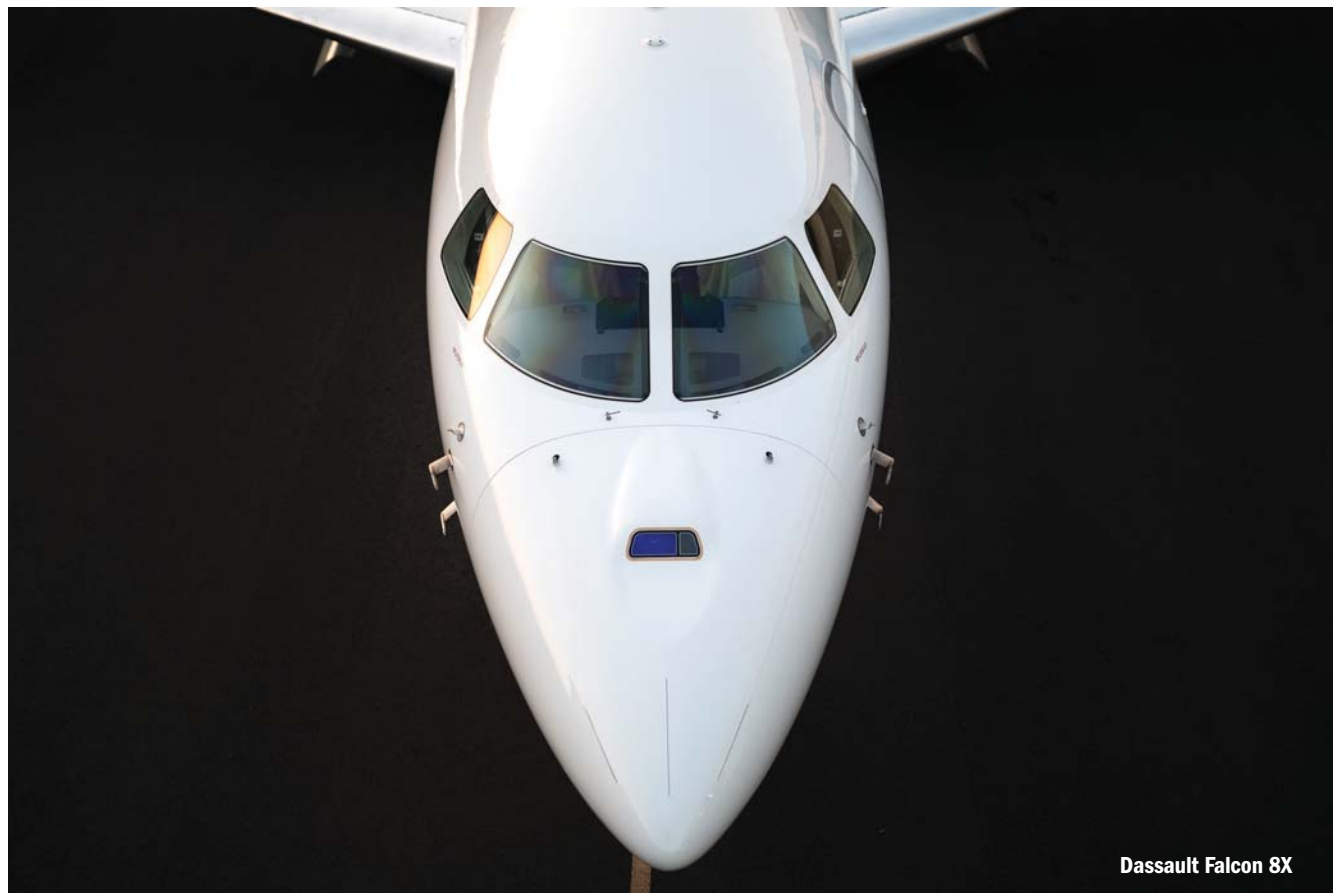
Photo: *Business & Commercial Aviation (BCA)* Editor-In-Chief William Garvey is introduced by Living Legends of Aviation host, actor/pilot John Travolta. ©2020 Larry Grace Photography / Living Legends of Aviation (LLoA)

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DASSAULT AVIATION

Dassault Falcon 8X

BY **FRED GEORGE** fred.george@informa.com

The first half of 2020 was an economic catastrophe for the business aviation sector, for air transport in general and for most of the world economies as well. April 2020 business jet flights declined more than 75% year over year. FBO fuel sales were off as much as 95%. Deliveries of some new general aviation aircraft were cut in half, pilots were furloughed, MRO staff was cut. Manufacturers' supply chains have been disrupted and some firms may not survive. Some facilities at general aviation airports were shuttered with no hope of reopening. The FAA is reducing operating hours at 100 control towers, mostly at smaller airports.

Recovery from the COVID-19 pandemic indeed could be more difficult than pulling out of the 2008 Great Recession because of the depth and breadth of the economic damage throughout the economy. Business aviation "got sucker punched," was the view of Michael Bruno, *Aviation Week & Space Technology's* senior business editor, during "Business Aviation, Post-Pandemic: Will This Crisis Reshape the Industry?" part of a COVID-19 webinar series hosted by the Aviation Week Network, of which *BCA* is a member.

Gulfstream's customers deferred deliveries of 11 aircraft in the first quarter and the firm announced the layoffs

of 700 employees in early May. In late April, Superior Air Charter, parent company of JetSuite, filed for bankruptcy. And NetJets announced a 25% cut in staff at two business units and deferral of some new aircraft deliveries.

Adding to the pain is the "complete collapse of oil prices," according to Richard Aboulafia, Teal Group's vice president of analysis, during the webinar. "In 2008, the top end of the market did fine, but the bottom end got crushed and never fully recovered. Small general aviation companies never got back to the frothiness they saw back in 2007 and 2008.

"So much of the top end of the market

is linked to resource rich economies, their companies and high-net-worth individuals. There's no way [this time] the top end doesn't take an extremely serious hit," says Aboulafia.

"Pain will be felt across all sectors, 40% in light jet, 30% in midsize and 30% in large cabin," says Rolland Vincent, head of the Plano, Texas, consultancy bearing his name. Aboulafia believes that "safe havens" are the first things business aircraft makers will seek in order to survive. "And the only thing I can see that even vaguely resembles a safe haven in this crazy world is defense spending."

General Dynamics, the parent company of Gulfstream Aerospace, is the U.S.'s fifth-largest defense contractor, earning more than half its revenue in that sector. Long term, that bodes well for Gulfstream as it proceeds amain with development of its 7,500-nm-range, four-section-cabin G700, as well as future projects, such as the P-32 joint venture with Israel Aerospace Industries (IAI) described below.

Dassault can fall back on sales of its Mach 2-class Rafale fighter and refurbished Atlantique 2 patrol aircraft. That will allow the French firm to push forward with both the Falcon 6X and upcoming Falcon 9X ultra-long-range executive jet.

But Bombardier has no such defense sector backstop to shore up its finances as it rides out the storm and attempts to service \$9.3 billion in debt. "That puts [Bombardier] in a fairly vulnerable place. So, I think it faces a unique set of challenges," says Aboulafia. Embraer, in spite of its defense business, also is in financial peril after the collapse of its \$4.2 billion joint venture with Boeing.

"Ironically enough, if you could somehow find a way to put ownership issues, ego issues, whatever else aside, it's hard to imagine a better combination than Embraer and Bombardier. That would actually go pretty well as retrenchment in this business," says Aboulafia.

"Not in my lifetime, no way," counters Vincent. He believes there are too many cultural differences between the two firms. There is also bad blood over old government subsidy feuds. But there are undeniable synergies, if such an agreement could be reached. Embraer's Phenom 300 has been the best-selling light jet for more than a decade, while Bombardier Learjet 75 sales have flagged. The Embraer Legacy 500 never has sold well and the Bombardier Challenger 350 continues to dominate the super-midsize

class. Bombardier's Global 5500, 6500 and 7500 models are well positioned against large-cabin competitors, leaving only the long-in-the-tooth Challenger 650 in need of faster cruising, higher flying, longer range replacement.

Textron, in contrast, may rekindle merger talks with Bombardier, now that Alstom's proposed \$6.7 billion acquisition of Bombardier's rail business is on hold. Meanwhile, Mitsubishi's \$550 million offer to buy the Bombardier CRJ

believes it would be more likely that a private equity firm, such as Bain Capital or Carlyle, would make a bid for Bombardier sooner than another business aircraft manufacturer.

More importantly, Vincent says consolidation of overlapping models will happen before companies consider mergers. Prime examples include Bombardier's Global 5000 and 5500, and Global 6000 and 6500, along with the Embraer Legacy 450 and Praetor 500,



Textron Aviation Citation M2

TEXTRON AVIATION

line seems to be proceeding. Regardless, there's pressure on cash-strapped Bombardier to unload its debt burden, adding urgency to a possible sale. Vincent notes that a sale of Bombardier Business Aircraft to a third party likely would leave the founding Boudoin family with a hefty portion of shares in any third-party acquisition as part of the deal.

"There are opportunities here. It's just that, as we all know, the history of business jet consolidation is largely unblemished by success," says Aboulafia. In summary, he quips, "We're all reminded of Warren Buffett: 'When the tide goes out, you see who's swimming naked.'"

Bruno notes that Textron doesn't have "mounts of cash" for research and development. The firm also may be too cash-strapped to pursue acquisitions, considering that its 1Q20 revenues declined 10.7% from 2019 mainly because of the impact of COVID-19. Notably, Textron Aviation's 1Q20 revenues also were down 23% year over year. Vincent

and Legacy 500 and Praetor 600, plus Textron Aviation's Sovereign and Longitude. Newer designs offering more range, more payload or more spacious cabins will survive. Market demand for older models will wane, leading to end of production.

Uncertainty dominates the market. "... [F]rankly we don't know the magnitude of this recession. We don't know how long equities markets will keep falling, or indeed, if they will keep falling. Maybe there'll be some stability. We don't know about the length and depth of the recession that's coming," says Aboulafia.

Vincent says that customer sentiment, their intentions to purchase are the lowest he's seen in nine years. "It'll be a very strange market for the next few months."

The beginnings of a business aviation turnaround will be shown by an uptick in aircraft utilization and a firming of prices in the pre-owned market.



Citation Latitude

Aboulafia says that a recovery in crude oil markets and recoveries in the equities markets will be key, coupled with a surge in business earnings. “The corporate profit index comes back and business jets come back.”

Vincent says GDP growth, bulls running in stock markets and more favorable U.S. dollar to foreign currency exchange rates, along with higher oil prices, will be the main drivers. He disagrees with Aboulafia’s prediction that higher corporate earnings will drive business aircraft purchases, pointing out that companies have not chosen to buy aircraft with profits that have surged since 2008. They’ve made considerably larger capital expenditures for other equipment. And the trend is unlikely to change as the world’s economies begin to recover.

Business aviation should recover before the airline industry because it’s much less dependent on discretionary travel. Face-to-face deal-making is one of the benefits of business aviation. You can’t Skype or Zoom your way through business negotiations. You have to be on site to inspect a plant, talk with employees, see processes in progress, examine products, hear what customers, financiers and suppliers have to say.

“It’s a competitive world. If I have a slight advantage of unseating a competitor, whether I’m trying to buy a company or consulting. It’s a competitive world and travel helps you. Nobody competes on safety. But it’s kind of implicit before people feel comfortable getting back in airports and airlines, they’re going to feel better about private aviation,”

says Aboulafia.

This is particularly true for international air travel. Private aviation won’t leave you stranded a long, long way from home because of an Icelandic volcano eruption, second wave of virus, travel bans or other roadblocks to commercial air travel.

And while private and public aviation sectors have been loath to point fingers at each other concerning safety, there’s a strong undercurrent of discussion about business aviation being the preferred mode of air travel in the new non-normal era of COVID-19.

Bruno says that coronavirus has been added to the risk management matrix and “executives don’t want to risk exposure on commercial flights.” Companies operating business aircraft have door-to-door control over the risk of exposure to disease, including assurance about the sanitation of ground support facilities, vehicles and aircraft, plus screening personnel, pilots and passengers for signs of infection. They’ll know that a person on board is coughing due to a seasonal allergy, not the onset of COVID-19. One industry observer says that companies are seeking to create a “health corridor” that will provide travel with near virus-free-exposure from origin to destination. Vincent believes that load factors aboard corporate aircraft may increase as CEOs strive to keep more key employees off the airlines.

Companies may view their aircraft as essential business tools, but they’re also keenly aware of the vilification of business aviation by Washington politicians and the media during the 2008 economic meltdown.

Aboulafia says that operators will have to manage the “optics” carefully to avoid a repeat of the “One Percenters” class warfare that dominated the news a decade ago, especially regarding use of private aircraft. “Otherwise, there’s going to be a certain degree of tension over the optics of that,” says Aboulafia.

Carbon impact is another part of managing “optics.” Europe is taking aim at business aviation because carbon emissions per passenger are considerably higher for an eight-passenger business jet than for a 400-passenger jumbo twin. Environmentalists note that the skies have been noticeably cleaner and quieter since the COVID-19 pandemic virtually shut down air travel. Even before that, “flight shaming” became common practice in some parts of Europe. Business aircraft are an especially easy target for eco activists.

As shown on the accompanying chart, though, all of aviation in the U.S. accounts for a scant 2.6% of greenhouse gas emissions, according to the Environmental Protection Agency. U.S. business aviation comprises 2% of aviation emissions or 0.052% of the total U.S. carbon footprint, according to the General Aviation Manufacturers Association (GAMA) and the International Business Aviation Council (IBAC). In contrast, more than 60% of human-generated greenhouse gases in the U.S. are emitted by power plants, factories and light cars and trucks.

Nonetheless, the business aviation community has been quite proactive in pushing for development and use of sustainable aviation fuels (SAFs), which are refined from plant-based feedstocks that absorb carbon dioxide during their growth cycles. GAMA and IBAC predict that more fuel-efficient business aircraft, coupled with widespread use of SAF, will eventually reduce business aircraft carbon emissions to 50% of what they were in 2005.

“It’s a matter of when, not if, to curb aviation carbon emissions. The idea of carbon offsetting is widely shared across both political parties,” says Bruno.

Long term, the outlook for private aviation is bright, especially with people being increasingly concerned about the risks of exposure to disease associated with traveling on commercial airlines. “Taking the long view, yes, we’ll get back on that growth trajectory. We’re still a really solid business that employs a lot of people. There’s a lot of money to be made by a lot of different types of companies,” says Aboulafia.

Short term, however, “we’re going to have a really difficult couple or three years” because of the fallout of COVID-19. One broker tells BCA that he recently had four transactions blow up because buyers were so concerned about the economy.

Bruno counters, “Billionaires and multi-billionaires don’t let little things like economic recessions stop them. They continue to march forward in all of their deal making and all of their business activity.” Ultra-high-net-worth individuals “are the stalwarts of this market,” says Aboulafia. “And one of the things we know about them is they like to get there faster,” adds Bruno.

This may bode well for the future of the Aerion and Boom supersonic aircraft projects, assuming the regulatory,

The COVID-19 pandemic is creating acute downward price pressure in some sectors. Manufacture of some models has ceased. For instance, we no longer list Mooney Ovation and Acclaim single-engine aircraft. The Embraer Legacy 650E, the business jet variant of its EMB-135 regional jet, and the Bombardier Learjet 70 are gone from the Handbook. Production lines for the Nextant G90XT and 400XTi, Piaggio Avanti Evo and Syberjet SJ30i may not be dead, but they’re in persistent vegetative states. Most manufacturers have nudged up asking prices ever so slightly. Bombardier and Dassault held over 2019 prices for 2020, as did Embraer for its super-midsize models. Textron even trimmed a little from Caravan and Grand Caravan EX prices.

Textron, however, hiked the retail price of the Citation Longitude by nearly

fruition, it will make the super-midsize segment even more competitive.

Textron also raised the price of the CJ4 by \$450,000, upped the list of the Latitude by \$700,000 and ballooned the price of the Sovereign+ by \$1 million.

Pilatus, benefiting from unsurpassed customer loyalty and strong market demand, raised the price of the PC-12 by more than \$350,000, bringing it to within \$1 million of the Beech King Air 250. Pilatus continues to own the passenger/freight combi niche of the pressurized single-engine turboprop market because of protracted delays in development of Textron’s Denali utility turboprop.

The Pilatus PC-24’s price has gone up 10%, to more than \$11 million as demand builds for the Swiss manufacturer’s first twin-turboprop light utility aircraft. Arguably, though, the PC-24 is a midsize jet because of its cabin cross-section. It’s the only midsize aircraft with a cargo door and capable of operating from unimproved runways.

This year, Bombardier’s Global 5500 and 6500 make their debuts in the *Handbook*. They’re considerably more capable than the Global 5000 and 6000, plus they’re aggressively priced to make them competitive with the Gulfstream G500 and G600. Meanwhile, the Bombardier Global 7500 now has direct competition as the Gulfstream G700 makes its first appearance in the *Handbook*.

We’ve retained the Airbus ACJ and Boeing BBJ jetliner derivatives as business aircraft because of their appeal to head-of-state and government special-mission organizations. A few of these large aircraft still are purchased by ultra-high-net-worth individuals, but their appeal to corporate operators seems to have all but dried up.

With the bears clearly beating the bulls so far this year, 2020 should be a bonanza for buyers across a wide range of models. Many aircraft manufacturers are itching for new business, in spite of their raising asking prices. They’ll be willing to take a fine pencil to sales contracts to ink deals and keep production lines open — at least for the near future.

While demand for business aircraft likely will be lackluster until 2022, or later, the intrinsic value of these business tools is becoming even clearer in the new non-normal era of disease pandemics. Demand will rebound, slowly at first, but steadily with time. As the market recovers, prices will get firmer and bargains will be fewer. This year should be the best year for buyers in more than a decade. **BCA**

TEXTRON AVIATION



Textron Aviation Hemisphere

technical and environmental hurdles can be overcome.

While the business aviation community awaits such quantum leaps in cruise performance and price tags, this year’s Purchase Planning Handbook provides performance numbers, size measurements and operational specifications for an impressive array of more conventional aircraft. They range from four-seat singles that can hop between tiny towns in Texas up to 12-passenger uber jets that can fly from Teterboro to Taipei.

\$1.4 million, making it the most-expensive super-midsize jet and only \$1.6 million less than the large-cabin Dassault Falcon 2000S. The Longitude was also the last aircraft to enter the fiercely competitive segment dominated by the Bombardier Challenger 350, the Embraer Praetors and the Gulfstream G280.

In December 2018, IAI and Gulfstream started planning for a successor to the G280, each agreeing to invest \$80 million in the new aircraft, code-named P-32, according to Globes, Israel, business news. If the project comes to

How to Use the Airplane Charts



TEXTRON AVIATION/DENALI

For an aircraft to be listed in the *Purchase Planning Handbook*, a production conforming article must have flown by May 1 of this year. The dimensions, weights and performance characteristics of each model listed are representative of the current production aircraft being built or for which a type certificate application has been filed. The basic operating weights we publish should be representative of actual production turboprop and turboprop aircraft because we ask manufacturers to supply us with the average weights of the last 10 commercial aircraft that have been delivered. However, spot checks of some manufacturers' BOW numbers reveal anomalies. We reserve the right to make adjustments to weights, dimensions and performance data. These data adjustments will be noted in the Remarks section for specific models as "BCA Estimated Data."

The takeoff field length distances are based on maximum takeoff weight for maximum range missions.

Please note that "all data preliminary" in the Remarks section indicates that actual aircraft weight, dimension and performance numbers may vary considerably after the model is certified and delivery of completed aircraft begins. All data for these aircraft is highlighted with a blue tint.

Manufacturer, Model and Type Designation

In some cases, the airplane manufacturer's name is abbreviated. The model name and the type designation also are included in this group.

BCA Equipped Price

► Price *estimates* are first quarter, current year dollars for the next available delivery. Some aircraft have long lead times, thus the actual price will be higher than our published price because of block point changes and inflation

adjustments. Note well, manufacturers may change prices without notification.

► **Piston-powered airplanes** — Computed retail price with at least the level of equipment specified in the "BCA Required Equipment List."

► **Turbine-powered airplanes** — Computed retail price with at least the level of equipment specified in the "BCA Required Equipment List," if available. Some manufacturers decline to provide us with actual prices of delivered aircraft, so we may estimate them. The aircraft serial numbers aren't necessarily consecutive because of variations in completion time and because some aircraft may be configured for non-commercial, special missions.

Characteristics

► **Seating:** Crew + Typical Executive Seating/High-Density Seating/Max Certification Seating — For example, 2+8/13/19 indicates that the aircraft requires two pilots, there are eight seats

in the typical executive configuration, 13 seats with optional high-density seating and up to 19 passenger seats based upon FAA and/or EASA certification limits. A four-place, single-engine aircraft is shown as 1+3/3, indicating that one pilot is required and there are three other seats available for passengers. We require two pilots for all turboprop airplanes, except for single-pilot certified aircraft such as the Cirrus Vision SF-50, Eclipse 550, Cessna Citation CJ series, HondaJet and Syberjet SJ30-2, which have, or will have, a large percentage of single-pilot operators. Four crewmembers are specified for ultra-long-range aircraft — three pilots and one flight attendant. However, Dassault only provides data with three crewmembers aboard for its ultra-long-range aircraft, thus the notations for the Falcon 8X.

Each occupant of a turbine-powered airplane is assumed to weigh 200 lb., thereby allowing for stowed luggage and carry-on items. In the case of piston-engine airplanes, we assume each occupant weighs 170 lb. There is no luggage allowance for piston-engine airplanes.

► **Wing Loading** — MTOW divided by total wing area.

