

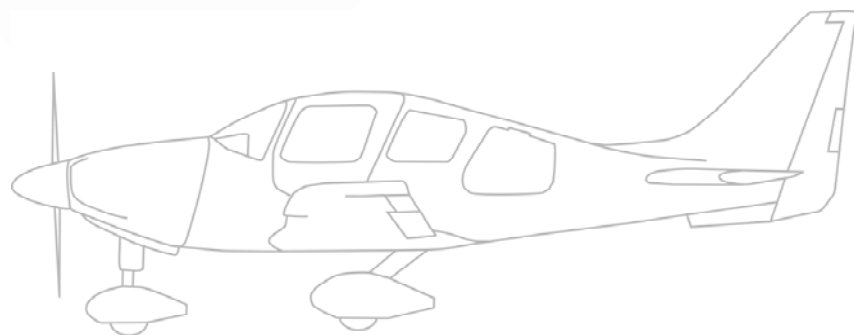
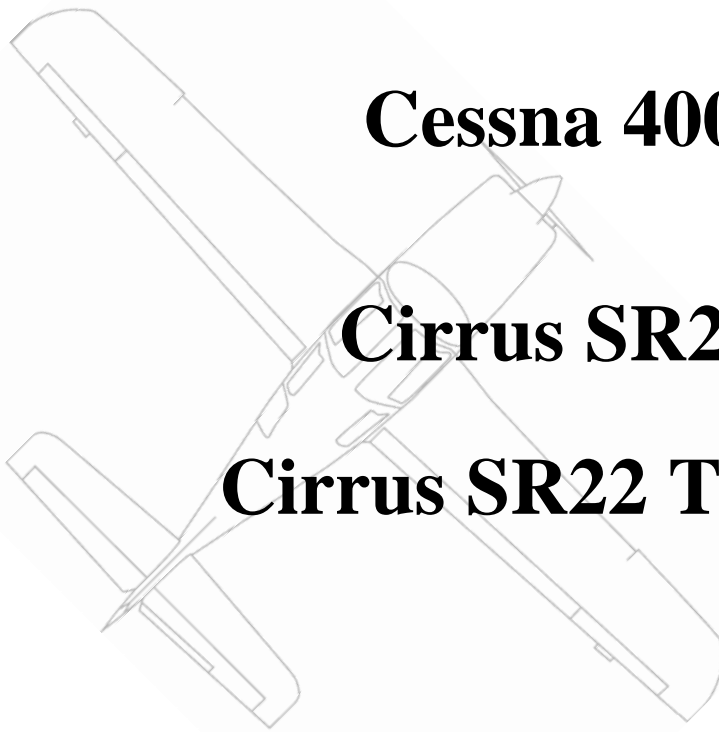
## **Aircraft Comparison**

**Cessna 350**

**Cessna 400**

**Cirrus SR22**

**Cirrus SR22 Turbo**



**Sales Engineering, Piston Marketing  
Cessna Aircraft Company  
April, 2008**

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# **INTRODUCTION**

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This comparative analysis examines the features of the **Cessna 350** and the **Cessna 400** in relation to the **Cirrus SR22** and **Cirrus SR22 Turbo**. Subjects reviewed in the following pages include:

## **BASIC PERFORMANCE**

## **FLIGHT PROFILES**

## **OPERATING ECONOMICS**

## **TECHNICAL EVALUATION**

## **BASIC SPECIFICATIONS & WEIGHTS**

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## EXECUTIVE SUMMARY

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This comparative analysis examines the benefits of purchasing the Cessna 350/400 versus the Cirrus SR22/SR22 Turbo. The Cessna 350/400 offers the better value for the following reasons:

### **PERFORMANCE: The Cessna 350/400 offer superior performance**

- Fewer fuel stops by reason of its greater efficiency and range capability
- Shorter flight times resulting from its higher cruise speeds leads to greater utilization

### **AIRCRAFT DESIGN: The Cessna 350/400 offer a better design**

- Higher quality interior and exterior fit and finish
- Greater avionics integration minimizes cockpit clutter and reduces pilot workload
- Meets more stringent design criteria
  - Utility Category vs Normal Category
- Engine manufacturer warranty support for turbocharged engine