► **Power Loading** — MTOW divided by total rated takeoff horsepower or total rated takeoff thrust.

► **FAR Part 36 Certified Noise Levels** — Flyover noise in A-weighted decibels (dBA) for small and turboprop aircraft. For turboprop-powered aircraft, we provide Part 36 EPNdB (effective perceived noise levels) for Lateral, Flyover and Approach.

Dimensions

► **External Length, Height and Span** dimensions are provided for use in determining hangar and/or tie-down space requirements.

Internal Length, Height and Width are based on a completed interior, including insulation, upholstery, carpet, carpet padding and fixtures. Note well: These dimensions are not intended to be based upon green aircraft dimensions. They must reflect the actual net dimensions with all soft goods installed. Some manufacturers provide optimistic measurements. Thus, prospective buyers are advised to measure aircraft themselves.

As shown in the Cabin Interior Dimensions illustration, for small airplanes other than “cabin-class” models, the length is measured from the forward bulkhead ahead of the rudder pedals to the back of the rear-most



BOEING

passenger seat in its normal, upright position. The upright position of the aft seat backs allows room for luggage in the cabin.

For so-called cabin-class and larger aircraft, we show two or three dimensions, depending on aircraft class. **The first** is the overall length of the passenger cabin, measured from the aft side of the forward cockpit/cabin divider to the aft-most bulkhead of the cabin. The aft-most point is defined by the rear side of a baggage compartment that is accessible to passengers in flight or the aft pressure bulkhead. The overall length is reduced by the length of any permanent mounted system or structure that is installed in the fuselage ahead of the aft bulkhead. For example, some aircraft have full fuselage cross-section fuel tanks mounted ahead of the aft pressure bulkhead.

The second length number is the net length of the cabin that routinely is occupied by passengers. It's measured from the aft side of the forward cockpit/cabin divider to an aft point defined by the rear of the cabin floor capable of supporting passenger seats, the rear wall of an aft galley or lavatory, an auxiliary pressure bulkhead or the front wall of the pressurized baggage compartment. Some aircraft have the same net and overall interior length because the manufacturer offers at least one interior configuration with the aft-most passenger seat located next to the front wall of the aft luggage compartment.

The third length dimension is the main seating area of the cabin, including all passenger seats in the standard aircraft configuration that are certified for full-time occupancy. Some manufacturers may fit their aircraft with forward, side-facing divans, ahead of areas with individual fore-aft facing chairs. The main seating length dimension may include such forward cabin side-facing divans at the discretion of

the manufacturer. The length of the lavatory, even though it may have a seat certified for full-time occupancy, may not be included in the main seating length dimension.

Interior height is measured at the center of the cabin cross-section. If the aircraft has a dropped aisle, the maximum depth below the adjacent cabin floor is shown. Some aircraft have dropped aisles of varying depths, resulting in less available interior net height in certain sections of the cabin.

Two width dimensions are shown for multiengine turbine airplanes — one at the widest part of the cabin and the other at floor level. The dimensions, however, are not completely indicative of the usable space in a specific aircraft because of individual variances in interior furnishings.

Power

Number of engines, if greater than one, and the abbreviated name of the manufacturer: GE — General Electric; GE/Honda — General Electric and Honda; Hon — Honeywell; CFMI — CFM International; IAE — International Aero Engines; Lyc — Textron Lycoming; P&WC — Pratt & Whitney Canada; RR — Rolls-Royce; Snecma; TCM — Teledyne Continental; and Wms — Williams International.

► **Output** — Takeoff rated horsepower for propeller-driven aircraft or pounds thrust for turboprop aircraft. If an engine is flat rated, enabling it to produce takeoff rated output at a higher than ISA (standard day) ambient temperature, the flat rating limit is shown as ISA+XXC. Highly flat-rated engines, i.e. engines that can produce takeoff rated thrust at a much higher than standard ambient temperature, typically provide substantially improved high density altitude, climb and high-altitude cruise performance.

► **Inspection Interval** is the longest scheduled hourly major maintenance interval for the engine, either “t” for TBO or “c” for compressor zone inspection. In some cases, we show a second number if the engine manufacturer has obtained an extended maintenance interval, provided that the engines are enrolled in the manufacturer’s service program. OC is shown only for engines that have “on condition” repair or replace parts maintenance.

Weights (lb.)

Weight categories are listed as appropriate to each class of aircraft.

► **Max Ramp** — Maximum ramp weight for taxi.

► **Max Takeoff** — Maximum takeoff weight as determined by structural limits.

► **Max Landing** — Maximum landing weight as determined by structural limits.

► **Zero Fuel** — Maximum zero fuel



TEXTRON AVIATION

weight, shown by “c,” indicating the certified MZFW, or “b,” a BCA-computed weight based on MTOW minus the weight of fuel required to fly 1.5 hr. at high-speed cruise.

► **Max ramp, max takeoff and max landing** weights may be the same for light aircraft that may only have a certified max takeoff weight.

► **EOW/BOW** — Empty Operating Weight is shown for piston-powered airplanes. EOW is based on the factory standard weight, plus items specified in the “BCA Required Equipment List,” less fuel, loose equipment and cabin stores.

Basic Operating Weight is shown for turbine-powered airplanes. BOW is based on the average EOW weight of the last 10 commercial deliveries, plus 200 lb. for each required crewmember. Three flight crewmembers and one cabin crewmember are required for ultra-long-range aircraft, unless otherwise noted.

While there is no requirement to add in the weight of cabin stores, some manufacturers choose to include galley

stores and passenger supplies as part of the BOW build-up. Life vests, life rafts and appropriate deep-water survival equipment are included in the weight buildup of the 80,000+ lb., ultra-long-range aircraft.

► **Max Payload** — Zero Fuel weight minus EOW or BOW, as appropriate. For piston-engine airplanes, Max Payload frequently is a computed value because it is based on the BCA (“b”) computed maximum ZFW.

► **Max Fuel** — Usable fuel weight based on 6.0 lb. per U.S. gallon for avgas or 6.7

lb. per U.S. gallon for jet fuel. Fuel quantity is based upon the largest capacity tanks that are available as standard equipment.

► **Available Payload With Max Fuel** — Max Ramp weight minus the tanks-full weight, not to exceed Zero Fuel weight minus EOW or BOW.

► **Available Fuel With Max Payload** — Max Ramp weight minus Zero Fuel weight, not to exceed maximum fuel capacity.

Limits

BCA lists V speeds and other limits as appropriate to the class of airplane. These are the abbreviations used on the charts:

► **VNE** — Never exceed speed (redline for piston-engine airplanes).

► **VNO** — Normal operating speed (top of the green arc for piston-engine airplanes).

► **VMO** — Maximum operating speed (redline for turbine-powered airplanes).



CESSNA AIRCRAFT

► **MMO** — Maximum operating Mach number (redline for turboprop-powered airplanes and a few turboprop airplanes).

► **FL/VMO** — Transition altitude at which VMO equals MMO (large turboprop and turboprop aircraft).

► **VA** — Maneuvering speed (except for certain large turboprop and all turboprop aircraft).

► **VDEC** — Accelerate/stop decision speed (multiengine piston and light multiengine turboprop airplanes).

► **VMCA** — Minimum control airspeed, airborne (multiengine piston and light multiengine turboprop airplanes).

► **VSO** — Maximum stalling speed, landing configuration (single-engine airplanes).

► **Vx** — Best angle-of-climb speed (single-engine airplanes).

► **VXSE** — Best angle-of-climb speed, one-engine inoperative (multiengine piston and multiengine turboprop airplanes under 12,500 lb.).

► **VY** — Best rate-of-climb speed (single-engine airplanes).

► **VYSE** — Best rate-of-climb speed, one-engine inoperative (multiengine piston and multiengine turboprop airplanes under 12,500 lb.).

► **V2** — Takeoff safety speed (large turboprops and turboprop airplanes).

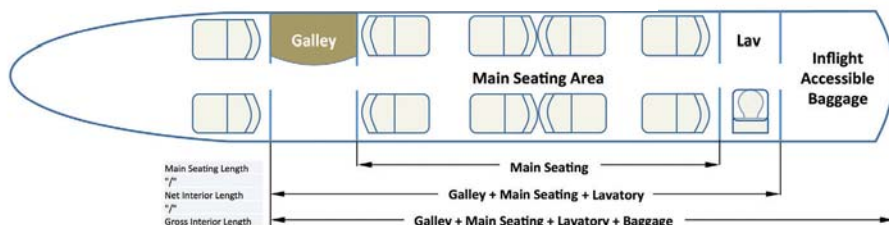
► **VREF** — Reference landing approach speed (large turboprops and turboprop airplanes, four passengers, NBAA IFR reserves; eight passengers for ultra-long-range aircraft).

► **PSI** — Cabin pressure differential (all pressurized airplanes).

Airport Performance

Airplane Flight Manual takeoff runway performance is shown for sea level, standard day and for 5,000-ft. elevation/25C day density altitude. All-engine takeoff distance (TO) is shown for single-engine and multiengine piston, and turboprop airplanes with an MTOW of less than 2,500 lb. Takeoff distances and speeds assume MTOW, unless otherwise noted.

Cabin Length



► **Accelerate/Stop distance (A/S)** is shown for small multiengine piston and small turboprop airplanes.

► **Takeoff Field Length (TOFL)**, the greater of the one-engine inoperative (OEI) takeoff distance or the accelerate/stop distance, is shown for FAR Part 23 Commuter Category and FAR Part 25 airplanes. If the accelerate/stop and accelerate/stop distances are equal, the TOFL is the balanced field length.

► **Landing distance (LD)** is shown for FAR Part 23 Commuter Category and FAR Part 25 Transport Category airplanes. The landing weight is BOW plus four passengers and NBAA IFR fuel reserves. We assume that 80,000+ lb. ultra-long-range aircraft will have eight passengers on board.

► **V2 and VREF** speeds are useful for reference when comparing the TOFL and LD numbers because they provide an indication of potential minimum-length runway performance when low RCR or runway gradient is a factor.

BCA lists two additional warm day airport performance numbers for large turboprop- and turbofan-powered airplanes. First, we publish the Mission Weight, which is the maximum allowable takeoff weight when departing a 5,000-ft. elevation/ISA+20C airport with at least four passengers aboard.

Mission Weight, when departing from a 5,000-ft./ISA+20C airport, may be less than the MTOW at sea level on a standard day because of FAR Part 25 second-segment, one-engine-inoperative, climb performance requirements. If maximum allowable mission weight at takeoff is restricted under said conditions, it's flagged with a "p." Aircraft with highly flat-rated engines are less likely to have a performance limited mission weight when departing under said warm day conditions.

Second, we publish the NBAA IFR range for said warm-day conditions, assuming a transition into standard-day, ISA flight conditions after takeoff. For purposes of computing NBAA IFR range, the aircraft is flown at the

long-range cruise speed shown in the "Cruise" block or at the same speed as shown in the "Range" block. Notably, some aircraft may actually have slightly better range performance when departing from said warm day airports because they have a 5,000-ft. head start on the climb to cruise altitude.

Climb

The all-engine time to climb provides an indication of overall climb performance, especially if the aircraft has an all-engine service ceiling well above our sample time-to-climb altitudes. We provide the all-engine time to climb to one of three specific altitudes, based on type of aircraft departing at MTOW from a sea-level, standard-day airport: (1) FL 100 (10,000 ft.) for normally aspirated single-engine and multiengine piston aircraft, plus pressurized single-engine piston aircraft and unpressurized turboprop aircraft; (2) FL 250 for pressurized single-engine and multiengine turboprop aircraft; or (3) FL 370 for turbofan-powered aircraft. These data are published as time-to-climb in minutes/climb altitude. For example, if a non-pressurized twin-engine piston

aircraft can depart from a sea-level airport at MTOW and climb to 10,000 ft. in 8 min., the time to climb is expressed as 8/FL 100.

We also publish the initial all-engine climb feet per nautical mile gradient, plus initial engine-out climb rate and gradient, for single-engine and multiengine pistons and turboprops with MTOWs of 12,500 lb. or less.

The one-engine-inoperative (OEI) climb rate for multiengine aircraft at MTOW is derived from the Airplane Flight Manual. OEI climb rate and gradient are based on landing gear retracted and wing flaps in the takeoff configuration used to compute the published takeoff distance. The climb gradient for such airplanes is obtained by dividing the product of the climb rate (fpm) in the Airplane Flight Manual times 60 by the VY or VYSE climb speed, as appropriate.

The OEI climb gradients we show for FAR Part 23 Commuter Category and FAR Part 25 Transport Category aircraft are the second-segment net climb performance numbers published in the AFMs. Please note: The AFM net second-segment climb performance numbers are adjusted downward by 0.8% to compensate for variations in pilot technique and ambient conditions.

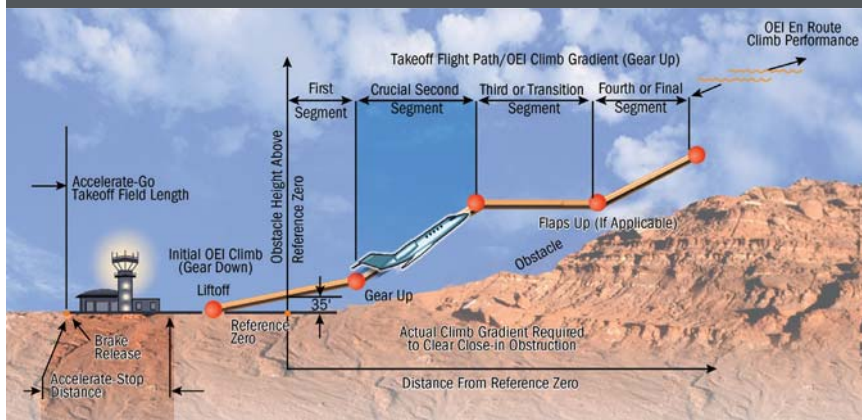
The OEI climb gradient is computed at the same flap configuration used to calculate the takeoff field length.

Ceilings (ft.)

► **Maximum Certificated Altitude** – Maximum allowable operating altitude determined by airworthiness authorities.

► **All-Engine Service Ceiling** – For

FAR Part 25 and Part 23 Commuter Category OEI Climb Performance



turboprop aircraft: maximum altitude at which at least a 300-fpm rate of climb can be attained, assuming the aircraft departed a sea-level, standard-day airport at MTOW and climbed directly to altitude. For piston and turboprop aircraft: 100 fpm rate of climb.

► **Sea-Level Cabin (SLC) Altitude** — Maximum cruise altitude at which a 14.7-psia, sea-level cabin altitude can be maintained in a pressurized airplane.

Cruise

Cruise performance is computed using EOW with four occupants or BOW with four passengers and one-half fuel load. Ultra-long-range aircraft carry eight passengers for purposes of computing cruise performance.

Assume 170 lb. for each occupant of a piston-engine airplane and 200 lb. for each occupant of a turbine-powered aircraft.

► **Long Range** — True airspeed (TAS), fuel flow in pounds/hour, flight level (FL) cruise altitude and specific range for long-range cruise specified by the manufacturer.

► **Recommended (Piston-Engine Airplanes)** — TAS, fuel flow in pounds/hour, FL cruise altitude and specific range for normal cruise performance specified by the manufacturer.

► **High Speed** — TAS, fuel flow in pounds/hour, FL cruise altitude and specific range for short-range, high-speed performance specified by the aircraft manufacturer.

Speed, fuel flow, specific range and altitude in each category are based on one mid-weight cruise point and these data reflect standard-day conditions. They are not an average for the overall mission and they are not representative of the above standard-day temperatures at cruise altitudes commonly encountered in everyday operations.

BCA imposes a 12,000-ft. maximum cabin altitude requirement on CAR3/FAR Part 23 normally aspirated aircraft. Non-pressurized turbocharged piston-engine airplanes are limited to FL 250, providing they are fitted with supplemental oxygen systems having sufficient capacity for all occupants for the entire duration of the mission. Pressurized CAR3/FAR Part 23 aircraft are limited to a maximum cabin altitude of 10,000 ft. For FAR Part 23 Commuter Category and FAR Part 25 aircraft, the maximum cabin altitude for computing cruise performance is 8,000 ft.

To conserve space, we use flight levels

(FL) for all cruise altitudes, which is appropriate considering that we assume standard-day ambient temperature and pressure conditions. Cruise performance is subject to BCA's verification.

Range

BCA shows various paper missions for each aircraft that illustrate range versus payload trade-offs, runway and cruise performance, plus fuel efficiency. Similar to the cruise profile calculations, BCA limits the maximum altitude to 12,000 ft. for normally aspirated, non-pressurized CAR3/FAR Part 23 aircraft, 25,000 ft. for turbocharged



TEXTRON AVIATION

non-pressurized airplanes with supplemental oxygen, 10,000-ft. cabin altitude for pressurized CAR 3/FAR Part 23 airplanes and 8,000-ft. cabin altitude for FAR Part 23 Commuter Category or FAR Part 25 aircraft.

► **Seats-Full Range (Single-Engine Piston Airplanes)** — Based on typical executive configuration with all seats filled with 170-lb. occupants, with maximum available fuel less 45-min. IFR fuel reserves.

We use the lower of seats full or maximum payload.

► **Tanks-Full Range (Single-Engine Piston Airplanes)** — Based on one 170-lb. pilot, full fuel less 45-min. IFR fuel reserves.

► **Max Fuel With Available Payload (Single-Engine Turboprops)** — Based on BOW, plus full fuel and the maximum available payload up to maximum ramp weight. Range is based on arriving at destination with NBAA IFR fuel reserves, but only a 100-mi. alternate is required.

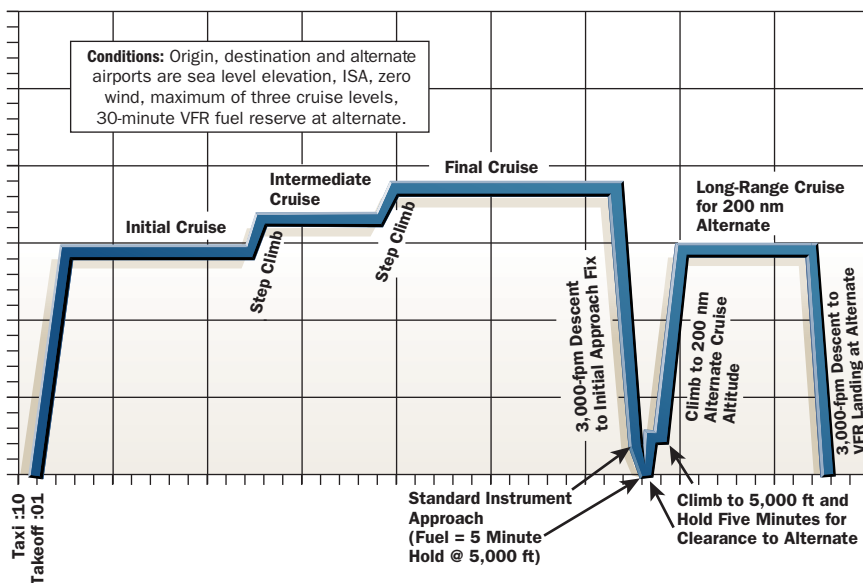
► **Ferry (Multiengine Piston Airplanes and Single-Engine Turboprops)** — Based on one 170-lb. pilot, maximum fuel less 45-min. IFR fuel reserves.

Please note: None of the missions for piston-engine aircraft includes fuel for diverting to an alternate. However, single-engine turboprops are required to have NBAA IFR fuel reserves, but only a 100-mi. alternate is required.

NBAA IFR range format cruise profiles, having a 200-mi. alternate, are used for turbine-powered aircraft with MTOWs equal to, or greater than, 22,000 lb. Turbine aircraft having MTOWs less than 22,000 lb. only need a 100-mi. NBAA alternate. The difference in alternate requirements should be kept in mind when comparing range performance of various classes of aircraft.

► **Available Fuel With Max Payload (Multiengine Turbine Airplanes)** — Based on aircraft loaded to maximum zero fuel weight with maximum available fuel up to maximum ramp weight, less NBAA

NBAA IFR RANGE PROFILE





PILATUS AIRCRAFT

IFR fuel reserves at destination.

► **Available Payload With Max Fuel (Multiengine Turbine Airplanes)** — Based on BOW plus full fuel and maximum available payload up to maximum ramp weight. Range based on NBAA IFR reserves at destination.

► **Full/Max Fuel With Four Passengers (Multiengine Turbine Airplanes)** — Based on BOW plus four 200-lb. passengers and the lesser of full fuel or maximum available fuel up to maximum ramp weight. Ultra-long-range aircraft must have eight passengers on board.

► **Ferry (Multiengine Turbine Airplanes)**

— Based on BOW, required crew and full fuel, arriving at destination with NBAA IFR fuel reserves.

We allow 2,000-ft. increment step climbs above the initial cruise altitude to improve specific range performance, even though current

air traffic rules in North America provide for 4,000-ft. altitude semicircular directional traffic separation above FL 290. The altitude shown in the range section is the highest cruise altitude for the trip — not the initial cruise or mid-mission altitude.

The range profiles are presented in nautical miles, and the average speed is computed by dividing that distance by the total flight time or weight-off-wheels time en route. The Fuel Used or Trip Fuel includes the fuel consumed for start, taxi, takeoff, cruise, descent and landing approach but not

after-landing taxi or reserves.

The Specific Range is obtained by dividing the distance flown by the total fuel burn. The Altitude is the highest cruise altitude achieved on the specific mission profile shown.

Missions

Various paper missions are computed to illustrate the runway requirements, speeds, fuel burns and specific range, plus cruise altitudes. The mission ranges are chosen to be representative for the airplane category. All fixed-distance missions are flown with four passengers on board, except for ultra-long-range airplanes, which have eight passengers on board. The pilot is counted as a passenger on board piston-engine airplanes. If an airplane cannot complete a specific fixed distance mission with the appropriate payload, *BCA* shows a reduction of payload in the remarks section or marks the fields NP (Not Possible) at our option.

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AVIATION WEEK
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BCA Required Equipment List

	Jets ≥20,000 lb.									
	Jets <20,000 lb.									
	Turboprops >12,500 lb.									
	Turboprops ≤12,500 lb.									
	Single-Engine Turboprops									
	Multiengine Pistons, Turbocharged									
	Multiengine Pistons									
	Single-Engine Pistons, Pressurized									
	Single-Engine Pistons, Turbocharged									
	Single-Engine Pistons									
POWERPLANT SYSTEMS										
Batt temp indicator (nicad only, for each battery)							●	●	●	●
Engine synchronization									●	●
Fire detection, each engine							●	●	●	●
Fire extinguishing, each engine							●	●	●	●
Propeller, reversible pitch							●	●	●	
Propellers, synchronization								●	●	
Thrust reversers									●	●
AVIONICS										
ADF receiver (non U.S. deliveries)							●	●	●	●
Altitude alerter							●	●	●	●
Altitude encoder	●	●	●	●	●		●	●	●	●
Audio control panel	●	●	●	●	●		●	●	●	●
Automatic flight guidance, 2-axis, alt hold	●	●	●	●						
Automatic flight guidance, 3-axis, alt hold					●	●	●	●	●	●
Digital air data computer							●	●	●	●
DME or approved GPS distance indication	●	●	●	●	●		●	●	●	●
EFIS/large-format flat-panel displays	●	●	●	●	●		●	●	●	●
ELT	●	●	●	●	●		●	●	●	●
FMS (TSO C115) or GPS (TSO C129/145/146)	●	●	●	●	●		●	●	●	●
Marker beacon receiver	●	●	●	●	●		●	●	●	●
Radio altimeter							●	●	●	●
RVSM certification							●	●	●	●
Satcom, Iridium, or Inmarsat									●	●
TAS or TCAS I							●	●	●	
TAWS							●	●	●	●
TCAS I/II									●	●
Transponder, Mode S 1090ES	●	●	●	●	●		●	●	●	●
VHF comm transceiver, 25-KHz spacing	●	●	●	●	●		●	●	●	
VHF comm transceiver, 8.33-kHz spacing									●	●
VOR/ILS	●	●	●	●	●		●	●	●	●
Weather data link										
Weather radar							●	●	●	●
GENERAL										
Air conditioning, vapor cycle (not required with APU)				●			●	●	●	●
Anti-skid brakes (not required MTOW <10,000 lb.)									●	●
APU (required for air-start engines, ACM air conditioning)										●
Cabin/cockpit bulkhead divider									●	●
Corrosion-proofing	●	●	●	●	●		●	●	●	●
Exterior paint, tinted windows	●	●	●	●	●		●	●	●	●
Fire extinguisher, cabin							●	●	●	●
Fire extinguisher, cockpit	●	●	●	●	●		●	●	●	●
Fuel tanks, long-range	●	●	●	●	●		●	●	●	●
Ground power jack	●	●	●	●	●		●	●	●	●
Headrests, air vents at all seats	●	●	●	●	●		●	●	●	●
Lavatory									●	●
Lights, external — nav/beacon/strobe/landing/taxi	●	●	●	●	●		●	●	●	●
Lights, internally illuminated instrument/cockpit flood	●	●	●	●	●		●	●	●	●
Oxygen, supplemental — all seats		●			●		●	●	●	●
Refreshment center								●	●	●
Seats, crew, articulating	●	●	●	●	●		●	●	●	●
Seats, passenger, reclining	●	●	●	●	●		●	●	●	●
Shoulder harness, all seats/crew with inertial reel	●	●	●	●	●		●	●	●	●
Tables, cabin work							●	●	●	●
ICE AND RAIN PROTECTION										
Alternate static pressure source (not required with dual DADC)	●	●	●	●	●		●			
Flight Into Known Icing (FIKI) approval			●	●	●		●	●	●	●
Ice protection plates								●	●	
Pitot heat	●	●	●	●	●		●	●	●	●
Windshield rain removal, mechanical/pneumatic/hygroscopic								●	●	●
INSTRUMENTATION										
Angle-of-attack stall margin indicator									●	●
EGT	●	●	●	●	●					
IVSI (or equivalent DADC function)	●	●	●	●	●		●	●	●	●
OAT	●	●	●	●	●		●	●	●	●
Primary flight instruments	●	●	●	●	●		●	●	●	●
● Required										
● Dual Required										

● Required
● Dual Required

Runway performance is obtained from the Approved Airplane Flight Manual. Takeoff distance is listed for single-engine airplanes; accelerate/stop distance is listed for piston twins and light turboprops; and takeoff field length, which often corresponds to balanced field length, is used for FAR Part 23 Commuter Category and FAR Part 25 large Transport Category airplanes.

Flight Time (takeoff to touchdown, or weight-off-wheels, time) is shown for turbine airplanes. Some piston-engine manufacturers also include taxi time, resulting in a chock-to-chock, Block Time measurement. Fuel Used, though, is the actual block fuel burn for each type of aircraft, but it does not include fuel reserves. The cruise altitude shown is that which is specified by the manufacturer for fixed-distance missions.

- ▶ **200 nm** — (Piston-engine airplanes).
- ▶ **500 nm** — (Piston-engine airplanes).
- ▶ **300 nm** — (Turbine-engine airplanes, except ultra-long-range).
- ▶ **600 nm** — (Turbine-engine airplanes, except ultra-long-range).
- ▶ **1,000 nm** — (All turbine-engine airplanes).
- ▶ **3,000 nm** — (Ultra-long-range turbine-engine airplanes).
- ▶ **6,000 nm** — (Ultra-long-range turbine-engine airplanes).

Remarks

In this section, *BCA* generally includes the base price, if it is available or applicable; the certification basis and year; and any notes about estimations, limitations or qualifications regarding specifications, performance or price. All prices are in 2017 dollars, FOB at a U.S. delivery point, unless otherwise noted. The certification basis includes the regulation under which the airplane was originally type certified, the year in which it was originally certified and, if applicable, subsequent years during which the airplane was re-certified. “*BCA Estimated Data*” indicates that we made adjustments to data provided by manufacturers.

General

The following abbreviations are used throughout the tables: “**NA**” means not available; “—” indicates the information is not applicable; and “**NP**” signifies that specific performance is not possible. **BCA**

SINGLE-ENGINE PISTONS NORMALLY ASPIRATED

Manufacturer			Cirrus Design	Piper Aircraft	Textron Aviation	
Model			SR20	Arrow PA-28R-201	Cessna Skylane CE-182T	
BCA Equipped Price			\$474,900	\$515,087	\$530,000	
Character-istics		Seating	1+3/4	1+3/3	1+3/3	
		Wing Loading	21.7	16.2	17.8	
		Power Loading	14.65	13.75	13.48	
		Noise (dBA)	83.4	77.7	77.7	
External Dimensions (ft.)		Length	26.0	24.7	29.0	
		Height	8.9	7.9	9.3	
		Span	38.3	35.4	36.0	
Internal Dimensions (ft.)		Length	8.0	7.7	7.2	
		Height	4.1	3.7	4.0	
		Width	4.1	3.5	3.5	
Power		Engine	Lyc IO-390-C3B6	Lyc IO-360-C1C6	Lyc IO-540-AB1A5	
		Output (hp)	215	200	230	
		Inspection Interval	2,000t	2,000t	2,000t	
Weights (lb.)		Max Ramp	3,160	2,758	3,110	
		Max Takeoff	3,150	2,750	3,100	
		Max Landing	3,150	2,750	2,950	
		Zero Fuel	3,043b	2,636b	2,986b	
		EOW	2,120	1,798	2,000	
		Max Payload	923	838	986	
		Useful Load	1,040	960	1,110	
		Max Baggage	130	200	200	
		Max Fuel	336	432	522	
		Available Payload w/Max Fuel	704	528	588	
Available Fuel w/Max Payload	117	122	124			
Limits		V _{NE}	201	183	175	
		V _{NO}	164	146	140	
		V _A	133	118	110	
Airport Performance		TO (SL elev./ISA temp.)	2,530	1,600	1,514	
		TO (5,000-ft. elev.@25C)	4,305	3,250	2,708	
		V _{SO}	62	55	49	
		V _X	81	78	65	
		V _Y	88	90	80	
Climb		Time to Climb (min.)/Altitude	20/FL 100	16/FL 100	15/FL 100	
		Initial Gradient (ft./nm)	540	560	694	
Ceiling (ft.)		Service	17,500	16,200	18,100	
Cruise	Long Range	TAS	135	124	125	
		Fuel Flow	53	51	61	
		Altitude	FL 080	FL 100	FL 100	
		Specific Range	2.547	2.431	2.049	
	Recommended	TAS	145	130	135	
		Fuel Flow	61	68	69	
		Altitude	FL 080	FL 090	FL 100	
		Specific Range	2.377	1.912	1.957	
	High Speed	TAS	152	137	144	
		Fuel Flow	71	76	76	
		Altitude	FL 080	FL 060	FL 060	
		Specific Range	2.141	1.803	1.895	
Ranges	Seats Full	Nautical Miles	672	537	723	
		Average Speed	135	121	130	
		Fuel Used	275	256	379	
		Specific Range/Altitude	2.444/FL 080	2.098/FL 070	1.908/FL 120	
	Tanks Full	Nautical Miles	672	926	912	
		Average Speed	135	121	131	
		Fuel Used	275	408	471	
		Specific Range/Altitude	2.444/FL 080	2.270/FL 070	1.936/FL 120	
Missions (4 occupants)	200 nm	Runway	1,685	1,600	1,249	
		Block Time	1+26	1+29	1+37	
		Fuel Used	112	125	123	
		Specific Range/Altitude	1.786/FL 080	1.600/FL 070	1.626/FL 120	
	500 nm	Runway	1,685	1,600	1,402	
		Block Time	3+30	3+50	3+52	
		Fuel Used	245	278	269	
		Specific Range/Altitude	2.041/FL 080	1.799/FL 090	1.859/FL 0120	
		Suggested Base Price		\$474,900	\$490,298	\$515,000
		Remarks	Certification Basis	FAR 23, 2000 Includes Garmin Perspective+ avionics.	CAR 3, 1976/2001 Garmin G500 TXi standard.	FAR 23, 1996/2001 A 23-6 Garmin G1000 NXi with GFC 700 autopilot.

SINGLE-ENGINE PISTONS NORMALLY ASPIRATED

Manufacturer		Cirrus Design	Textron Aviation	GippsAero
Model		SR22	Beechcraft Bonanza G36 G36	Airvan GA-8
BCA Equipped Price		\$654,900	\$919,000	\$939,632
Characteristics	Seating	1+3/4	1+4/5	1+6/7
	Wing Loading	23.5	20.2	20.7
	Power Loading	11.61	12.17	13.33
	Noise (dBA)	83.7	76.7	84.9
External Dimensions (ft.)	Length	26.0	27.5	29.3
	Height	8.9	8.6	12.8
	Span	38.3	33.5	40.7
Internal Dimensions (ft.)	Length	8.0	12.6	11.6
	Height	4.1	4.2	3.7
	Width	4.1	3.5	4.2
Power	Engine	Cont 10-550-N	Cont 10-550-B	Lyc 10-540-K1A5
	Output (hp)	310	300	300
	Inspection Interval	2,000t	1,900t	2,000t
Weights (lb.)	Max Ramp	3,610	3,663	4,014
	Max Takeoff	3,600	3,650	4,000
	Max Landing	3,600	3,650	4,000
	Zero Fuel	3,400c	3,510b	3,849b
	EOW	2,260	2,590	2,241
	Max Payload	1,140	920	1,608
	Useful Load	1,350	1,073	1,773
	Max Baggage	130	670	180
	Max Fuel	552	444	540
	Available Payload w/Max Fuel	798	629	1,233
Limits	V _{NE}	205	203	185
	V _{NO}	176	165	143
	V _A	140	139	121
Airport Performance	TO (SL elev./ISA temp.)	1,756	1,913	1,860
	TO (5,000-ft. elev.@25C)	3,016	3,450	3,670
	V _{SO}	64	59	57
	V _X	88	84	70
	V _Y	108	100	86
Climb	Time to Climb (min.)/Altitude	11/FL 100	14/FL 100	15/FL 100
	Initial Gradient (ft./nm)	775	730	787
Ceiling (ft.)	Service	17,500	18,500	20,000
Cruise	Long Range	TAS	160	127
		Fuel Flow	68	78
		Altitude	FL 080	FL 120
		Specific Range	2.353	1.628
	Recommended	TAS	171	135
		Fuel Flow	92	88
		Altitude	FL 080	FL 080
		Specific Range	1.859	1.534
	High Speed	TAS	180	142
		Fuel Flow	107	101
		Altitude	FL 080	FL 060
		Specific Range	1.682	1.406
Ranges	Seats Full	Nautical Miles	1,118	487
		Average Speed	162	124
		Fuel Used	492	339
		Specific Range/Altitude	2.272/FL 080	1.437/FL 120
	Tanks Full	Nautical Miles	1,118	690
		Average Speed	162	125
		Fuel Used	492	464
		Specific Range/Altitude	2.272/FL 080	1.487/FL 120
Missions (4 occupants)	200 nm	Runway	1,303	1,860
		Block Time	1+09	1+38
		Fuel Used	127	157
		Specific Range/Altitude	1.575/FL 080	1.274/FL 120
	500 nm	Runway	1,519	1,860
		Block Time	2+49	3+55
		Fuel Used	305	339
		Specific Range/Altitude	1.639/FL 080	1.475/FL 120
	Suggested Base Price		\$654,900	\$798,256
Remarks		FAR 23, 2000 Includes Garmin Perspective+ avionics.	CAR 3, 1956/69/83/2005 A/C system standard; Garmin G1000 NXi.	FAR 23 A 54 Includes Garmin G500. All data preliminary.

SINGLE-ENGINE PISTONS TURBOCHARGED

Manufacturer			Textron Aviation		Cirrus Design		GippsAero			
Model			Cessna Turbo Stationair HD CE-T206H		SR22T		GA8 Airvan TC GA8-TC320			
BCA Equipped Price			\$735,000		\$754,900		\$977,856			
Characteristics		Seating	1+5/5		1+3/4		1+6/7			
		Wing Loading	21.8		23.5		20.7			
		Power Loading	12.22		11.43		13.13			
		Noise (dBA)	82.6		80.3		85.4			
External Dimensions (ft.)		Length	28.3		26.0		28.3			
		Height	9.3		8.9		9.3			
		Span	36.0		38.3		36.0			
Internal Dimensions (ft.)		Length	9.3		8.0		11.6			
		Height	4.1		4.1		3.7			
		Width	3.7		4.1		4.2			
Power		Engine	Lyc TIO-540-AJ1A		Cont TSIO-550-K		Lyc TIO-540-AH1A			
		Output (hp)	310		315		320			
		Inspection Interval	2,000t		2,000t		1,800t			
Weights (lb.)		Max Ramp	3,806		3,610		4,214			
		Max Takeoff	3,789		3,600		4,200			
		Max Landing	3,600		3,600		4,000			
		Zero Fuel	3,615b		3,400c		4,053b			
		EOW	2,365		2,342		2,349			
		Max Payload	1,250		1,058		1,704			
		Useful Load	1,441		1,268		1,865			
		Max Baggage	180		130		180			
		Max Fuel	522		552		540			
		Available Payload w/Max Fuel	919		716		1,325			
Limits		Available Fuel w/Max Payload	191		210		161			
		Vne	182		205		185			
		Vno	149		176		143			
		Va	125		140		121			
Airport Performance		TO (SL elev./ISA Temp.)	1,970		1,517		1,840			
		TO (5,000-ft. elev.@25C)	2,845		2,268		2,788			
		Vso	59		64		61			
		Vx	70		88		71			
		Vr	88		103		81			
Climb		Time to Climb (min.)/Altitude	12/FL 100		7/FL 100		13/FL 100			
		Initial Gradient (ft./nm)	724		782		825			
Ceilings (ft.)		Certificated	26,000		25,000		20,000			
		Service	26,000		25,000		20,000			
Cruise	Long Range	TAS	137		171		125			
		Fuel Flow	85		76		68			
		Altitude	FL 240		FL 250		FL 200			
		Specific Range	1.612		2.250		1.838			
	Recommended	TAS	155		201		130			
		Fuel Flow	99		98		78			
		Altitude	FL 240		FL 250		FL 200			
		Specific Range	1.574		2.051		1.667			
	High Speed	TAS	164		213		135			
		Fuel Flow	116		110		98			
Altitude		FL 200		FL 250		FL 200				
Specific Range		1.410		1.936		1.378				
Ranges	Seats Full	Nautical Miles	465		1,021		233			
		Average Speed	137		171		125			
		Fuel Used	358		486		220			
		Specific Range/Altitude	1.299/FL 200		2.101/FL 250		1.059/FL 200			
	Tanks Full	Nautical Miles	608		1,021		618			
		Average Speed	138		171		125			
		Fuel Used	430		486		459			
Missions (4 occupants)	200 nm	Specific Range/Altitude	1.414/FL 240		2.101/FL 250		1.346/FL 200			
		Runway	1,420		1,405		1,743			
		Block Time	1+23		1+08		1+35			
		Fuel Used	163		197		125			
	500 nm	Specific Range/Altitude	1.227/FL 150		1.015/FL 100		1.600/FL 120			
		Runway	1,626		1,699		1,743			
		Block Time	3+22		2+28		3+30			
		Fuel Used	386		360		373			
	Remarks		Suggested Base Price		\$714,000		\$754,900		\$837,133	
			Certification Basis	FAR 23, 1998 Utility version with 2,212-lb. EOW available for \$707,650.		FAR 23, 2010 Includes Garmin Perspective+ avionics.		FAR 23, 1998 Garmin G500; KC 225. All data preliminary.		

SINGLE-ENGINE PISTONS PRESSURIZED

Manufacturer			Piper Aircraft
Model			M350 PA-46-350P
BCA Equipped Price			\$1,478,000
Characteristics		Seating	1+4/5
		Wing Loading	24.8
		Power Loading	12.40
		Noise (dBA)	81.0
External Dimensions (ft.)		Length	28.9
		Height	11.3
		Span	43.0
Internal Dimensions (ft.)		Length	12.4
		Height	3.9
		Width	4.2
Power		Engine	Lyc TIO-540-AE2A
		Output (hp)	350
		Inspection Interval	2,000t
Weights (lb.)		Max Ramp	4,358
		Max Takeoff	4,340
		Max Landing	4,123
		Zero Fuel	4,123c
		EOW	3,146
		Max Payload	977
		Useful Load	1,212
		Max Baggage	200
		Max Fuel	720
		Available Payload w/ Max Fuel	492
Available Fuel w/ Max Payload	235		
Limits		V _{NE}	198
		V _{VO}	168
		V _A	133
		PSI	5.5
Airport Performance		TO (SL elev./ISA temp.)	2,090
		TO (5,000-ft. elev.@25C)	2,977
		V _{SO}	58
		V _X	81
		V _Y	110
Climb		Time to Climb (min.)/Altitude	8/FL 100
		Initial Gradient (ft./nm)	703
Ceilings (ft.)		Certificated	25,000
		Service	25,000
		Sea-Level Cabin	12,300
Cruise	Long Range	TAS	156
		Fuel Flow	66
		Altitude	FL 250
		Specific Range	2.364
	Recommended	TAS	203
		Fuel Flow	108
		Altitude	FL 250
		Specific Range	1.880
	High Speed	TAS	213
		Fuel Flow	120
		Altitude	FL 250
		Specific Range	1.775
Ranges	Seats Full	Nautical Miles	535
		Average Speed	138
		Fuel Used	312
	Tanks Full	Specific Range/Altitude	1.715/FL 120
		Nautical Miles	1,343
		Average Speed	159
Missions (4 occupants)	200 nm	Fuel Used	670
		Specific Range/Altitude	2.004/FL 250
		Runway	2,090
		Block Time	1+06
	500 nm	Fuel Used	167
		Specific Range/Altitude	1.198/FL 200
		Runway	2,090
		Block Time	2+31
		Fuel Used	350
		Specific Range/Altitude	1.429/FL 250
Suggested Base Price		\$1,195,000	
Remarks		FAR 23, 1983/88 Garmin G1000 NXi; FIKI optional.	
		Certification Basis	

MULTIENGINE PISTONS NORMALLY ASPIRATED

Manufacturer		Vulcanair SpA	Vulcanair SpA	Textron Aviation
Model		P.68C P 68C	Victor P 68R	Beech Baron G58 G58
BCA Equipped Price		\$1,001,600	\$1,179,058*	\$1,491,000
Characteristics	Seating	1+5/6	1+5/6	1+4/5
	Wing Loading	22.9	22.7	27.6
	Power Loading	11.49	11.37	9.17
	Noise (dBA)	74.7	78.8	77.6
External Dimensions (ft.)	Length	31.3	31.3	29.8
	Height	11.2	11.2	9.8
	Span	39.4	39.4	37.8
Internal Dimensions (ft.)	Length	10.6	10.6	12.6
	Height	3.9	3.9	4.2
	Width	3.8	3.8	3.5
Power	Engines	2 Lyc IO-360-A1B6	2 Lyc IO-360-A1B6	2 Cont IO-550-C
	Output (hp each)	200	200	300
	Inspection Interval	2,000t	2,000t	1,900t
Weights (lb.)	Max Ramp	4,630	4,548	5,524
	Max Takeoff	4,594	4,548	5,500
	Max Landing	4,365	4,321	5,400
	Zero Fuel	4,167c	4,374b	5,210b
	EOW	3,153	3,197	3,965
	Max Payload	1,014	1,177	1,245
	Useful Load	1,477	1,351	1,559
	Max Fuel	1,063	1,063	1,164
	Available Payload w/Max Fuel	415	289	395
	Available Fuel w/Max Payload	463	174	314
Limits	V _{NE}	194	197	223
	V _{NO}	154	157	195
	V _A	132	127	156
	TO (SL elev./ISA Temp.)	1,312	1,260	2,345
Airport Performance	TO (5,000-ft. elev.@25C)	4,000	4,000	4,144
	A/S (SL elev./ISA)	2,150	1,410	3,009
	A/S (5,000-ft. elev.@25C)	2,950	2,370	4,335
	V _{MC} A	60	60	84
	V _{SEC}	70	70	85
	V _{XSE}	82	82	100
	V _{YSE}	88	88	101
	Time to Climb (min.)/Altitude	12/FL 100	12/FL 100	10/FL 100
Climb	Initial Engine-Out Rate (fpm)	217	217	390
	Initial All-Engine Gradient (ft./nm)	1,100	920	988
	Initial Engine-Out Gradient (ft./nm)	147	147	232
Ceilings (ft.)	Certified	—	—	—
	All-Engine Service	18,000	20,000	20,688
	Engine-Out Service	5,000	5,650	7,284
	TAS	144	144	185
Cruise	Long Range	Fuel Flow	94	144
		Altitude	FL 080	FL 080
		Specific Range	1.532	1.285
	Recommended	TAS	155	192
		Fuel Flow	108	174
		Altitude	FL 080	FL 080
		Specific Range	1.435	1.103
	High Speed	TAS	162	200
		Fuel Flow	116	193
		Altitude	FL 080	FL 080
		Specific Range	1.397	1.035
Ranges	Max Payload	Nautical Miles	300	250
		Average Speed	140	174
		Trip Fuel	315	231
		Specific Range/Altitude	0.952/FL 080	1.082/FL 040
	Ferry	Nautical Miles	1,000	1,480
		Average Speed	145	180
		Trip Fuel	975	1,081
		Specific Range/Altitude	1.026/FL 080	1.369/FL 120
Missions (4 occupants)	200 nm	Runway	1,450	2,861
		Block Time	1+28	1+02
		Fuel Used	140	226
		Specific Range/Altitude	1.429/FL 080	0.885/FL 060
	500 nm	Runway	1,500	2,940
		Block Time	3+25	2+31
		Fuel Used	375	531
		Specific Range/Altitude	1.333/FL 080	0.942/FL 060
	Suggested Base Price		\$1,001,600	\$1,160,490
Remarks	Certification Basis		FAR 23, 1976/80 Garmin G1000 NXi with GFC autopilot.	EASA 23, 2009 Garmin G1000 NXi. *BCA estimate.
				CAR 3, 1957/69/ 83/2005 A/C system standard; Garmin G1000 NXi; max payload mission flown with six occupants.