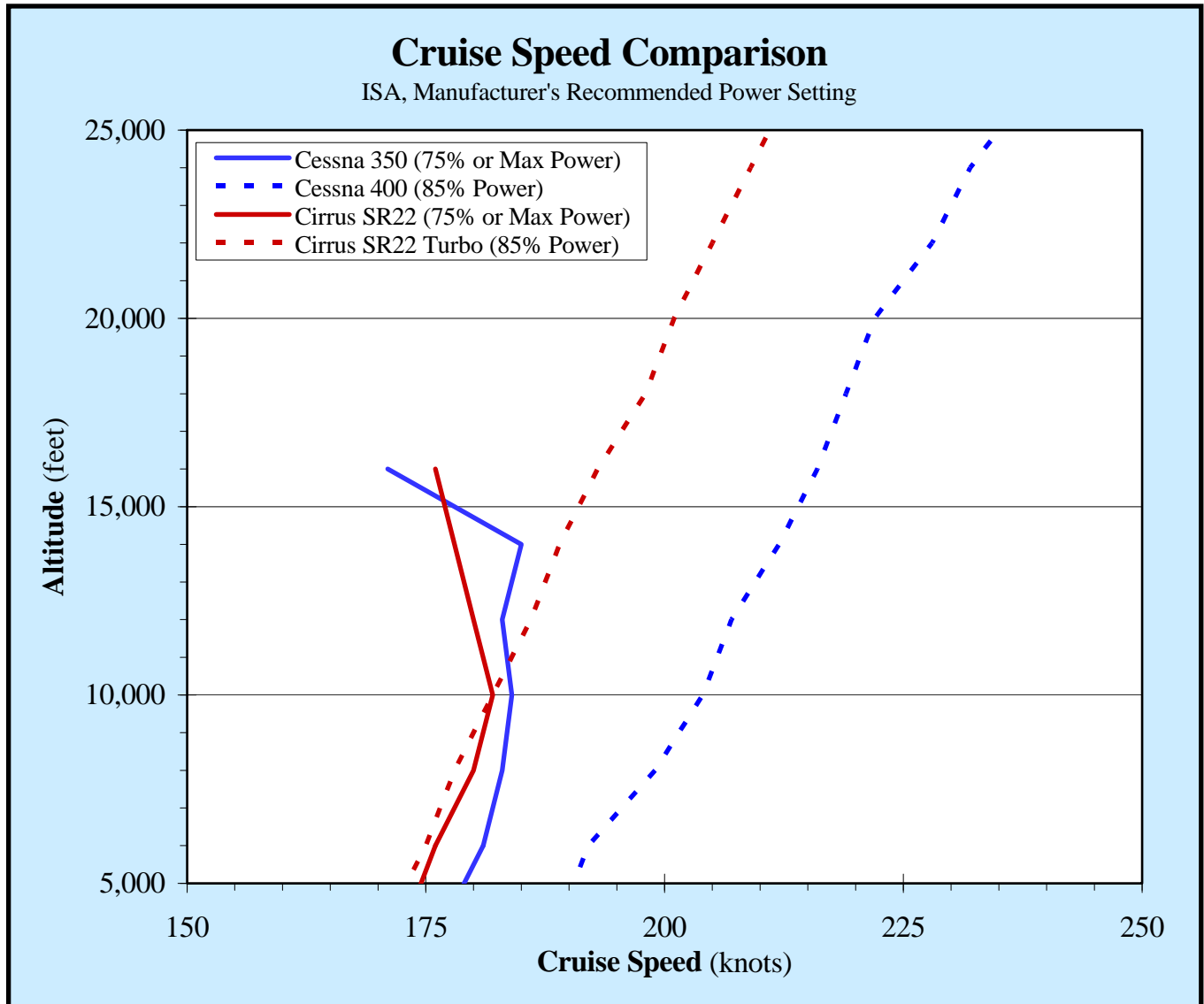
### **CUSTOMER SUPPORT: Cessna is an industry leader**

- Comprehensive warranty program
- Extensive world-wide service station network
- 24 hour, 7 days a week access to parts and technical assistance

The following pages detail the greater value offered by the Cessna 350 and Cessna 400.