MULTIENGINE PISTONS TURBOCHARGED

Manufacturer			Vulcanair SpA	Piper Aircraft
Model			P 68C-TC	Seneca V PA-34-220T
BCA Equipped Price			\$1,063,200	\$1,273,200
Characteristics		Seating	1+5/5	1+4/5
		Wing Loading	20.7	22.8
		Power Loading	10.94	10.80
		Noise (dBA)	74.7	75.6
External Dimensions (ft.)		Length	31.3	28.6
		Height	11.2	9.9
		Span	39.4	38.9
Internal Dimensions (ft.)		Length	10.6	10.4
		Height	3.9	3.6
		Width	3.8	4.1
Power		Engines	2 Lyc TIO-360-C1A6D	2 Cont TSIO-360-RB
		Output (hp each)	210	220
		Inspection Interval	2,000t	1,800t
Weights (lb.)		Max Ramp	4,630	4,773
		Max Takeoff	4,594	4,750
		Max Landing	4,365	4,513
		Zero Fuel	4,140b	4,479c
		EOW	3,197	3,491
		Max Payload	943	988
		Useful Load	1,433	1,282
		Max Fuel	1,062	732
		Available Payload w/Max Fuel	371	550
		Available Fuel w/Max Payload	490	294
Limits		V _{NE}	194	204
		V _{NO}	154	164
		V _A	132	139
Airport Performance		T ₀ (SL elev./ISA temp.)	1,260	1,707
		T ₀ (5,000-ft. elev.@25C)	2,200	2,435
		A/S (SL elev./ISA)	1,800	2,510
		A/S (5,000-ft. elev.@25C)	2,400	3,117
		V _{MCX}	66	66
		V _{OC}	NA	73
		V _{XSE}	78	83
		V _{YSE}	88	88
Climb		Time to Climb (min.)/Altitude	10/FL 100	7/FL 100
		Initial Engine-Out Rate (fpm)	240	253
		Initial All-Engine Gradient (ft./nm)	1,400	996
		Initial Engine-Out Gradient (ft./nm)	NA	173
Ceilings (ft.)		Certificated	20,000	25,000
		All-Engine Service	20,000	25,000
		Engine-Out Service	10,000	16,500
Cruise	Long Range	TAS	144	167
		Fuel Flow	104	108
		Altitude	FL 080	FL 230
		Specific Range	1.385	1.546
	Recommended	TAS	155	196
		Fuel Flow	125	144
		Altitude	FL 080	FL 250
		Specific Range	1.240	1.361
	High Speed	TAS	162	200
		Fuel Flow	150	156
		Altitude	FL 080	FL 230
		Specific Range	1.080	1.282
Range	Ferry	Nautical Miles	1,100	866
		Average Speed	145	160
		Trip Fuel	960	648
		Specific Range/Altitude	1.146/FL 080	1.336/FL 180
Missions (4 occupants)	200 nm	Runway	NA	1,520
		Block Time	1+28	1+10
		Fuel Used	260	213
		Specific Range/Altitude	0.769/FL 080	0.939/FL 120
	500 nm	Runway	NA	1,610
		Block Time	3+25	2+41
		Fuel Used	485	476
		Specific Range/Altitude	1.031/FL 080	1.050/FL 200
		Suggested Base Price	\$1,063,200	\$1,030,000
Remarks				
		Certification Basis	FAR 23, 1982 Garmin G1000 NXi. BCA estimated data.	FAR 23, 1971/80/97 Garmin G1000 NXi standard.

SINGLE-ENGINE TURBOPROPS

Manufacturer			Mahindra Aerospace	Textron Aviation	Piper Aircraft	Textron Aviation	Daher
Model			Airvan 10 GA10	Cessna Caravan CE-208	M500 PA-46-500TP	Cessna Grand Caravan EX CE-208B	Kodiak Kodiak 100
BCA Equipped Price			\$1,700,000*	\$2,000,000	\$2,250,000	\$2,250,000	\$2,454,800
Characteristics	Seating		1+9/9	1+9/13*	1+4/5	1+9/13*	1+6/9
	Wing Loading		28.6	28.6	27.8	31.5	30.2
	Power Loading		10.56	11.85	10.18	10.16	9.67
	Noise (dBA)		79.0	79.0	76.8	84.1	84.4
External Dimensions (ft.)	Length		33.5	37.6	29.6	41.6	33.8
	Height		12.7	14.9	11.3	15.5	14.7
	Span		40.6	52.1	43.0	52.1	45.0
Internal Dimensions (ft.)	Length		16.1	12.7	12.3	16.7	15.8
	Height		3.8	4.5	3.9	4.5	4.8
	Width		4.2	5.3	4.1	5.3	4.5
Power	Engine		RR 250 B-17F/2	P&WC PT6A-114A	P&WC PT6A-42A	P&WC PT6A-140	P&WC PT6A-34
	Output (shp)/Flat Rating		450/ISA+31C	675/ISA+31C	500/ISA+55C	867/ISA+24C	750/ISA+7C
	Inspection Interval		3,500t	3,600t	3,600t	4,000t	4,000t
Weights (lb.)	Max Ramp		4,775	8,035	5,134	8,842	7,305
	Max Takeoff		4,750	8,000	5,092	8,807	7,255
	Max Landing		4,515	7,800	4,850	8,500	7,255
	Zero Fuel		4,182b	7,432b	4,850c	8,152b	7,071c
	BOW		2,475	4,930	3,634	5,510	4,417
	Max Payload		1,707	2,502	1,216	2,642	2,654
	Useful Load		2,300	3,105	1,500	3,332	2,888
	Max Fuel		1,013	2,224	1,160	2,246	2,144
	Available Payload w/Max Fuel		1,287	881	340	1,086	744
	Available Fuel w/Max Payload		594	604	284	691	234
Limits	V _{MO}		157	175	188	175	180
	V _A		133	150	127	148	143
	PSI		—	—	5.6	—	—
	TO (SL elev./ISA temp.)		1,600	2,055	2,438	2,160	1,468
Airport Performance	TO (5,000-ft. elev.@25C)		2,973	2,973	3,691	3,661	2,396
	V _{SO}		61	61	69	61	60
	V _X		90	90	95	86	73
	V _R		107	107	125	108	101
Climb	Time to Climb (min.)/Altitude		9/FL 100	9/FL 100	19/FL 250	9/FL 100	10/FL 100
	Initial Gradient (ft./nm)		771	771	753	816	915
Ceilings (ft.)	Certificated		20,000	25,000	30,000	25,000	25,000
	Service		25,000	25,000	30,000	25,000	25,000
	Sea-Level Cabin		—	—	12,600	—	—
Cruise	Long Range	TAS	157	157	179	156	164
		Fuel Flow	281	281	135	328	251
		Altitude	FL 100	FL 100	FL 280	FL 100	FL 120
		Specific Range	0.559	0.559	1.326	0.476	0.653
	High Speed	TAS	186	186	258	185	175
		Fuel Flow	379	379	242	437	335
		Altitude	FL 100	FL 100	FL 280	FL 100	FL 120
		Specific Range	0.491	0.491	1.066	0.423	0.522
NBAA IFR Ranges (100-nm alternate)	Full Fuel (w/available payload)	Nautical Miles	965	965	834	807	1,005
		Average Speed	156	156	171	156	175
		Trip Fuel	1,795	1,799	748	1,761	2,130
		Specific Range/Altitude	0.538/FL 100	0.536/FL 100	1.115/FL 280	0.458/FL 100	0.472/120
	Ferry	Nautical Miles	970	970	834	816	1,236
		Average Speed	156	156	171	156	164
		Trip Fuel	1,800	1,800	748	1,772	2,130
		Specific Range/Altitude	0.539/FL 100	0.539/FL 100	1.115/FL 280	0.460/FL 100	0.580/FL 200
Missions (4 passengers)	300 nm	Runway	1,468	1,468	1,550	1,428	1,468
		Flight Time	1+40	1+40	1+22	1+41	1+47
		Fuel Used	648	648	379	750	587
		Specific Range/Altitude	0.463/FL 100	0.463/FL 100	0.792/FL 280	0.400/FL 100	0.511/FL 120
	600 nm	Runway	1,675	1,675	1,625	1,792	1,468
		Flight Time	3+17	3+17	2+32	3+19	3+30
		Fuel Used	1,260	1,260	660	1,462	1,140
		Specific Range/Altitude	0.476/FL 100	0.476/FL 100	0.909/FL 280	0.410/FL 100	0.526/FL 120
	1,000 nm	Runway	NP	NP	1,700	NP	1,467
		Flight Time	NP	NP	4+18	NP	5+47
		Fuel Used	NP	NP	985	NP	1,878
		Specific Range/Altitude	NP	NP	1.015/FL 280	NP	0.532/FL 120
Remarks	Suggested Base Price		NA	NA	\$2,122,600	NA	\$2,150,000
	Certification Basis		FAR 23 A 62, 2017 Garmin G1000 with GFC700 autopilot. Not approved for FIKI. *BCA estimated price.	FAR 23, 1984/98 Garmin G1000 NXi with GFC700 autopilot. *Export only.	FAR 23 A 52 Garmin G1000 NXi with SVS. *1,000 nm, three passengers.	FAR 23, 1986/2012 Includes cargo pod; Garmin G1000 NXi with GFC700 autopilot. *Export only.	FAR 23, 2007 Normal category Includes Garmin G1000 and GFC700 autopilot with coupled GA; Summit interior option.

SINGLE-ENGINE TURBOPROPS

Manufacturer		Epic Aircraft	Piper Aircraft	Daher	Daher	Pilatus
Model		Epic E1000	M600 PA-46-600TP	TBM 910 TBM 700 N	TBM 940 TBM 700 N	PC-12 NGX PC-12/47E
BCA Equipped Price		\$3,250,000	\$3,261,955	\$4,162,365	\$4,504,654	\$5,353,000
Characteristics	Seating	1+5/6	1+4/5	1+5/6	1+5/6	1+8/9
	Wing Loading	38.6	28.7	38.2	38.2	37.6
	Power Loading	6.67	10.00	8.70	8.70	8.71
	Noise (dBA)	77.3	76.8	76.2	76.2	77.0
External Dimensions (ft.)	Length	35.8	29.6	35.2	35.2	47.3
	Height	12.5	11.3	14.3	14.3	14.0
	Span	43.0	43.2	42.1	42.1	53.3
Internal Dimensions (ft.)	Length	13.9	12.3	15.0	15.0	16.9
	Height	4.5	3.9	4.1	4.1	4.8
	Width	4.5	4.1	4.0	4.0	5.0
Power	Engine	P&WC PT6A-67A	P&WC PT6A-42A	P&WC PT6A-66D	P&WC PT6A-66D	P&WC PT6E-67XP
	Output (shp)/Flat Rating	1,200/ISA+35C	600/ISA+55C	850/ISA+49C	850/ISA+49C	1,200/ISA+35C
	Inspection Interval	3,500t	3,600t	3,500t	3,500t	5,000t
Weights (lb.)	Max Ramp	8,050	6,050	7,430	7,430	10,495
	Max Takeoff	8,000	6,000	7,394	7,394	10,450
	Max Landing	7,600	5,800	7,024	7,024	9,921
	Zero Fuel	7,600c	4,850c	6,032c	6,032c	9,039c
	BOW	5,166	3,850	4,829	4,829	6,803
	Max Payload	2,434	1,000	1,203	1,203	2,236
	Useful Load	2,884	2,200	2,601	2,601	3,692
	Max Fuel	1,770	1,742	2,017	2,017	2,704
	Available Payload w/Max Fuel	1,114	458	584	584	988
	Available Fuel w/Max Payload	450	1,200	1,398	1,398	1,456
Limits	V _{MO}	270	250	266	266	240
	V _A	170	151	160	160	163
	PSI	6.6	5.6	6.2	6.2	5.8
Airport Performance	TO (SL elev./ISA temp.)	1,654	2,635	2,380	2,380	2,485
	TO (5,000-ft. elev.@25C)	2,376	3,998	3,475	3,475	4,080
	V _{SO}	68	62	65	65	67
	V _X	116	95	100	100	120
	V _R	150	122	124	124	130
Climb	Time to Climb (min.)/Altitude	12/FL 250	21/FL 250	13/FL 250	13/FL 250	19/FL 250
	Initial Gradient (ft./nm)	1,400	785	1,000	1,000	877
Ceilings (ft.)	Certificated	34,000	30,000	31,000	31,000	30,000
	Service	34,000	30,000	31,000	31,000	30,000
	Sea-Level Cabin	15,000	12,600	14,390	14,390	13,100
Cruise	Long Range	TAS	260	184	252	225
		Fuel Flow	235	155	241	269
		Altitude	FL 340	FL 280	FL 310	FL 300
		Specific Range	1.106	1.187	1.046	0.836
	High Speed	TAS	333	274	330	290
		Fuel Flow	436	324	412	463
		Altitude	FL 260	FL 280	FL 260	FL 240
		Specific Range	0.764	0.846	0.801	0.626
NBAA IFR Ranges (100-nm alternate)	Full Fuel (w/available payload)	Nautical Miles	NA	1,406	1,514	1,548
		Average Speed	NA	179	252	270
		Trip Fuel	NA	1,324	1,599	2,235
		Specific Range/Altitude	NA/NA	1.062/FL 280	0.947/FL 310	0.693/FL 300
	Ferry	Nautical Miles	NA	1,406	1,594	1,571
		Average Speed	NA	179	252	275
		Trip Fuel	NA	1,324	1,598	2,224
		Specific Range/Altitude	NA/NA	1.062/FL 280	0.997/FL 310	0.706/FL 300
Missions (4 passengers)	300 nm	Runway	NA	1,593	1,765	1,677
		Flight Time	NA	1+21	1+00	1+08
		Fuel Used	NA	429	440	534
		Specific Range/Altitude	NA/NA	0.699/FL 280	0.682/FL 280	0.562/FL 240
	600 nm	Runway	NA	1,687	2,005	1,866
		Flight Time	NA	2+31	1+55	2+12
		Fuel Used	NA	735	830	977
		Specific Range/Altitude	NA/NA	0.816/FL 280	0.723/FL 280	0.614/FL 260
	1,000 nm	Runway	2,380	1,812	2,380	2,109
		Flight Time	3+10	4+06	3+10	3+40
		Fuel Used	1,320	1,142	1,320	1,525
		Specific Range/Altitude	0.758/FL 290	0.876/FL 280	0.758/FL 290	0.656/FL 280
	Suggested Base Price		NA	\$3,081,402	\$3,925,715	\$4,290,590
Remarks		Certification Basis FAR 23, 2019 Garmin G1000 NXi.	FAR 23 A 62, 2016 Garmin G3000 with SVS and enhanced AFCS.	FAR 23, 1990/2006/07/14 Pilot door standard; five-blade propeller; Garmin G1000 NXi; elec-heated seats; five-year system warranty.	FAR 23, 1990/2006/07/14 Pilot door standard; five-blade propeller; HomeSafe; autothrottle; Garmin G3000; AoA-ESP-USP; five-year system warranty.	FAR 23, 1996/2005/08/19 Typically equipped executive interior and avionics.

MULTIENGINE TURBOPROPS ≤12,500-LB. MTOW

Manufacturer			Nextant Aerospace		Vulcanair SpA		Textron Aviation		
Model			G90XT C90		Viator AP68TP-600		Beechcraft King Air C90GTx C90GTi		
BCA Equipped Price			\$2,750,000		\$2,965,000		\$4,200,000		
Characteristics	Seating		1+7/10		1+7/10		1+7/8		
	Wing Loading		35.6		33.0		35.5		
	Power Loading		9.55		10.08		9.53		
	Noise (dBA)		71.7		71.7		74.8		
External Dimensions (ft.)	Length		35.5		37.0		35.5		
	Height		14.3		11.9		14.3		
	Span		NA		39.4		53.7		
Internal Dimensions (ft.)	Length: OA/Net		12.4/12.4		11.9/17.2		12.6/12.6		
	Height		4.8		4.1		4.8		
	Width: Max/Floor		4.5/4.1		3.7/3.7		4.5/4.1		
Power	Engines		2 GE Czech H75-100		2 RR 250 B17C		2 P&WC PT6A-135A		
	Output (shp each)/Flat Rating		550/ISA+8C		328/ISA+25C		550/ISA+30C		
	Inspection Interval		4,000t		3,500t		3,600t		
Weights (lb.)	Max Ramp		10,560		6,669		10,545		
	Max Takeoff		10,500		6,613		10,485		
	Max Landing		9,700		6,283		9,832		
	Zero Fuel		9,650c		5,621c		9,378c		
	BOW		7,200		3,850		7,265		
	Max Payload		2,450		1,771		2,113		
	Useful Load		3,360		2,819		3,280		
	Max Fuel		2,573		1,487		2,573		
	Available Payload w/Max Fuel		787		1,332		707		
	Available Fuel w/Max Payload		910		1,048		1,167		
Limits	Vmo		208		200		226		
	Va		169		141		163		
	PSI		5.0		—		5.0		
Airport Performance	TO (SL elev./ISA temp.)		2,100		2,034		1,984		
	TO (5,000-ft. elev.@25C)		2,800		2,950		3,375		
	A/S (SL elev./ISA temp.)		3,800		2,034		3,690		
	A/S (5,000-ft. elev.@25C)		5,100		2,953		5,855		
	VmcA		92		77		80		
	Vmec		97		85		97		
	Vxse		101		90		100		
	Vyse		111		105		108		
	Time to Climb (min.)/Altitude		18/FL 250		7/FL 100		18/FL 250		
	Initial Engine-Out Rate (fpm)		460		270		460		
Climb	Initial All-Engine Gradient (ft./nm)		1,900		1,500		1,900		
	Initial Engine-Out Gradient (ft./nm)		260		180		260		
	Certificated		30,000		25,000		30,000		
	All-Engine Service		30,000		25,000		30,000		
Ceilings (ft.)	Engine-Out Service		22,000		8,050		19,230		
	Sea-Level Cabin		11,065		—		11,065		
	Cruise	Long Range	TAS	213		169		208	
			Fuel Flow	292		261		332	
Altitude			FL 280		FL 100		FL 260		
Specific Range			0.729		0.648		0.627		
High Speed		TAS	283		214		270		
		Fuel Flow	578		375		612		
		Altitude	FL 240		FL 100		FL 200		
		Specific Range	0.490		0.571		0.441		
NBAA IFR Ranges (100-nm alternate)	Max Payload (w/available fuel)	Nautical Miles	324		543		260		
		Average Speed	203		180		229		
		Trip Fuel	600		781		620		
		Specific Range/Altitude	0.540/FL 220		0.695/FL 100		0.419/FL 270		
	Max Fuel (w/available payload)	Nautical Miles	1,300		837		1,026		
		Average Speed	207		179		252		
		Trip Fuel	1,782		1,220		2,044		
		Specific Range/Altitude	0.730/FL 280		0.686/FL 100		0.502/FL 270		
	Full Fuel (w/4 passengers)	Nautical Miles	1,290		837		975		
		Average Speed	207		179		252		
		Trip Fuel	1,769		1,220		1,949		
		Specific Range/Altitude	0.729/FL 280		0.686/FL 100		0.500/FL 270		
	Ferry	Nautical Miles	1,369		837		1,045		
		Average Speed	203		179		255		
		Trip Fuel	1,850		1,220		2,053		
		Specific Range/Altitude	0.740/FL 280		0.686/FL 100		0.509/FL 270		
Missions (4 passengers)	300 nm	Runway	3,010		1,247		3,004		
		Flight Time	1+06		1+35		1+13		
		Fuel Used	584		419		748		
		Specific Range/Altitude	0.514/FL 220		0.716/FL 100		0.401/FL 210		
	600 nm	Runway	3,350		1,558		3,347		
		Flight Time	2+12		3+18		2+22		
		Fuel Used	1,162		866		1,353		
		Specific Range/Altitude	0.516/FL 280		0.693/FL 100		0.443/FL 230		
	1,000 nm	Runway	3,500		NP		3,690		
		Flight Time	3+39		NP		3+58		
		Fuel Used	1,938		NP		1,996		
		Specific Range/Altitude	0.516/FL 280		NP/NP		0.501/FL 270		
	Remarks	Suggested Base Price		NA		\$3,237,140		NA	
		Certification Basis		STC ST01902CH; STC SA3593NM; STC SA4010NM; STC SA3593NM; STC SA01902CH; STC SA01456WI-D; STC SA02133SE		FAR 23, 1986 Garmin G1000 NXi; S-TEC Genesys 2100 autopilot. BCA-computed performance data.		CAR 3, 1959/2007 Collins Pro Line Fusion standard; STC SA10747SC, weight increase; STC SA02054SE, winglets; STC SA3593NM, swept propellers; STC SA4010NM, dual aft strakes; 1,000-nm mission flown with 755-lb. payload.	

MULTIENGINE TURBOPROPS ≤12,500-LB. MTOW

Manufacturer			Textron Aviation		Viking Air		Piaggio Aero Industries	
Model			Beechcraft King Air 250 B200GT		400 Series DHC-6-400		Avanti Evo P180	
BCA Equipped Price			\$6,390,000		\$6,500,000*		\$7,695,000	
Characteristics	Seating		1+8/10		1+11/19		1+7/9	
	Wing Loading		40.3		29.8		70.3	
	Power Loading		7.35		10.08		7.12	
	Noise (dBA)		81.2		85.6		75.0	
External Dimensions (ft.)	Length		43.8		51.8		47.3	
	Height		14.8		19.5		13.0	
	Span		57.9		65.0		46.0	
Internal Dimensions (ft.)	Length: OA/Net		16.7/16.7		18.4/24.5		17.5/17.5	
	Height		4.8		4.9		5.8	
	Width: Max/Floor		4.5/4.1		5.4/4.4		6.1/3.5	
Power	Engines		2 P&WC PT6A-52		2 P&WC PT6A-34		2 P&WC PT6A-66B	
	Output (shp each)/Flat Rating		850/ISA+37C		620/ISA+27C		850/ISA+28C	
	Inspection Interval		3,600t		3,600t		3,600t	
Weights (lb.)	Max Ramp		12,590		12,525		12,150	
	Max Takeoff		12,500		12,500		12,100	
	Max Landing		12,500		12,300		11,500	
	Zero Fuel		11,000c		11,655b		9,800c	
	BOW		8,830		8,100		8,375	
	Max Payload		2,170		3,555		1,425	
	Useful Load		3,760		4,425		3,775	
	Max Fuel		3,645		3,549		2,802	
	Available Payload w/Max Fuel		115		876		973	
	Available Fuel w/Max Payload		1,590		870		2,350	
Limits	Vmo		260		170		260	
	Va		181		136		202	
	PSI		6.5		—		9.0	
Airport Performance	TO (SL elev./ISA temp.)		2,111		1,490		3,262	
	TO (5,000-ft. elev.@25C)		3,099		NA		4,700	
	A/S (SL elev./ISA temp.)		3,687		2,220		5,750	
	A/S (5,000-ft. elev.@25C)		4,859		NA		7,400	
	VmcA		86		66		100	
	Vloc		94		NA		106	
	Vxse		115		NA		132	
	Vyse		121		NA		140	
Climb	Time to Climb (min.)/Altitude		13/FL 250		NA/FL 100		10/FL 250	
	Initial Engine-Out Rate (fpm)		682		340		670	
	Initial All-Engine Gradient (ft./nm)		1,170		NA		1,106	
	Initial Engine-Out Gradient (ft./nm)		364		NA		287	
Ceilings (ft.)	Certificated		35,000		25,000		41,000	
	All-Engine Service		35,000		26,700		39,400	
	Engine-Out Service		26,000		11,600		23,800	
	Sea-Level Cabin		15,293		—		24,000	
Cruise	Long Range	TAS	256	NA	318			
		Fuel Flow	430	NA	408			
		Altitude	FL 350	FL 100	FL 410			
		Specific Range	0.595	NA	0.779			
	High Speed	TAS	310	180	400			
		Fuel Flow	750	580	792			
NBAA IFR Ranges (100-nm alternate)	Max Payload (w/available fuel)	Nautical Miles	321	NP	1,070			
		Average Speed	267	NP	315			
		Trip Fuel	870	NP	1,715			
		Specific Range/Altitude	0.369/FL 330	NP	0.624/FL 390			
	Max Fuel (w/available payload)	Nautical Miles	1,403	NA	1,450			
		Average Speed	291	NA	311			
		Trip Fuel	2,941	NA	2,167			
		Specific Range/Altitude	0.477/FL 330	NA/FL 100	0.669/FL 410			
	Full Fuel (w/4 passengers)	Nautical Miles	1,038	NA	1,510			
		Average Speed	288	NA	317			
		Trip Fuel	2,225	NA	2,167			
		Specific Range/Altitude	0.467/FL 330	NA/FL 100	0.697/FL 410			
	Ferry	Nautical Miles	1,420	NA	1,530			
		Average Speed	293	NA	318			
		Trip Fuel	2,942	NA	2,167			
		Specific Range/Altitude	0.483/FL 330	NA/FL 100	0.706/FL 410			
Missions (4 passengers)	300 nm	Runway	3,504	NA	2,350			
		Flight Time	1+03	NA	0+53			
		Fuel Used	869	NA	688			
		Specific Range/Altitude	0.345/FL 250	NA/FL 100	0.436/FL 310			
	600 nm	Runway	3,587	NA	2,550			
		Flight Time	2+03	NA	1+44			
		Fuel Used	1,494	NA	1,144			
		Specific Range/Altitude	0.402/FL 290	NA/FL 100	0.524/FL 350			
	1,000 nm	Runway	3,677	NA	2,700			
		Flight Time	3+28	NA	3+02			
		Fuel Used	2,147	NA	1,603			
		Specific Range/Altitude	0.466/FL 330	NA/FL 100	0.624/FL 390			
Suggested Base Price		NA		NA		\$7,395,000		
Remarks		FAR 23, 1973/80/2008/11 Collins Pro Line Fusion standard; Wi-Fi optional; STC SA02131SE.		EASA/FAR 23 A 57, 2010 *BCA estimate		EASA 23, 2014; FAR 23, 2015 Includes Collins Pro Line 21; TCAS I; Iridium satcom; RVSM approved; optional 390-lb. capacity internal tank: \$275,000.		

MULTIENGINE TURBOPROPS >12,500-LB. MTOW

Manufacturer		Textron Aviation	Textron Aviation
Model		Beech King Air 350i B300	Beech King Air 350iER B300ER
BCA Equipped Price		\$7,755,000	\$8,795,400
Characteristics	Seating	1+9/11	1+9/11
	Wing Loading	48.4	53.2
	Power Loading	7.14	7.86
	Noise (dBA)	72.9	81.5
External Dimensions (ft.)	Length	46.7	46.7
	Height	14.3	14.3
	Span	57.9	57.9
Internal Dimensions (ft.)	Length: OA/Net	19.5/19.5	19.5/19.5
	Height	4.8	4.8
	Width: Max/Floor	4.5/4.1	4.5/4.1
Power	Engines	2 P&WC PT6A-60A	2 P&WC PT6A-60A
	Output (shp each)/Flat Rating	1,050/ISA+10C	1,050/ISA+10C
	Inspection Interval	3,600t	3,600t
	Max Ramp	15,100	16,600
Weights (lb.)	Max Takeoff	15,000	16,500
	Max Landing	15,000	15,675
	Zero Fuel	12,500c	13,000c
	BOW	9,955	10,215
	Max Payload	2,545	2,785
	Useful Load	5,145	6,385
	Max Fuel	3,611	5,192
	Available Payload w/Max Fuel	1,534	1,193
	Available Fuel w/Max Payload	2,600	3,600
	MWO	0.58	0.58
Limits	Trans. Alt. FL/Vmo	FL 210/263	FL 240/245
	Va	184	182
	PSI	6.5	6.5
	TO (SL elev./ISA temp.)	3,300	4,057
Airport Performance	TOFL (5,000-ft. elev.@25C)	5,376	7,675
	Mission Weight	14,196	16,100
	NBAA IFR Range	1,549	2,257
	V2	109	111
	Vref	100	104
	Landing Distance	2,390	2,728
Climb	Time to Climb (min.)/Altitude	15/FL 250	18/FL 250
	*FAR 25 Initial Engine-Out Rate (fpm)	552	337
	FAR 25 Initial Engine-Out Gradient (ft./nm)	304	182
Ceilings (ft.)	Certificated	35,000	35,000
	All-Engine Service	35,000	35,000
	Engine-Out Service	21,500	17,100
	Sea-Level Cabin	15,293	15,293
Cruise	Long Range	TAS	235
		Fuel Flow	362
		Altitude	FL 330
	High Speed	Specific Range	0.649
		TAS	312
		Fuel Flow	773
NBAA IFR Ranges (100-nm alternate)	Max Payload (w/available fuel)	Altitude	FL 240
		Specific Range	0.404
		Nautical Miles	896
	Max Fuel (w/available payload)	Average Speed	273
		Trip Fuel	1,891
		Specific Range/Altitude	0.474/FL 350
	Full Fuel (w/4 passengers)	Nautical Miles	1,485
		Average Speed	280
		Trip Fuel	2,944
	Ferry	Specific Range/Altitude	0.504/FL 350
		Nautical Miles	1,533
		Average Speed	285
Missions (4 passengers)	300 nm	Trip Fuel	2,951
		Specific Range/Altitude	0.519/FL 350
		Nautical Miles	1,560
	600 nm	Average Speed	289
		Trip Fuel	2,958
		Specific Range/Altitude	0.527/FL 350
	1,000 nm	Runway	2,586
		Flight Time	1+02
		Fuel Used	881
	Remarks	Specific Range/Altitude	0.341/FL 250
		Runway	2,702
		Flight Time	2+02
Remarks	300 nm	Fuel Used	1,470
		Specific Range/Altitude	0.408/FL 290
		Runway	2,827
	600 nm	Flight Time	3+27
		Fuel Used	2,102
		Specific Range/Altitude	0.476/FL 330
	1,000 nm	Runway	3,048
		Flight Time	3+35
		Fuel Used	2,195
	Suggested Base Price	NA	NA
		FAR 23, 1989	FAR 23, 1989/2007
		Commuter category	Commuter category

JETS <10,000-LB. MTOW

Manufacturer			Cirrus Design
Model			Vision G2 SF-50
BCA Equipped Price			\$2,480,000
Characteristics	Seating		1+4/6
	Wing Loading		30.7
	Power Loading		3.25
	Noise (EPNdB): Lateral/Flyover/Approach		79.6/ 70.9/80.3
External Dimensions (ft.)	Length		30.7
	Height		10.9
	Span		38.7
Internal Dimensions (ft.)	Length: OA/Net		11.5/9.8
	Height/Dropped Aisle Depth		4.1/NA
	Width: Max/Floor		5.1/3.1
Baggage	Internal: Cu. ft./lb.		24/NA
	External: Cu. ft./lb.		30/NA
Power	Engine(s)		1 Wms Intl FJ33-5A
	Output (lb. each)/Flat Rating		1,846/ISA+10C
	Inspection Interval/Manu. Service Plan Interval		4,000t/—
Weights (lb.)	Max Ramp		6,040
	Max Takeoff		6,000
	Max Landing		5,550
	Zero Fuel		4,900c
	BOW		3,860
	Max Payload		1,040
	Useful Load		2,180
	Max Fuel		2,000
	Available Payload w/Max Fuel		180
	Available Fuel w/Max Payload		1,140
Limits	Mmo		0.530
	Trans. Alt. FL/Vmo		FL 183/250
	PSI		7.1
Airport Performance	TOFL (SL elev./ISA temp.)		2,036
	TOFL (5,000-ft. elev.@25C)		3,679
	Mission Weight		6,000
	NBAA IFR Range		1,098
	V2		91
	Vref		87
Climb	Landing Distance		1,628
	Time to Climb/Altitude		23/FL 310
	FAR 25 Engine-Out Rate (fpm)		NA
Ceilings (ft.)	FAR 25 Engine-Out Gradient (ft./nm)		NA
	Certificated		31,000
	All-Engine Service		31,000
Cruise	Long Range	Engine-Out Service	—
		Sea-Level Cabin	NA
		TAS	259
	High Speed	Fuel Flow	300
		Altitude	FL 310
		Specific Range	0.863
NBAA IFR Ranges (100-nm alternate)	Max Payload (w/available fuel)	TAS	305
		Fuel Flow	384
		Altitude	FL 310
		Specific Range	0.794
	Max Fuel (w/available payload)	Nautical Miles	461
		Average Speed	233
		Trip Fuel	745
		Specific Range/Altitude	0.619/FL 310
	Four Passengers (w/available fuel)	Nautical Miles	1,171
		Average Speed	233
		Trip Fuel	1,611
		Specific Range/Altitude	0.727/FL 310
Ferry	Nautical Miles	622	
	Average Speed	233	
	Trip Fuel	941	
	Specific Range/Altitude	0.661/FL 310	
Missions (4 passengers)	300 nm	Nautical Miles	1,220
		Average Speed	233
		Trip Fuel	1,760
		Specific Range/Altitude	0.693/FL 310
	600 nm	Runway	1,867
		Flight Time	1+12
		Fuel Used	548
		Specific Range/Altitude	0.547/FL 310
	1,000 nm	Runway	2,036
		Flight Time	2+36
		Fuel Used	914
		Specific Range/Altitude	0.656/FL 310
Remarks	Certification Basis	Runway	2,437
		Flight Time	4+18
		Fuel Used	1,401
		Specific Range/Altitude	0.714/ FL 310
Remarks		FAR 23, 2016/18 Garmin Perspective Touch+; RVSM standard; Safe Return emergency autoland.	

JETS <20,000-LB. MTOW

Manufacturer			Embraer	Nextant Aerospace	Honda Aircraft Co.	Textron Aviation	Syberjet
Model			Phenom 100 EV EMB-500	Nextant 400 XTI BE 400A	HondaJet Elite HA-420	Cessna Citation M2 CE-525	SJ30i SJ30-2
BCA Equipped Price			\$4,250,000	\$4,650,000	\$5,300,000	\$5,305,000	\$8,306,452
Characteristics	Seating		1+5/7/7	2+7/9/9	1+5/8/8	1+7/7/7	1+4/6/6
	Wing Loading/Power Loading		53.1/3.09	67.6/2.67	60.6/2.61	44.6/2.72	73.2/3.03
Noise (EPNdB): Lateral/Flyover/Approach			81.6/70.8/86.1	76.9/91.5/88.8	85.5/73.1/87.4	85.9/73.2/88.5	78.5/86.2/91.8
External Dimensions (ft.)	Length		42.1	48.4	42.6	42.6	46.8
	Height		14.3	13.9	14.9	13.9	14.2
	Span		40.4	43.5	39.8	47.3	42.3
Internal Dimensions (ft.)	Length: Main Seating/Net/Gross		9.0/11.0/11.0	15.5/15.5/—	12.1/12.1/NA	8.8/11.0/11.0	12.5/12.5/—
	Height/Dropped Aisle Depth		4.9/0.3	4.8/flat floor	4.8/NA	4.8/0.4	4.4/NA
	Width: Max/Floor		5.1/3.6	4.9/4.0	5.0/NA	4.8/3.1	4.8/2.8
Baggage	Internal: Cu. ft./lb.		10/93	27/410	NA/NA	—/—	6/100
	External: Cu. ft./lb.		60/419	26/450	66/600	46/725	53/500
Power	Engines		2 P&WC PW 617F1-E	2 Wms Intl FJ44-3AP	2 GE Honda HF-120-H1A	2 Wms Intl FJ44-1AP-21	2 Wms Intl FJ44-2A
	Output (lb. each)/Flat Rating		1,730/ISA+8C	3,052/ISA+7C	2,050/ISA+10C	1,965/ISA+7C	2,300/ISA+8C
	Inspection Interval/Manu. Service Plan Interval		3,500t/—	5,000t/—	5,000t*/—	3,500t/5,000	3,500t/—
Weights (lb.)	Max Ramp		10,748	16,500	10,780	10,800	14,050
	Max Takeoff		10,703	16,300	10,700	10,700	13,950
	Max Landing		9,998	15,700	9,960	9,900	12,725
	Zero Fuel		9,072c	13,000c	8,900c	8,500c	10,500c
	BOW		7,297	10,950	7,348	6,990	8,917
	Max Payload		1,775	2,050	1,552	1,510	1,583
	Useful Load		3,451	5,550	3,432	3,810	5,133
	Max Fuel		2,804	4,912	2,944	3,296	4,850
	Available Payload w/Max Fuel		647	638	488	514	283
	Available Fuel w/Max Payload		1,676	3,500	1,880	2,300	3,550
Limits	Muo		0.700	0.780	0.720	0.710	0.830
	Trans. Alt. Ft./Vmo		FL 280/275	FL 290/320	FL 302/270	FL 305/263	FL 295/320
	PSI/Sea-Level Cabin		8.3/21,280	9.1/24,000	8.8/23,060	8.5/22,027	12.0/41,000
Airport Performance	TOFL (SL elev./ISA temp.)		3,190	3,821	3,491	3,210	3,939
	TOFL (5,000-ft. elev.@25°C)		5,663	5,088	5,166	5,580	8,784
	Mission Weight		10,703	14,500p	10,700	10,700	13,125
	NBAA IFR Range		1,113	1,197	1,191	1,204	1,915
	V2		99	116	115	111	112
	Vref		95	105	106	101	104
	Landing Distance		2,473	2,960	2,804	2,340	2,657
Climb	Time to Climb/Altitude		19/FL 370	16/FL 370	15/FL 370	18/FL 370	16/FL 370
	FAR 25 Engine-Out Rate (fpm)		747	305	672	618	312
	FAR 25 Engine-Out Gradient (ft./nm)		453	158	303	334	167
Ceilings (ft.)	Certificated		41,000	45,000	43,000	41,000	49,000
	All-Engine Service		41,000	45,000	43,000	41,000	44,000
	Engine-Out Service		24,045	27,500	26,400	26,800	25,800
Cruise	Long Range	TAS/Fuel Flow (lb./hr.)	340/543	406/740	360/543	323/516	436/684
	High Speed	Altitude/Specific Range	FL 410/0.626	FL 450/0.549	FL 430/0.663	FL 410/0.626	FL 450/0.637
		TAS/Fuel Flow (lb./hr.)	406/955	447/968	419/999	401/920	475/1,188
NBAA IFR Ranges (FAR Part 23, 100-nm alternate; FAR Part 25, 200-nm alternate)	Max Payload (w/available fuel)	Altitude/Specific Range	FL 330/0.425	FL 430/0.462	FL 330/0.419	FL 350/0.436	FL 360/0.400
		Nautical Miles	466	1,024	641	751	1,635
		Average Speed	325	367	332	358	402
	Max Fuel (w/available payload)	Trip Fuel	1,036	2,411	1,267	1,600	2,908
		Specific Range/Altitude	0.450/FL 410	0.425/FL 450	0.506/FL 430	0.469/FL 410	0.562/FL 470
		Nautical Miles	1,194	1,895	1,433	1,357	2,598
	Four Passengers (w/available fuel)	Average Speed	333	384	344	372	410
		Trip Fuel	2,196	3,953	2,414	2,675	4,241
		Specific Range/Altitude	0.544/FL 410	0.479/FL 450	0.594/FL 430	0.507/FL 410	0.613/FL 490
	Ferry	Nautical Miles	1,092	1,801	1,171	1,183	2,205
		Average Speed	333	383	342	370	408
		Trip Fuel	2,038	3,706	2,044	2,352	3,713
		Specific Range/Altitude	0.536/FL 410	0.486/FL 450	0.573/FL 430	0.503/FL 410	0.594/FL 490
		Nautical Miles	1,254	1,981	1,495	1,400	2,667
		Average Speed	329	381	342	378	411
		Trip Fuel	2,220	3,986	2,430	2,705	4,246
Missions (4 passengers)	300 nm	Specific Range/Altitude	0.565/FL 410	0.497/FL 450	0.615/FL 430	0.518/FL 410	0.628/FL 490
		Runway	2,909	3,015	3,372	2,625	2,822
		Flight Time	0+53	0+48	0+53	0+52	0+45
	600 nm	Fuel Used	753	786	679	804	846
		Specific Range/Altitude	0.398/FL 390	0.382/FL 390	0.442/FL 430	0.373/FL 370	0.355/FL 410
		Runway	3,121	3,044	3,413	2,692	3,025
	1,000 nm	Flight Time	1+45	1+30	1+40	1+38	1+26
		Fuel Used	1,236	1,323	1,185	1,362	1,313
		Specific Range/Altitude	0.485/FL 390	0.454/FL 430	0.506/FL 430	0.441/FL 390	0.457/FL 450
		Runway	3,179	3,101	3,473	3,009	3,336
		Flight Time	2+54	2+28	2+43	2+42	2+21
		Fuel Used	1,919	2,145	1,872	2,018	1,980
Remarks	Certification Basis		FAR 23, 2008	FAR 25, 1981/85 STC 02371LA; STC 10959SC; STC 03960AT	FAR 23, 2015/19 *Mature TBO.	FAR 23, 2013	FAR 23 Commuter category

JETS <20,000-LB. MTOW

Manufacturer			Textron Aviation	Embraer	Textron Aviation	Pilatus Aircraft
Model			Cessna Citation CJ3+ CE-525B	Phenom 300E EMB-505	Cessna Citation CJ4 CE-525C	PC-24
BCA Equipped Price			\$8,990,000	\$9,650,000	\$10,095,000	\$11,134,900
Characteristics	Seating		1+8/9/9	1+7/10/10	1+9/10/10	1+8/10/10
	Wing Loading/Power Loading		47.2/2.46	60.5/2.67	51.8/2.36	54.0/2.68
	Noise (EPNdB): Lateral/Flyover/Approach		88.7/74.0/88.6	89.2/70.6/88.9	92.8/75.6/89.5	90.9/77.5/91.5
External Dimensions (ft.)	Length		51.2	51.2	53.3	55.2
	Height		15.2	16.7	15.3	17.3
	Span		53.3	52.2	50.8	55.8
Internal Dimensions (ft.)	Length: Main Seating/Net/Gross		12.3/15.7/15.7	14.8/17.2/17.2	12.9/17.3/17.3	17.0/17.0/23.0
	Height/Dropped Aisle Depth		4.8/0.4	4.9/0.3	4.8/0.4	5.1/flat floor
	Width: Max/Floor		4.8/3.1	5.1/3.6	4.8/3.3	5.6/3.8
Baggage	Internal: Cu. ft./lb.		—/—	10/77	7/40	90/1,000
	External: Cu. ft./lb.		65/1,000	74/573	71/1,000	NA/NA
Power	Engines		2 Wms Intl FJ44-3A	2 P&WC PW 535E1	2 Wms Intl FJ44-4A	2 Wms Intl FJ44-4A-QPM
	Output (lb. each)/Flat Rating		2,820/ISA+11C	3,478/ISA+15C	3,621/ISA+11C	3,420/ISA+23C
	Inspection Interval/Manu. Service Plan Interval		4,000t/5,000	5,000t/—	5,000t/5,000	5,000t/5,000
Weights (lb.)	Max Ramp		14,070	18,618	17,230	18,400
	Max Takeoff		13,870	18,552	17,110	18,300
	Max Landing		12,750	17,273	15,660	16,900
	Zero Fuel		10,675c	14,264c	12,500c	14,220c
	BOW		8,540	11,628	10,280	11,720
	Max Payload		2,135	2,636	2,220	2,500
	Useful Load		5,530	6,990	6,950	6,680
	Max Fuel		4,710	5,404	5,828	5,965
	Available Payload w/Max Fuel		820	1,586	1,122	715
	Available Fuel w/Max Payload		3,395	4,354	4,730	4,180
Limits	Muo		0.737	0.800	0.770	0.740
	Trans. Alt. FL/Wo		FL 293/278	FL 276/320	FL 279/305	FL 280/290
	PSI/Sea-Level Cabin		8.9/23,586	9.4/25,560	9.0/24,005	9.1/24,362
Airport Performance	TOFL (SL elev./ISA temp.)		3,180	3,209	3,410	2,930
	TOFL (5,000-ft. elev./25C)		4,750	5,374	5,180	4,980
	Mission Weight		13,870	18,552	16,788	18,300
	NBAA IFR Range		1,918	2,033	2,109	2,000
	V ₂		114	111	117	106
	V _{REF}		99	103	99	90
	Landing Distance		2,422	2,212	2,281	2,120
Climb	Time to Climb/Altitude		15/FL 370	14/FL 370	14/FL 370	26/FL 450
	FAR 25 Engine-Out Rate (fpm)		808	872	839	665
	FAR 25 Engine-Out Gradient (ft./nm)		425	471	430	379
Ceilings (ft.)	Certificated		45,000	45,000	45,000	45,000
	All-Engine Service		45,000	45,000	45,000	45,000
	Engine-Out Service		26,250	30,137	28,200	30,000
Cruise	Long Range	TAS/Fuel Flow (lb./hr.)	352/624	385/783	377/812	358/757
		Altitude/Specific Range	FL 450/0.564	FL 450/0.492	FL 450/0.464	FL 450/0.473
	High Speed	TAS/Fuel Flow (lb./hr.)	415/1,197	464/1,549	442/1,470	438/1,717
NBAA IFR Ranges (FAR Part 23, 100-nm alternate; FAR Part 25, 200-nm alternate)	Altitude/Specific Range		FL 350/0.347	FL 350/0.300	FL 370/0.301	FL 300/0.255
	Max Payload (w/available fuel)	Nautical Miles	1,080	1,381	1,425	1,206
		Average Speed	366	397	407	400
		Trip Fuel	2,381	3,369	3,753	3,069
	Specific Range/Altitude		0.454/FL 450	0.410/FL 450	0.380/FL 450	0.393/FL 450
	Max Fuel (w/available payload)	Nautical Miles	1,814	1,932	1,913	2,013
		Average Speed	377	393	413	366
		Trip Fuel	3,846	4,450	4,904	4,920
	Specific Range/Altitude		0.472/FL 450	0.434/FL 450	0.390/FL 450	0.409/FL 450
	Four Passengers (w/available fuel)	Nautical Miles	1,825	2,010	1,927	2,030
		Average Speed	276	387	416	367
		Trip Fuel	3,767	4,471	4,920	4,956
	Specific Range/Altitude		0.484/FL 450	0.450/FL 450	0.392/FL 450	0.410/FL 450
	Ferry	Nautical Miles	1,900	2,094	1,955	2,129
		Average Speed	383	380	420	359
		Trip Fuel	3,872	4,498	4,955	5,046
	Specific Range/Altitude		0.491/FL 450	0.466/FL 450	0.395/FL 450	0.422/FL 450
Missions (4 passengers)	300 nm	Runway	2,608	2,899	2,669	2,280
		Flight Time	0+49	0+49	0+46	0+50
		Fuel Used	969	998	1,087	978
	Specific Range/Altitude		0.310/FL 370	0.301/FL 390	0.276/FL 390	0.307/FL 410
	600 nm	Runway	2,609	2,868	2,715	2,320
		Flight Time	1+35	1+29	1+27	1+32
		Fuel Used	1,571	1,653	1,865	1,674
	Specific Range/Altitude		0.382/FL 410	0.363/FL 410	0.322/FL 410	0.358/FL 450
	1,000 nm	Runway	2,720	2,831	2,770	2,360
		Flight Time	2+36	2+24	2+23	2+29
		Fuel Used	2,315	2,533	2,747	2,659
	Specific Range/Altitude		0.432/FL 430	0.395/FL 450	0.364/FL 430	0.376/FL 450
Remarks	Certification Basis		FAR 23, 2004/14 Commuter category Garmin G3000.	FAR 23, 2009/20 Commuter category	FAR 23, 2010 Commuter category	EASA CS 23, 2017; FAR 23, 2018 Approved for unimproved runway operations; standard aircraft with executive interior plus avionics.

JETS ≥20,000-LB. MTOW

Manufacturer			Bombardier	Bombardier	Textron Aviation	Embraer	Embraer	
Model			Learjet 75 Liberty Model 45	Learjet 75 Model 45	Cessna Citation XLS+ CE-560XL	Legacy 450 EMB-545	Praetor 500 EMB-545	
BCA Equipped Price			\$9,900,000	\$13,800,000	\$13,940,000	\$16,570,000	\$16,995,000	
Character-istics	Seating		2+6/7*/9	2+8/9/9	2+9/12/12	2+7/9/9	2+7/9/9	
	Wing Loading/Power Loading		69.6/2.79	69.6/2.79	54.6/2.45	74.0/2.73	77.7/2.87	
	Noise (EPNdB): Lateral/Flyover/Approach		87.4/74.3/93.4	87.4/74.3/93.4	86.8/72.2/92.8	84.2/72.9/89.9	84.1/73.5/89.9	
External Dimensions (ft.)	Length		58.0	58.0	52.5	64.6	64.6	
	Height		14.0	14.0	17.2	21.1	21.1	
	Span		50.9	50.9	56.3	66.4	66.4	
Internal Dimensions (ft.)	Length: Main Seating/Net/Gross		13.4/19.8/19.8	13.4/19.8/19.8	14.3/18.5/18.5	17.4/20.6/24.0	17.4/20.6/24.0	
	Height/Dropped Aisle Depth		4.9/flat floor	4.9/flat floor	5.7/0.7	6.0/flat floor	6.0/flat floor	
	Width: Max/Floor		5.1/3.2	5.1/3.2	5.5/3.9	6.8/4.7	6.8/4.7	
Baggage	Internal: Cu. ft./lb.		15/150	15/150	10/100	40/418	40/418	
	External: Cu. ft./lb.		50/500	50/500	80/700	110/880	110/880	
Power	Engines		2 Hon TFE731-40BR	2 Hon TFE731-40BR	2 P&WC PW545C	2 Hon HTF7500E	2 Hon HTF7500E	
	Output (lb. each)/Flat Rating		3,850/ISA+23C	3,850/ISA+23C	4,119/ISA+10C	6,540/ISA+18C	6,540/ISA+18C	
	Inspection Interval/Manu. Service Plan Interval		7,000t/—	7,000t/—	5,000t/—	0C/—	0C/—	
Weights (lb.)	Max Ramp		21,750	21,750	20,400	35,891	37,699	
	Max Takeoff		21,500	21,500	20,200	35,759	37,567	
	Max Landing		19,200	19,200	18,700	32,518	34,172	
	Zero Fuel		16,500c	16,500c	15,100c	25,904c	25,959c	
	BOW		13,598	14,050	12,860	22,983	23,038	
	Max Payload		2,902	2,450	2,240	2,921	2,921	
	Useful Load		8,152	7,700	7,540	12,908	14,661	
	Max Fuel		6,062	6,062	6,740	12,108	13,051	
	Available Payload w/Max Fuel		2,090	1,638	800	800	1,610	
	Available Fuel w/Max Payload		5,250	5,250	5,300	9,987	11,740	
Limits	Muo		0.810	0.810	0.750	0.830	0.830	
	Trans. Alt. FL/Vno		FL 270/330	FL 270/330	FL 265/305	FL 295/320	FL 295/320	
	PSI/Sea-Level Cabin		9.4/25,700	9.4/25,700	9.3/25,230	9.7/27,140	9.7/27,140	
Airport Performance	TOFL (SL elev./ISA temp.)		4,440	4,440	3,560	3,907	4,222	
	TOFL (5,000-ft. elev.@25C)		5,272	5,272	5,430	5,189	5,692	
	Mission Weight		20,782	20,782	20,200	35,759	37,567	
	NBAA IFR Range		2,080	2,026	2,018	2,919	3,412	
	V2		125	125	118	117	119	
	Vref		113	113	106	101	101	
	Landing Distance		2,296	2,338	2,740	2,090	2,086	
Climb	Time to Climb/Altitude		15/FL 370	15/FL 370	15/FL 370	14/FL 370	14/FL 370	
	FAR 25 Engine-Out Rate (fpm)		430	430	765	831	743	
	FAR 25 Engine-Out Gradient (ft./nm)		207	207	389	426	375	
Ceilings (ft.)	Certificated		51,000	51,000	45,000	45,000	45,000	
	All-Engine Service		44,700	44,700	45,000	43,000	43,000	
	Engine-Out Service		27,900	27,900	28,600	27,513	27,513	
Cruise	Long Range	TAS/Fuel Flow (lb./hr.)	436/955	437/977	353/865	438/1,404	426/1,352	
		Altitude/Specific Range	FL 470/0.457	FL 470/0.447	FL 450/0.408	FL 450/0.312	FL 450/0.315	
	High Speed	TAS/Fuel Flow (lb./hr.)	465/1,258	465/1,280	431/1,238	469/2,014	469/2,018	
NBAA IFR Ranges (FAR Part 23, 100-nm alternate; FAR Part 25, 200-nm alternate)	Altitude/Specific Range		FL 430/0.370	FL 430/0.363	FL 410/0.348	FL 390/0.233	FL 390/0.232	
	Max Payload (w/available fuel)	Nautical Miles	1,491	1,491	1,284	2,170	2,819	
		Average Speed	420	420	387	428	423	
		Trip Fuel	3,971	3,971	4,020	8,084	9,963	
	Max Fuel (w/available payload)	Specific Range/Altitude	0.375/FL 470	0.375/FL 470	0.319/FL 450	0.268/FL 450	0.283/FL 450	
		Nautical Miles	1,885	1,884	1,853	2,904	3,282	
		Average Speed	424	424	397	431	419	
	Four Passengers (w/available fuel)	Trip Fuel	4,821	4,821	5,582	10,285	11,322	
		Specific Range/Altitude	0.391/FL 470	0.391/FL 470	0.332/FL 450	0.282/FL 450	0.290/FL 450	
		Nautical Miles	2,118	2,058	1,853	2,904	3,340	
	Ferry	Average Speed	425	426	397	431	417	
		Trip Fuel	5,077	5,058	5,582	10,285	11,342	
		Specific Range/Altitude	0.417/FL 490	0.407/FL 470	0.332/FL 450	0.282/FL 450	0.294/FL 450	
	Missions (4 passengers)	300 nm	Nautical Miles	2,225	2,163	1,918	2,973	3,416
			Average Speed	426	426	404	430	417
			Trip Fuel	5,113	5,093	5,612	10,313	11,357
600 nm		Specific Range/Altitude	0.435/FL 490	0.425/FL 490	0.342/FL 450	0.288/FL 450	0.301/FL 450	
		Runway	3,569	3,598	2,741	3,674	2,673	
		Flight Time	0+46	0+46	0+46	0+45	0+48	
1,000 nm		Fuel Used	983	994	1,239	1,543	1,564	
		Specific Range/Altitude	0.305/FL 470	0.302/FL 470	0.242/FL 390	0.194/FL 450	0.192/FL 430	
		Runway	3,613	3,637	2,730	2,696	2,690	
		Flight Time	1+25	1+25	1+28	1+26	1+28	
		Fuel Used	1,715	1,729	2,081	2,478	2,494	
		Specific Range/Altitude	0.350/FL 470	0.347/FL 470	0.288/FL 410	0.242/FL 450	0.241/FL 450	
	Runway	3,672	3,701	2,939	2,873	2,875		
	Flight Time	2+18	2+18	2+26	2+21	2+21		
	Fuel Used	2,695	2,711	3,198	3,710	3,802		
	Specific Range/Altitude	0.371/FL 470	0.369/FL 470	0.313/FL 430	0.270/FL 450	0.263/FL 450		
	Remarks	Certification Basis	FAR 25; EASA CS 25 *Modsum 045T024322 IAW LR engineering report 45-D6038.	FAR 25; EASA CS 25	FAR 25, 2008	RBAC/FAR 25, 2015; EASA CS 25, 2015	RBAC/FAR 25, 2015/19; EASA CS 25, 2015/19 Mod: DCA 0550-000-00100-2018.	

JETS ≥20,000-LB. MTOW

Manufacturer			Textron Aviation	Textron Aviation	Embraer	Embraer
Model			Cessna Citation Latitude CE-680A	Cessna Citation Sovereign+ CE-680	Legacy 500 EMB-550	Praetor 600 EMB-550
BCA Equipped Price			\$18,195,000	\$19,730,000	\$19,995,000	\$20,995,000
Characteristics	Seating		2+9/9/9	2+9/12/12	2+8/12/12	2+8/12/12
	Wing Loading/Power Loading		56.8/2.61	56.7/2.60	79.4/2.73	88.7/2.85
	Noise (EPNdB): Lateral/Flyover/Approach		87.7/73.5/87.7	87.8/71.9/87.9	85.5/73.1/89.9	86.9/75.1/90.3
External Dimensions (ft.)	Length		62.3	63.5	68.1	68.1
	Height		20.9	20.3	21.2	21.2
	Span		72.3	72.3	66.4	70.5
Internal Dimensions (ft.)	Length: Main Seating/Net/Gross		15.9/21.8/21.8	17.4/25.3/25.3	21.3/24.1/27.5	21.3/24.1/27.5
	Height/Dropped Aisle Depth		6.0/flat floor	5.7/0.7	6.0/flat floor	6.0/flat floor
	Width: Max/Floor		6.4/4.1	5.5/3.9	6.8/4.7	6.8/4.7
Baggage	Internal: Cu. ft./lb.		27/245	35/435	45/418	45/418
	External: Cu. ft./lb.		100/1,000	100/1,000	110/880	110/880
Power	Engines		2 P&WC PW306D1	2 P&WC PW306D	2 Hon HTF7500E	2 Hon HTF7500E
	Output (lb. each)/Flat Rating		5,907/ISA+15C	5,907/ISA+16C	7,036/ISA+18C	7,528/ISA+18C
	Inspection Interval/Manu. Service Plan Interval		6,000t/—	6,000t/—	OC/—	OC/—
Weights (lb.)	Max Ramp		31,050	31,025	38,537	42,990
	Max Takeoff		30,800	30,775	38,360	42,857
	Max Landing		27,575	27,575	34,524	37,478
	Zero Fuel		21,430c	21,000c	26,500	28,660
	BOW		18,656	18,231	23,700	24,658
	Max Payload		2,774	2,769	2,800	4,002
	Useful Load		12,394	12,794	14,837	18,332
	Max Fuel		11,394	11,394	13,058	16,138
	Available Payload w/Max Fuel		1,000	1,400	1,779	2,194
	Available Fuel w/Max Payload		9,620	10,025	12,037	14,330
Limits	Muo		0.800	0.800	0.830	0.830
	Trans. Alt. FL/Wo		FL 298/305	FL 298/305	FL 295/320	FL 295/320
	PSI/Sea-Level Cabin		9.7/26,800	9.3/25,230	9.7/27,140	9.7/27,140
Airport Performance	TOFL (SL elev./ISA temp.)		3,580	3,530	4,084	4,717
	TOFL (5,000-ft. elev.@25C)		5,070	4,760	5,523	6,431
	Mission Weight		30,675	30,250	38,360	42,857
	NBAA IFR Range		2,700	3,112	3,131	4,040
	V2		115	117	120	128
	Vxcr		95	96	102	104
	Landing Distance		2,085	2,160	2,114	2,165
Climb	Time to Climb/Altitude		16/FL 370	13/FL 370	14/FL 370	13/FL 370
	FAR 25 Engine-Out Rate (fpm)		652	735	841	777
	FAR 25 Engine-Out Gradient (ft./nm)		340	377	420	364
Ceilings (ft.)	Certificated		45,000	47,000	45,000	45,000
	All-Engine Service		43,000	45,000	44,000	43,000
	Engine-Out Service		27,620	29,740	28,189	28,189
Cruise	Long Range	TAS/Fuel Flow (lb./hr.)	368/1,114	368/1,059	440/1,441	433/1,449
		Altitude/Specific Range	FL 430/0.330	FL 450/0.347	FL 450/0.305	FL 450/0.299
	High Speed	TAS/Fuel Flow (lb./hr.)	432/1,765	448/1,756	467/1,741	466/1,826
NBAA IFR Ranges (FAR Part 23, 100-nm alternate; FAR Part 25, 200-nm alternate)		Altitude/Specific Range	FL 390/0.245	FL 390/0.255	FL 430/0.268	FL 430/0.255
	Max Payload (w/available fuel)	Nautical Miles	2,135	2,484	2,603	3,277
		Average Speed	394	396	438	426
		Trip Fuel	7,901	8,170	9,908	12,600
	Max Fuel (w/available payload)	Specific Range/Altitude	0.270/FL 450	0.304/FL 470	0.263/FL 450	0.260/FL 450
		Nautical Miles	2,645	2,996	2,998	3,878
		Average Speed	401	400	440	425
	Four Passengers (w/available fuel)	Trip Fuel	9,586	9,658	11,151	14,357
		Specific Range/Altitude	0.276/FL 450	0.310/FL 470	0.269/FL 450	0.270/FL 450
		Nautical Miles	2,678	3,069	3,125	4,018
	Ferry	Average Speed	401	402	433	423
		Trip Fuel	9,594	9,679	11,222	14,404
		Specific Range/Altitude	0.279/FL 450	0.317/FL 470	0.278/FL 450	0.279/FL 450
	300 nm	Nautical Miles	2,731	3,138	3,153	4,102
		Average Speed	405	405	440	421
		Trip Fuel	9,628	9,708	11,250	14,436
Missions (4 passengers)	600 nm	Specific Range/Altitude	0.284/FL 450	0.323/FL 470	0.280/FL 450	0.284/FL 450
		Runway	2,760	2,591	2,822	2,745
		Flight Time	0+46	0+45	0+45	0+46
	1,000 nm	Fuel Used	1,610	1,506	1,545	1,558
		Specific Range/Altitude	0.186/FL 390	0.199/FL 390	0.194/FL 450	0.193/FL 450
		Runway	2,845	2,600	2,817	2,746
		Flight Time	1+29	1+26	1+26	1+26
		Fuel Used	2,573	2,404	2,478	2,580
		Specific Range/Altitude	0.233/FL 430	0.250/FL 430	0.242/FL 450	0.233/FL 450
		Runway	2,951	2,650	2,963	2,810
		Flight Time	2+25	2+21	2+21	2+18
		Fuel Used	3,989	3,750	3,750	3,969
Remarks						
	Certification Basis		FAR 25, 2015 Garmin G5000.	FAR 25, 2013 Garmin G5000.	RBAC/FAR/EASA CS 25, 2014	ANAC 2019; RBAC/FAR/EASA CS 25, 2014/19 Mod: DCA 0550-000-00026-2016.

JETS ≥20,000-LB. MTOW

Manufacturer			Gulfstream Aerospace	Bombardier	Textron Aviation	Dassault
Model			Gulfstream 280 G280	Challenger 350 BD-100-1A10	Cessna Citation Longitude CE-700	Falcon 2000S Falcon 2000EX
BCA Equipped Price			\$24,500,000	\$26,673,000	\$28,345,000	\$29,950,000
Characteristics	Seating		2+9/10/19	2+10/11/19	2+8/12/12	2+10/10/19
	Wing Loading/Power Loading		80.0/2.60	77.6/2.77	73.5/2.58	77.7/2.93
	Noise (EPNdB): Lateral/Flyover/Approach		89.5/75.2/90.5	87.6/75.3/89.6	78.7/61.6/81.1	91.8/75.1/90.5
External Dimensions (ft.)	Length		66.8	68.7	73.2	66.3
	Height		21.3	20.0	19.4	23.3
	Span		63.0	69.0	68.9	70.2
Internal Dimensions (ft.)	Length: Main Seating/Net/Gross		17.7/25.8/32.3	16.6/25.2/28.6	16.5/25.2/28.1	17.1/26.2/31.0
	Height/Dropped Aisle Depth		6.1/4.5	6.0/flat floor	6.0/flat floor	6.2/flat floor
	Width: Max/Floor		6.9/5.4	7.2/5.1	6.4/4.1	7.7/6.3
Baggage	Internal: Cu. ft./lb.		154/1,980	106/750	112/1,115	131/1,600
	External: Cu. ft./lb.		—/—	—/—	NA/NA	8/92
Power	Engines		2 Hon HTF7250G	2 Hon HTF7350	2 Hon HTF7700L	2 P&WC PW308C
	Output (lb. each)/Flat Rating		7,624/ISA+17C	7,323/ISA+15C	7,665/ISA+19C	7,000/ISA+15C
	Inspection Interval/Manu. Service Plan Interval		OC/—	OC/—	OC/—	7,000c/—
Weights (lb.)	Max Ramp		39,750	40,750	39,700	41,200
	Max Takeoff		39,600	40,600	39,500	41,000
	Max Landing		32,700	34,150	33,500	39,300
	Zero Fuel		28,200c	28,200c	26,000c	29,700c
	BOW		24,200	24,800	23,600	24,750
	Max Payload		4,000	3,400	2,400	4,950
	Useful Load		15,550	15,950	16,100	16,450
	Max Fuel		14,600	14,045	14,500	14,600
	Available Payload w/Max Fuel		950	1,905	1,600	1,850
	Available Fuel w/Max Payload		11,550	12,550	13,700	11,500
Limits	Muo		0.850	0.830	0.840	0.862
	Trans. Alt. FL/Wo		FL 280/340	FL 290/320	FL 293/325	FL 250/370
	PSI/Sea-Level Cabin		9.2/25,000	8.8/23,338	9.7/26,800	9.3/25,300
Airport Performance	TOFL (SL elev./ISA temp.)		4,750	4,829	4,810	4,325
	TOFL (5,000-ft. elev./25°C)		7,320	6,451	6,810	6,055
	Mission Weight		39,600	39,495	38,725	39,950
	NBAA IFR Range		3,600	3,250	3,520	3,600
	V ₂		137	133	136	123
	V _{Ref}		115	111	110	106
	Landing Distance		2,373	2,302	2,595	2,295
Climb	Time to Climb/Altitude		14/FL 370	14/FL 370	13/FL 370	16/FL 370
	FAR 25 Engine-Out Rate (fpm)		845	552	1,330	528
	FAR 25 Engine-Out Gradient (ft./nm)		371	249	456	257
Ceilings (ft.)	Certificated		45,000	45,000	45,000	47,000
	All-Engine Service		45,000	44,000	45,000	43,265
	Engine-Out Service		27,500	27,800	28,420	22,187
Cruise	Long Range	TAS/Fuel Flow (lb./hr.)	459/1,488	459/1,590	449/1,478	437/1,400
		Altitude/Specific Range	FL 450/0.308	FL 450/0.289	FL 450/0.304	FL 470/0.312
	High Speed	TAS/Fuel Flow (lb./hr.)	482/1,925	470/1,832	478/1,937	482/2,075
NBAA IFR Ranges (FAR Part 23, 100-nm alternate; FAR Part 25, 200-nm alternate)	Altitude/Specific Range		FL 430/0.250	FL 430/0.257	FL 430/0.247	FL 410/0.232
	Max Payload (w/available fuel)	Nautical Miles	2,577	2,719	3,074	2,450
		Average Speed	448	447	452	426
		Trip Fuel	9,591	10,689	11,600	9,640
	Max Fuel (w/available payload)	Specific Range/Altitude	0.269/FL 450	0.254/FL 450	0.265/FL 450	0.254/FL 450
		Nautical Miles	3,636	3,235	3,422	3,445
		Average Speed	452	449	453	429
	Four Passengers (w/available fuel)	Trip Fuel	12,757	12,206	12,763	12,740
		Specific Range/Altitude	0.285/FL 450	0.265/FL 450	0.268/FL 450	0.270/FL 470
		Nautical Miles	3,646	3,250	3,500	3,540
	Ferry	Average Speed	451	448	454	430
		Trip Fuel	12,761	12,212	12,763	12,740
		Specific Range/Altitude	0.286/FL 450	0.266/FL 450	0.274/FL 450	0.278/FL 470
		Nautical Miles	3,724	3,307	3,500	3,615
		Average Speed	452	450	454	430
		Trip Fuel	12,789	12,236	12,787	12,740
		Specific Range/Altitude	0.291/FL 450	0.270/FL 450	0.274/FL 450	0.284/FL 470
Missions (4 passengers)	300 nm	Runway	2,957	3,611	2,744	2,795
		Flight Time	0+47	0+47	0+44	0+47
		Fuel Used	1,505	1,583	1,516	1,525
	600 nm	Specific Range/Altitude	0.199/FL 450	0.190/FL 450	0.198/FL 450	0.197/FL 470
		Runway	2,997	3,656	2,880	2,855
		Flight Time	1+26	1+26	1+23	1+27
		Fuel Used	2,412	2,577	2,457	2,465
	1,000 nm	Specific Range/Altitude	0.249/FL 450	0.233/FL 450	0.244/FL 450	0.243/FL 470
		Runway	3,136	3,718	3,025	2,920
		Flight Time	2+18	2+18	2+16	2+20
		Fuel Used	3,645	3,925	3,746	3,755
		Specific Range/Altitude	0.274/FL 450	0.255/FL 450	0.267/FL 450	0.266/FL 470
Remarks	Certification Basis		FAR 25, 2012; EASA CS 25, 2013	FAR 25 A 98; JAR 25 Chg 15 Collins Pro Line 21 Advanced.	FAR 25, 2019 Garmin G5000. Pre-certification data estimates.	FAR/EASA CS 25, 2013 EASy II flight deck. 2019 delivery price.

JETS ≥20,000-LB. MTOW

Manufacturer			Bombardier	Dassault	Dassault	Bombardier
Model			Challenger 650 CL-600-2B16	Falcon 2000LXS Falcon 2000EX	Falcon 900LX Falcon 900EX	Global 5500 BD-700-1A11
BCA Equipped Price			\$32,350,000	\$35,100,000	\$44,800,000	\$46,000,000
Character-istics	Seating		2+12/13/19	2+8/10/19	2+12/12/19	3+13/15/19
	Wing Loading/Power Loading		98.6/2.61	81.2/3.06	92.9/3.27	90.6/3.06
	Noise (EPNdB): Lateral/Flyover/Approach		86.2/81.2/90.3	91.7/76.4/90.5	90.3/78.2/92.1	79.7/88.9/89.4
External Dimensions (ft.)	Length		68.4	66.3	66.3	96.8
	Height		20.7	23.3	25.2	25.5
	Span		64.3	70.2	70.2	94.0
Internal Dimensions (ft.)	Length: Main Seating/Net/Gross		15.4/25.6/28.3	17.1/26.2/31.0	23.5/33.2/39.3	27.2/40.7/45.7
	Height/Dropped Aisle Depth		6.0/flat floor	6.2/flat floor	6.2/flat floor	6.2/flat floor
	Width: Max/Floor		7.9/6.9	7.7/6.3	7.7/6.3	7.9/6.5
Baggage	Internal: Cu. ft./lb.		112/900	131/1,600	127/2,866	195/1,000
	External: Cu. ft./lb.		—/—	8/92	—/—	—/—
Power	Engines		2 GE CF34-3B	2 P&WC PW308C	3 Hon TFE731-60	2 RR BR700-710DS-21*
	Output (lb. each)/Flat Rating		9,220*/ISA+15C	7,000/ISA+15C	5,000/ISA+17C	15,125/ISA+15C
Weights (lb.)	Inspection Interval/Manu. Service Plan Interval		OC/—	7,000c/—	6,000c/—	OC/—
	Max Ramp		48,300	43,000	49,200	92,750
	Max Takeoff		48,200	42,800	49,000	92,500
	Max Landing		38,000	39,300	44,500	78,600
	Zero Fuel		32,000c	29,700c	30,864c	58,000c
	BOW		27,250	24,750	26,750	50,861
	Max Payload		4,750	4,950	4,114	7,139
	Useful Load		21,050	18,250	22,450	41,889
	Max Fuel		19,852	16,660	20,905	38,959
	Available Payload w/Max Fuel		1,198	1,590	1,545	2,930
Limits	Available Fuel w/Max Payload		16,300	13,300	18,336	34,750
	Mmo		0.850	0.862	0.870	0.900
	Trans. Alt. FL/Vmo		FL 222/348	FL 250/370	FL 250/370	FL 301/340
Airport Performance	PSI/Sea-Level Cabin		8.8/23,000	9.3/25,300	9.6/25,300	10.3/30,125
	TOFL (SL elev./ISA temp.)		5,640	4,675	5,360	5,436
	TOFL (5,000-ft. elev.@25C)		9,233	6,840	7,615	7,284
	Mission Weight		47,802	42,010	48,255	92,500
	NBAA IFR Range		4,011	4,100	4,685	5,978
	V2		147	127	134	138
	Vref		117	106	111	107
Climb	Landing Distance		2,365	2,295	2,455	2,189
	Time to Climb/Altitude		21/FL 370	17/FL 370	19/FL 370	18/FL 370
	FAR 25 Engine-Out Rate (fpm)		581	463	723	523
Ceilings (ft.)	FAR 25 Engine-Out Gradient (ft./nm)		237	221	324	227
	Certificated		41,000	47,000	51,000	51,000
	All-Engine Service		38,250	42,315	39,630	42,900
Cruise	Engine-Out Service		20,000	21,010	24,980	20,600
	Long Range	TAS/Fuel Flow (lb./hr.)	424/1,832	437/1,485	431/1,665	470/2,646
	Altitude/Specific Range		FL 410/0.231	FL 450/0.294	FL 430/0.259	FL 450/0.178
NBAA IFR Ranges (FAR Part 23, 100-nm alternate; FAR Part 25, 200-nm alternate)	High Speed	TAS/Fuel Flow (lb./hr.)	470/2,448	483/2,325	474/2,225	499/3,266
	Altitude/Specific Range		FL 370/0.192	FL 390/0.208	FL 390/0.213	FL 410/0.153
	Max Payload (w/available fuel)	Nautical Miles	3,011	2,915	3,790	4,949
		Average Speed	417	427	422	488
		Trip Fuel	14,256	11,438	16,340	31,615
	Max Fuel (w/available payload)	Specific Range/Altitude	0.211/FL 410	0.255/FL 450	0.232/FL 430	0.157/FL 450
		Nautical Miles	3,974	3,990	4,565	5,849
		Average Speed	419	430	421	488
	Four Passengers (w/available fuel)	Trip Fuel	17,939	14,798	18,909	36,262
		Specific Range/Altitude	0.222/FL 410	0.270/FL 470	0.241/FL 430	0.161/FL 490
		Nautical Miles	4,011	4,065	4,650	5,978
	Ferry	Average Speed	419	430	420	488
		Trip Fuel	17,953	14,798	18,909	36,322
		Specific Range/Altitude	0.223/FL 410	0.275/FL 470	0.246/FL 430	0.165/FL 490
	Missions (4 passengers)	300 nm	Nautical Miles	4,085	4,155	4,740
Average Speed			419	431	419	488
Trip Fuel			17,982	14,798	18,909	36,348
Specific Range/Altitude			0.227/FL 410	0.281/FL 470	0.251/FL 430	0.166/FL 490
600 nm		Runway	3,389	2,795	2,730	2,542
		Flight Time	0+47	0+47	0+47	0+46
		Fuel Used	1,595	1,525	1,595	2,321
		Specific Range/Altitude	0.188/FL 410	0.197/FL 470	0.188/FL 470	0.129/FL 470
1,000 nm		Runway	3,421	2,855	2,865	2,559
		Flight Time	1+27	1+27	1+27	1+23
		Fuel Used	2,835	2,465	2,625	3,822
		Specific Range/Altitude	0.212/FL 410	0.243/FL 470	0.229/FL 470	0.157/FL 490
Remarks	Certification Basis	Runway	3,483	2,920	2,880	2,596
		Flight Time	2+19	2+20	2+20	2+13
		Fuel Used	4,532	3,755	4,070	5,871
		Specific Range/Altitude	0.221/FL 410	0.266/FL 470	0.246/FL 450	0.170/FL 490
		FAR 25, 1980/83/ 87/95/2006/15 Collins Pro Line 21 Advanced. *9,220 max takeoff; 8,729 normal takeoff.	FAR/EASA CS 25, 2013 EASy II flight deck. 2019 delivery price.	FAR 25/EASA 25, 1979/2010 EASy II flight deck. 2019 delivery price.	FAR 25, 1998/2004/19; EASA 25, 2004 Global Vision flight deck. *Marketed as Pearl 15. ModSums: 700T901902; 700T03185; 700T63572.	

JETS ≥20,000-LB. MTOW

Manufacturer			Gulfstream Aerospace	Bombardier	Dassault	Airbus
Model			Gulfstream 500 GVII-G500	Global 5000 BD-700-1A11	Falcon 7X	A320 Prestige A320-251N*
BCA Equipped Price			\$48,500,000	\$50,441,000	\$53,800,000	\$115,000,000**
Characteristics	Seating		2+13/19/19	3+13/15/19	3+12/14/19	4+18/179/—
	Wing Loading/Power Loading		83.8/2.63	90.6/3.14	92.0/3.64	126.2/3.21
	Noise (EPNdB): Lateral/Flyover/Approach		87.4/75.5/91.0	88.7/83.5/89.7	90.1/82.3/92.6	85.7/81.6/92.6
External Dimensions (ft.)	Length		91.2	96.8	76.7	123.3
	Height		25.5	25.5	26.2	38.6
	Span		86.3	94.0	86.0	117.4
Internal Dimensions (ft.)	Length: Main Seating/Net/Gross		26.3/41.5/47.6	27.2/40.7/45.7	26.2/39.1/46.5	89.9/89.9/—
	Height/Dropped Aisle Depth		6.2/flat floor	6.2/flat floor	6.2/flat floor	7.4/flat floor
	Width: Max/Floor		7.6/6.1	7.9/6.5	7.7/6.3	12.1/11.7
Baggage	Internal: Cu. ft./lb.		175/2,250	195/1,000	140/2,004	NA/NA
	External: Cu. ft./lb.		—/—	—/—	—/—	985/NA
Power	Engines		2 P&WC PW814GA	2 RR BR700-710A2-20	3 P&WC PW307A	2 CFMI LEAP-1A26
	Output (lb. each)/Flat Rating		15,144/ISA+15C	14,750/ISA+20C	6,402/ISA+17C	27,120/ISA+29C
	Inspection Interval/Manu. Service Plan Interval		OC/—	OC/—	7,200c/—	OC/—
Weights (lb.)	Max Ramp		80,000	92,750	70,200	175,045
	Max Takeoff		79,600	92,500	70,000	174,165
	Max Landing		64,350	78,600	62,400	148,592
	Zero Fuel		52,100c	58,000c	41,000c	141,757c
	BOW		46,850	50,861	36,600	110,000***
	Max Payload		5,250	7,139	4,400	31,757
	Useful Load		33,150	41,889	33,600	65,045
	Max Fuel		30,250	38,959	31,940	60,803
	Available Payload w/Max Fuel		2,900	2,930	1,660	4,243
	Available Fuel w/Max Payload		27,900	34,750	29,200	33,288
Limits	Muo		0.925	0.890	0.900	0.820
	Trans. Alt. FL/Vmo		NA/NA	FL 303/340	FL 270/370	FL 250/350
	PSI/Sea-Level Cabin		10.7/31,900	10.3/30,125	10.2/29,200	8.3/NA
Airport Performance	TOFL (SL elev./ISA temp.)		5,300	5,540	5,710	6,920
	TOFL (5,000-ft. elev.@25C)		7,340	7,223	8,045	9,355
	Mission Weight		79,600	92,500	69,140	171,950
	NBAA IFR Range		5,200	5,467	5,795	NA
	V2		148	138	133	NA
	Vxcr		118	107	106	NA
	Landing Distance		2,620	2,189	2,120	2,400
Climb	Time to Climb/Altitude		15/FL 370	18/FL 370	19/FL 370	23/FL 360
	FAR 25 Engine-Out Rate (fpm)		NA	457	597	NA
	FAR 25 Engine-Out Gradient (ft./nm)		NA	199	269	NA
Ceilings (ft.)	Certificated		51,000	51,000	51,000	39,000
	All-Engine Service		NA	44,600	40,215	NA
	Engine-Out Service		NA	20,600	25,480	NA
Cruise	Long Range	TAS/Fuel Flow (lb./hr.)	488/2,445	470/2,856	459/2,260	451/4,113
		Altitude/Specific Range	FL 470/0.200	FL 450/0.165	FL 430/0.203	FL 370/0.110
	High Speed	TAS/Fuel Flow (lb./hr.)	516/3,087	499/3,582	497/3,205	473/5,096
NBAA IFR Ranges (FAR Part 23, 100-nm alternate; FAR Part 25, 200-nm alternate)	Altitude/Specific Range		FL 430/0.167	FL 410/0.139	FL 390/0.155	350/0.093
	Max Payload (w/available fuel)	Nautical Miles	4,562	4,920	5,000	2,100
		Average Speed	478	463	453	428
		Trip Fuel	24,910	33,374	26,820	27,936
	Max Fuel (w/available payload)	Specific Range/Altitude	0.183/FL 470	0.147/FL 470	0.186/FL 450	0.075/FL 350
		Nautical Miles	5,212	5,395	5,670	6,000
		Average Speed	480	464	454	438
	Four Passengers (w/available fuel)	Trip Fuel	27,368	35,702	29,560	54,000
		Specific Range/Altitude	0.190/FL 490	0.151/FL 470	0.192/FL 470	0.111/FL 390
		Nautical Miles	5,292	5,546	5,760	6,100
	Ferry	Average Speed	480	464	454	438
		Trip Fuel	27,400	36,010	29,560	54,000
		Specific Range/Altitude	0.193/FL 490	0.154/FL 470	0.195/FL 470	0.113/FL 390
	300 nm	Nautical Miles	5,362	5,598	5,840	62,000
		Average Speed	480	464	454	438
		Trip Fuel	27,425	36,034	29,560	54,000
	600 nm	Specific Range/Altitude	0.196/FL 510	0.155/FL 470	0.198/FL 470	1.148/FL 390
		Runway	3,480	2,487	2,500	3,670
		Flight Time	0+46	0+46	0+46	0+55
Missions (4 passengers)	1,000 nm	Fuel Used	2,375	2,773	2,075	3,709
		Specific Range/Altitude	0.126/FL 490	0.108/FL 450	0.145/FL 450	0.081/FL 350
		Runway	3,500	2,575	2,515	3,700
	600 nm	Flight Time	1+23	1+23	1+25	1+34
		Fuel Used	3,647	4,445	3,285	6,157
		Specific Range/Altitude	0.165/FL 490	0.135/FL 490	0.183/FL 470	0.097/FL 390
	300 nm	Runway	3,525	2,697	2,640	3,760
		Flight Time	2+13	2+13	2+17	2+28
		Fuel Used	5,398	6,752	4,945	9,539
		Specific Range/Altitude	0.185/FL 490	0.148/FL 470	0.202/FL 470	0.105/FL 390
Remarks	Certification Basis		FAR 25, 2018; EASA CS 25, 2020	FAR 25, 1998/2004; EASA 25, 2004 Global Vision flight deck.	FAR/EASA 25, 2007 EASy II flight deck; DFCS. 2019 delivery price.	FAR 25, 1999/2016 *Also available as -271N with IAE PW1127G engines rated at 27,075 lbf; includes four additional center tanks and VIP cabin. **BCA estimate. ***BCA estimate.

ULTRA-LONG-RANGE JETS

Manufacturer			Gulfstream Aerospace	Bombardier	Gulfstream Aerospace	Dassault	Bombardier		
Model			G550 GV-SP	Global 6500 BD-700-1A10	G600 GVII-600	Falcon 8X Falcon 7X	Global 6000 BD-700-1A10		
BCA Equipped Price			\$54,500,000	\$56,000,000	\$58,500,000	\$59,300,000	\$62,310,000		
Characteristics	Seating		4+16/18/19	4+13/15/19	4+16/19/19	3+12/14/19	4+13/15/19		
	Wing Loading/Power Loading		80.1/2.96	97.5/3.29	81.5/3.02	95.9/3.62	97.5/3.37		
	Noise (EPNdB): Lateral/Flyover/Approach		90.2/79.3/90.8	88.7/82.2/89.4	88.3/78.3/91.3	88.7/80.1/90.6	88.7/83.5/89.7		
External Dimensions (ft.)	Length		96.4	99.4	96.1	80.2	99.4		
	Height		25.8	25.5	25.3	26.1	25.5		
	Span		93.5	94.0	94.1	86.3	94.0		
Internal Dimensions (ft.)	Length: Main Seating/Net/Gross		30.3/42.6/50.1	27.3/43.3/48.3	30.2/45.2/51.3	29.8/42.7/50.1	27.3/43.3/48.3		
	Height/Dropped Aisle Depth		6.0/flat floor	6.2/flat floor	6.2/flat floor	6.2/flat floor	6.2/flat floor		
	Width: Max/Floor		7.0/5.4	7.9/6.5	7.6/6.1	7.7/6.3	7.9/6.5		
Baggage	Internal: Cu. ft./lb.		170/2,500	195/1,000	175/2,250	140/2,004	195/1,000		
	External: Cu. ft./lb.		—/—	—/—	—/—	—/—	—/—		
Power	Engines		2 RR BR700-710C4-11	2 RR BR700-710D5-21*	2 P&WC PW815GA	3 P&WC PW307D	2 RR BR700-710A2-20		
	Output (lb. each)/Flat Rating		15,385/ISA+15C	15,125/ISA+15C	15,680/ISA+15C	6,722/ISA+17C	14,750/ISA+20C		
	Inspection Interval/Manu. Service Plan Interval		8,000t or OC/—	OC/OC	10,000t or OC/—	7,200c/—	OC/OC		
Weights (lb.)	Max Ramp		91,400	99,750	95,000	73,200	99,750		
	Max Takeoff		91,000	99,500	94,600	73,000	99,500		
	Max Landing		75,300	78,600	76,800	62,400	78,600		
	Zero Fuel		54,500c	58,000c	57,440c	41,000c	58,000c		
	BOW		48,700	52,230	51,470	36,800	52,230		
	Max Payload		5,800	5,770	5,970	4,200	5,770		
	Useful Load		42,700	47,520	43,530	36,400	47,520		
	Max Fuel		40,994	45,050	41,730	35,141	45,050		
	Available Payload w/Max Fuel		1,706	2,470	1,800	1,259	2,470		
	Available Fuel w/Max Payload		36,900	41,750	37,560	32,200	41,750		
Limits	MVo		0.885	0.900	0.925	0.900	0.890		
	Trans. Alt. FL/Wo		FL 270/340	FL 301/340	NA/NA	FL 270/370	FL 303/340		
	PSI/Sea-Level Cabin		10.2/29,200	10.3/30,125	10.7/31,900	10.2/30,300	10.3/30,125		
Airport Performance	TOFL (SL elev./ISA temp.)		5,910	6,278	5,900	5,880	6,476		
	TOFL (5,000-ft. elev.@25C)		9,070	8,422	NA	8,540	7,926		
	Mission Weight		91,000	99,317p	94,600	72,591	94,628p		
	NBAA IFR Range		6,738	6,639	6,200	6,415	5,560		
	V2		147	143	NA	138	142		
	VREF		112	110	NA	107	110		
Climb	Landing Distance		2,240	2,243	2,550	2,245	2,243		
	Time to Climb/Altitude		18/FL 370	21/FL 370	18/FL 370	20/FL 370	21/FL 370		
	FAR 25 Engine-Out Rate (fpm)		594	401	NA	774	324		
Ceiling (ft.)	FAR 25 Engine-Out Gradient (ft./nm)		242	168	NA	339	137		
	Certificated		51,000	51,000	51,000	51,000	51,000		
	All-Engine Service		42,700	41,600	NA	40,075	41,600		
Cruise	Long Range	Engine-Out Service		25,820	20,500	NA	26,645	18,800	
		TAS		459	470	488	459	470	
		Fuel Flow		2,563	2,841	2,865	2,254	3,046	
		Altitude		FL 450	FL 450	FL 450	FL 430	FL 450	
	High Speed	Specific Range		0.179	0.165	0.170	0.204	0.154	
		TAS		488	499	516	497	499	
		Fuel Flow		3,228	3,451	3,945	3,172	3,796	
		Altitude		FL 430	FL 390	FL 410	FL 390	FL 410	
	NBAA IFR Ranges (200-nm alternate)	Max Payload (w/available fuel)	Specific Range		0.151	0.145	0.131	0.157	0.131
			Nautical Miles		5,767	5,909	5,609	5,555	5,882
			Average Speed		452	464	480	452	464
			Trip Fuel		33,993	38,375	34,617	29,507	40,415
		Max Fuel (w/available payload)	Specific Range/Altitude		0.170/FL 490	0.154/FL 470	0.162/FL 450	0.188/FL 470	0.146/FL 470
			Nautical Miles		6,698	6,575	6,500	6,325	6,130
			Average Speed		454	488	481	453	464
			Trip Fuel		38,202	41,782	38,882	32,558	41,505
Eight Passengers (w/available fuel)		Specific Range/Altitude		0.175/FL 490	0.157/FL 470	0.167/FL 490	0.194/FL 470	0.148/FL 470	
		Nautical Miles		6,708	6,672	6,518	6,235	6,220	
		Average Speed		453	488	481	453	464	
		Trip Fuel		38,205	42,061	38,887	32,204	41,782	
Ferry		Specific Range/Altitude		0.176/FL 490	0.159/FL 470	0.168/FL 490	0.194/FL 470	0.149/FL 470	
		Nautical Miles		6,853	6,792	6,658	6,475	6,330	
		Average Speed		454	488	481	454	464	
		Trip Fuel		38,251	42,113	38,930	32,653	41,831	
Missions (8 passengers)	1,000 nm	Specific Range/Altitude		0.179/FL 510	0.161/FL 470	0.171/FL 490	0.198/FL 470	0.151/FL 470	
		Runway		3,436	2,727	NA	2,715	2,852	
		Flight Time		2+20	2+13	2+12	2+12	2+13	
		Fuel Used		5,599	5,984	5,798	5,440	6,842	
	3,000 nm	Specific Range/Altitude		0.179/FL 490	0.167/FL 470	0.172/FL 490	0.184/FL 450	0.146/FL 470	
		Runway		3,599	3,503	NA	3,730	3,858	
		Flight Time		6+42	6+20	6+19	6+19	6+20	
		Fuel Used		15,474	17,283	16,352	15,945	19,538	
	6,000 nm	Specific Range/Altitude		0.194/FL 490	0.174/FL 470	0.183/FL 490	0.188/FL 450	0.154/FL 470	
		Runway		5,277	5,508	NA	5,785	6,293	
		Flight Time		13+15	12+32	12+29	12+45	12+39	
		Fuel Used		33,428	37,137	35,191	32,200	41,053	
Remarks	Certification Basis		FAR 25, 1997/2003; EASA CS 25, 2004	FAR 25, 1998/2003/19; EASA CS 25, 1998/2019 BEVS and Global Vision flight deck standard. *Marketed as Pearl 15. ModSums: 700T901901; 700T03185; 700T63572.	FAR 25, 2020; EASA CS 25 pending	FAR/EASA 25, 2016 EASy III flight deck; DFCS. 2020 delivery price.	FAR 25, 1998/2003; EASA CS 25, 1998 BEVS and Global Vision flight deck standard.		

ULTRA-LONG-RANGE JETS

Manufacturer			Gulfstream Aerospace		Gulfstream Aerospace		Bombardier		Gulfstream Aerospace		
Model			G650 GVI		G650ER GVI		Global 7500 BD-700-1A10		G700 GVII-G700		
BCA Equipped Price			\$68,500,000		\$70,500,000		\$75,000,000		\$75,000,000		
Character- istics	Seating		4+16/19/19		4+16/19/19		4+17/19/19		4+16/19/19		
	Wing Loading/Power Loading		77.6/2.95		80.7/3.07		91.6/3.04		83.8/2.95		
External	Noise (EPNdB): Lateral/Flyover/Approach		89.8/77.5/88.3		89.6/78.7/88.3		91.6/80.3/88.8		NA/NA/NA		
Dimensions (ft.)	Length		99.8		99.8		111.0		109.9		
	Height		25.7		25.7		27.0		25.4		
	Span		99.6		99.6		104.0		103.0		
Internal Dimensions (ft.)	Length: Main Seating/Net/Gross		32.7/46.8/53.6		32.7/46.8/53.6		36.0/54.4/60.6		40.8/56.9/63.7		
	Height/ Dropped Aisle Depth		6.3/flat floor		6.3/flat floor		6.2/flat floor		6.3/flat floor		
	Width: Max/Floor		8.2/6.7		8.2/6.7		8.0/6.8		8.2/6.7		
Baggage	Internal: Cu. ft./lb.		195/2,500		195/2,500		195/—		195/2,500		
	External: Cu. ft./lb.		—/—		—/—		—/—		—/—		
Power	Engines		2 RR BR700-725A1-12		2 RR BR700-725A1-12		2 GE Passport 20-19BB1A		2 RR Pearl 700*		
	Output (lb. each)/Flat Rating		16,900/ISA+15C		16,900/ISA+15C		18,920/ISA+15C		18,250/NA		
	Inspection Interval/Manu. Service Plan Interval		10,000t/—		10,000t/—		0C/0C		NA/—		
Weights (lb.)	Max Ramp		100,000		104,000		115,100		108,000		
	Max Takeoff		99,600		103,600		114,850		107,600		
	Max Landing		83,500		83,500		87,600		83,500		
	Zero Fuel		60,500c		60,500c		67,500c		62,750c		
	BOW		54,500		54,500		61,700		56,365		
	Max Payload		6,000		6,000		5,800		6,385		
	Useful Load		45,500		49,500		53,400		51,635		
	Max Fuel		44,200		48,200		51,510		49,400		
	Available Payload w/Max Fuel		1,300		1,300		1,890		2,235		
	Available Fuel w/Max Payload		39,500		43,500		47,600		45,250		
Limits	Mmo		0.925		0.925		0.925		0.925		
	Trans. Alt. FL/Vmo		FL 290/340		FL 290/340		FL 320/350		NA/340		
	PSI/Sea-Level Cabin		10.7/31,900		10.7/31,900		10.3/30,125		10.7/31,900		
Airport Performance	TOFL (SL elev./ISA temp.)		5,858		6,299		5,760		6,250		
	TOFL (5,000-ft. elev.@25C)		9,000		11,139		8,679		NA		
	Mission Weight		99,600		103,600		114,850p		107,600		
	NBAA IFR Range		6,912		7,437		7,800		7,500		
	V2		146		148		137		151		
	VREF		114		114		108		116		
Climb	Landing Distance		2,680		2,680		2,240		2,550		
	Time to Climb/Altitude		19/FL 370		21/FL 370		20/FL 370		20/FL 370		
	FAR 25 Engine-Out Rate (fpm)		NA		NA		418		NA		
Ceiling (ft.)	FAR 25 Engine-Out Gradient (ft./nm)		NA		NA		183		NA		
	Certificated		51,000		51,000		51,000		51,000		
	All-Engine Service		42,700		41,000		43,000		41,000		
Cruise	Long Range	Engine-Out Service		25,000		25,000		25,000		NA	
		TAS		488		488		488		488	
		Fuel Flow		2,825		2,883		2,983		2,945	
		Altitude		FL 450		FL 450		FL 450		FL 450	
	High Speed	Specific Range		0.173		0.169		0.164		0.166	
		TAS		516		516		516		516	
NBAA IFR Ranges (200-nm alternate)	Max Payload (w/available fuel)	Fuel Flow		3,136		3,136		3,224		3,540	
		Altitude		FL 450		FL 450		FL 450		FL 450	
		Specific Range		0.165		0.165		0.160		0.146	
		Nautical Miles		5,934		6,459		6,902		6,560	
	Max Fuel (w/available payload)	Average Speed		481		481		474		481	
		Trip Fuel		36,285		40,285		44,610		42,030	
		Specific Range/Altitude		0.164/FL 490		0.160/FL 490		0.155/FL 470		0.156/FL 490	
		Nautical Miles		6,981		7,507		7,700		7,450	
	Eight Passengers (w/available fuel)	Average Speed		482		482		475		482	
		Trip Fuel		41,129		45,129		48,512		46,301	
		Specific Range/Altitude		0.170/FL 510		0.166/FL 510		0.159/FL 510		0.161/FL 510	
		Nautical Miles		6,912		7,437		7,725		7,500	
Missions (8 passengers)	Ferry	Average Speed		481		482		475		482	
		Trip Fuel		40,820		44,820		48,519		46,319	
		Specific Range/Altitude		0.169/FL 510		0.166/FL 510		0.159/FL 510		0.162/FL 510	
		Nautical Miles		7,105		7,636		7,860		7,660	
	1,000 nm	Average Speed		482		482		476		482	
		Trip Fuel		41,168		45,168		48,560		46,364	
		Specific Range/Altitude		0.173/FL 510		0.169/FL 510		0.162/FL 510		0.165/FL 510	
		Runway		3,241		3,241		3,442		3,210	
Remarks	3,000 nm	Flight Time		2+10		2+10		2+14		2+10	
		Fuel Used		5,942		5,942		5,879		5,993	
		Specific Range/Altitude		0.168/FL 510		0.168/FL 510		0.170/FL 510		0.167/FL 510	
		Runway		3,591		3,591		3,567		3,490	
	6,000 nm	Flight Time		6+17		6+17		6+21		6+17	
		Fuel Used		16,280		16,280		16,799		16,564	
		Specific Range/Altitude		0.184/FL 510		0.184/FL 510		0.179/FL 510		0.181/FL 510	
		Runway		5,241		5,241		4,678		5,060	
Flight Time		12+28		12+28		12+32		12+27			
Fuel Used		34,622		34,622		35,761		35,372			
Specific Range/Altitude		0.173/FL 510		0.173/FL 510		0.168/FL 510		0.170/FL 510			
Certification Basis			FAR, EASA CS 25, 2012		FAR 25, 2014; EASA CS 25, 2018 ASC 014		FAR 25, 2018; EASA CS 25, 2019		FAR 25 pending; EASA CS 25 pending 2022 delivery price. *Marketing name only.		

ULTRA-LONG-RANGE JETS

Manufacturer			Boeing	Boeing	Airbus	Boeing
Model			BBJ MAX7 737-7	BBJ MAX8 737-8	ACJ319NEO A319-151N*	BBJ MAX9 737-9
BCA Equipped Price			\$91,200,000	\$99,000,000	\$105,000,000**	\$107,900,000
Character- istics	Seating		4+19/71/172	4+19/71/189	4+19/19/156	4+19/75/220
	Wing Loading/Power Loading		132.0/3.02	135.1/3.09	123.5/3.55	145.2/3.32
	Noise (EPNdB): Lateral/Flyover/Approach		NA/NA/NA	NA/NA/NA	84.9/81.4/92.0	NA/NA/NA
External Dimensions (ft.)	Length		116.7	129.7	111.0	138.3
	Height		40.3	40.3	38.6	40.3
	Span		117.8	117.8	117.4	117.8
Internal Dimensions (ft.)	Length: Main Seating/Net/Gross		83.9/85.5/85.5	91.9/98.5/98.5	79.0/79.0/—	100.6/107.2/107.2
	Height/Dropped Aisle Depth		7.1/flat floor	7.1/flat floor	7.4/flat floor	7.1/flat floor
	Width: Max/Floor		11.6/10.7	11.6/10.7	12.2/11.6	11.6/10.7
Baggage	Internal: Cu. ft./lb.		NA/NA	NA/NA	160/NA	NA/NA
	External: Cu. ft./lb.		274/NA	654/NA	128/NA	821/NA
Power	Engines		2 CFMI LEAP-1B	2 CFMI LEAP-1B	2 CFMI LEAP-1A24	2 CFMI LEAP-1B
	Output (lb. each)/Flat Rating		29,300/ISA+15C	29,300/ISA+15C	24,010/ISA+30C	29,300/ISA+15C
	Inspection Interval/Manu. Service Plan Interval		OC/—	OC/—	OC/—	OC/—
Weights (lb.)	Max Ramp		177,500	181,700	171,299	195,200
	Max Takeoff		177,000	181,200	170,417	194,700
	Max Landing		145,600	152,800	140,875	163,900
	Zero Fuel		138,700c	145,400c	132,939c	156,500c
	BOW		105,830	109,890	104,000***	117,900
	Max Payload		35,400	35,510	28,939	38,600
	Useful Load		71,670	71,810	67,299	77,300
	Max Fuel		70,109	70,149	66,196	73,734
	Available Payload w/Max Fuel		1,561	1,661	1,103	3,567
	Available Fuel w/Max Payload		36,300	36,300	38,360	38,700
Limits	Mwo		0.820	0.820	0.820	0.820
	Trans. Alt. FL/Vmo		FL 260/340	FL 260/340	FL 250/350	FL 260/340
	PSI/Sea-Level Cabin		9.0/24,000	9.0/24,000	9.0/24,000	9.0/24,000
Airport Performance	TOFL (SL elev./ISA temp.)		6,630	6,630	6,036	8,200
	TOFL (5,000-ft. elev.@25C)		NA	NA	8,360	NA
	Mission Weight		NA	NA	NA	NA
	NBAA IFR Range		NA	NA	NA	NA
	V2		NA	NA	137	NA
	Vref		122	122	111	124
	Landing Distance		2,440	2,440	2,220	2,570
Climb	Time to Climb/Altitude		24/FL 350	24/FL 350	22/FL 360	26/FL 330
	FAR 25 Engine-Out Rate (fpm)		NA	NA	NA	NA
	FAR 25 Engine-Out Gradient (ft./nm)		NA	NA	NA	NA
Ceiling (ft.)	Certificated		41,000	41,000	41,000	41,000
	All-Engine Service		NA	NA	36,000	NA
	Engine-Out Service		NA	NA	18,000	NA
Cruise	Long Range	TAS	455	455	447	457
		Fuel Flow	NA	NA	4,100	NA
		Altitude	FL 380	FL 380	FL 370	FL 360
		Specific Range	NA	NA	0.109	NA
	High Speed	TAS	471	471	470	471
		Fuel Flow	NA	NA	5,050	NA
		Altitude	FL 360	FL 360	FL 370	FL 360
		Specific Range	NA	NA	0.093	NA
NBAA IFR Ranges (200-nm alternate)	Max Payload (w/available fuel)	Nautical Miles	2,692	2,692	2,679	2,628
		Average Speed	NA	NA	434	NA
		Trip Fuel	NA	NA	NA	NA
		Specific Range/Altitude	NA/FL 370	NA/FL 370	NA/FL 370	NA/FL 350
	Max Fuel (w/available payload)	Nautical Miles	NA	NA	6,750	NA
		Average Speed	NA	NA	442	NA
		Trip Fuel	NA	NA	61,785	NA
		Specific Range/Altitude	NA/FL 390	NA/FL 390	0.109/FL 410	NA/FL 390
	Eight Passengers (w/available fuel)	Nautical Miles	7,000	6,640	6,750	6,515
		Average Speed	NA	NA	442	NA
		Trip Fuel	NA	NA	61,785	NA
		Specific Range/Altitude	NA/FL 390	NA/FL 390	0.109/FL 410	NA/FL 410
	Ferry	Nautical Miles	NA	NA	6,800	NA
		Average Speed	NA	NA	442	NA
		Trip Fuel	NA	NA	61,785	NA
		Specific Range/Altitude	NA/FL 390	NA/FL 390	0.110/FL 410	NA/FL 410
Missions (8 passengers)	1,000 nm	Runway	NA	NA	4,075	NA
		Flight Time	NA	NA	2+26	NA
		Fuel Used	NA	NA	9,017	NA
		Specific Range/Altitude	NA/NA	NA/NA	0.111/FL 410	NA/NA
	3,000 nm	Runway	NA	NA	4,280	NA
		Flight Time	NA	NA	6+54	NA
		Fuel Used	NA	NA	26,148	NA
		Specific Range/Altitude	NA/NA	NA/NA	0.115/FL 410	NA/NA
	6,000 nm	Runway	NA	NA	6,160	NA
		Flight Time	NA	NA	13+35	NA
		Fuel Used	NA	NA	56,981	NA
		Specific Range/Altitude	NA/NA	NA/NA	0.105/FL 410	NA/NA
Remarks	Certification Basis	FAR 25, 2018 15,500-lb. interior allowance. All data preliminary.	FAR 25 A 137, 2017 18,000-lb. interior allowance. All data preliminary.	FAR 25, 1999/2018 *Also available with IAEV2527M-A5 engines with 26,500 lbf; includes five additional center tanks plus VIP cabin. **BCA estimate. ***BCA estimate.	FAR 25 A 141, 2018 21,000-lb. interior allowance. All data preliminary.	