# CRUISE SPEEDS

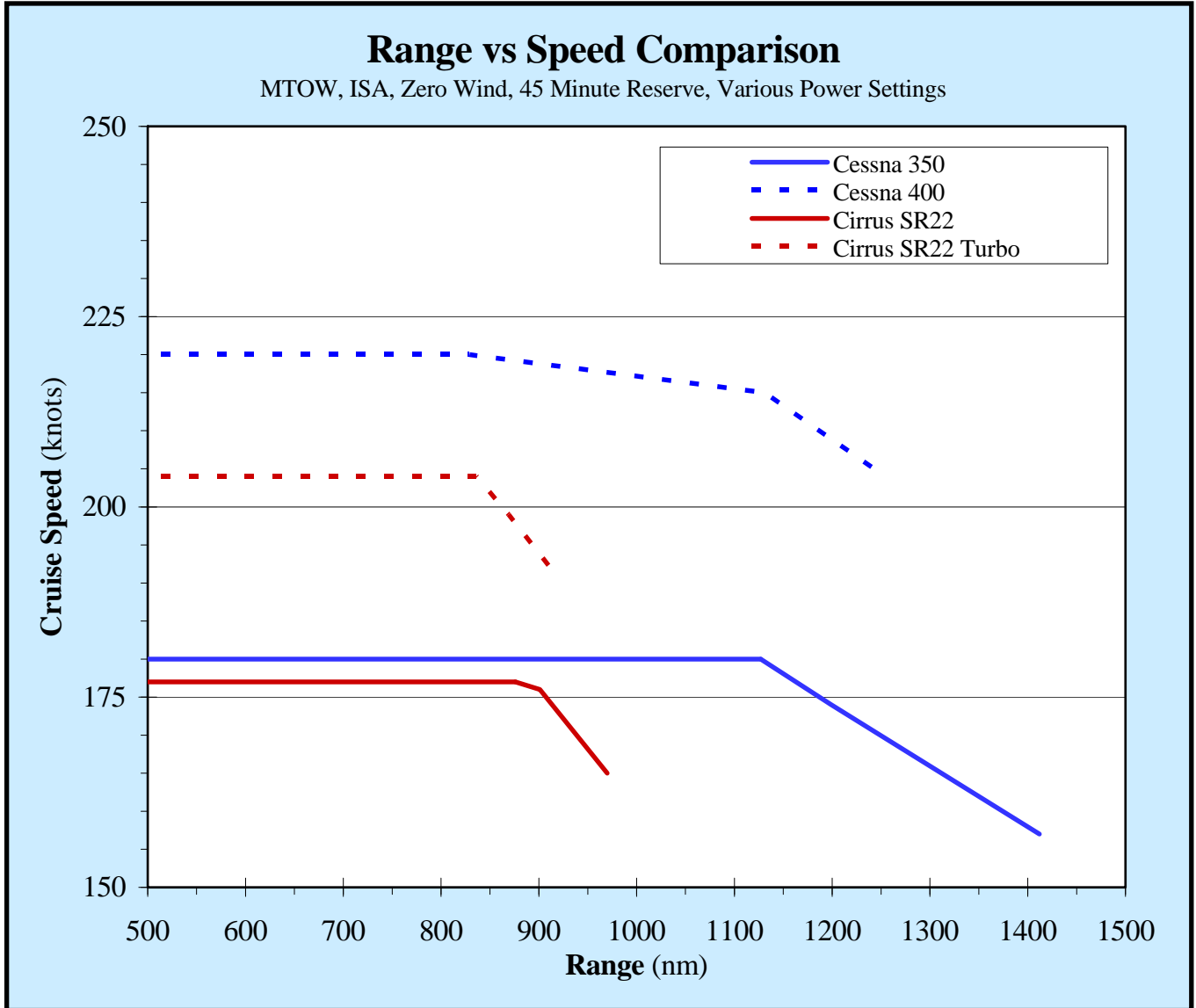
Cruise speed represents the true airspeed for each aircraft at various cruising altitudes. Airspeeds are based on the recommended cruise power setting published in each manufacturer's flight manual or operating/pilot manual (75% or Max Power for the Cessna 350 and Cirrus SR22; 85% Power for the Cessna 400 and Cirrus SR22 Turbo). Airspeeds are reported using standard conditions (ISA).



Note: Cessna 350 cruise speeds are shown at Rich of Peak above 65% power and Lean of Peak below 65% power; Cirrus SR22 cruise speeds are shown at Lean of Peak for all power settings

# RANGE

Cruise speed represents the average true airspeed for each aircraft through a complete mission including climb, cruise, and descent. All climbs are calculated at Rich of Peak power settings. All Cirrus cruise data is calculated at Lean of Peak power settings; Cessna 350 and Cessna 400 cruise data is calculated at Rich of Peak power settings above 65% and Lean of Peak power settings at or below 65%.



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## FLIGHT PROFILES

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Optimum flight profiles are presented on the following page. These profiles are calculated with a computer program developed to simulate a typical mission and are based on performance data from manufacturers' flight manuals and operating or pilot manuals.

1. **Distance** is shown in nautical miles for selected distances.
2. **Power** setting shown is the manufacturer's recommended setting for cruise flight. Cruise power settings used are 75% or Max for the Cessna 350 and Cirrus SR22 and 85% for the Cessna 400 and Cirrus SR22 Turbo.
3. **Takeoff Weight** reflects the aircraft's typically-equipped empty weight plus the fuel required to complete the trip, the indicated number of passengers and payload, and reserve fuel.
4. **Flight Time** shown is for the climb, cruise, and descent phases of the flight. No allowance has been made for taxi, takeoff, approach, or air traffic control procedures.
5. **Block Fuel** includes all phases of the flight, plus a fuel allowance for taxi and takeoff.
6. **Number of Passengers** includes the pilot and other occupants. Weight allowances are based on 170 pounds per passenger.
7. **Cruise Altitude** shown is based on an optimal altitude for the given distance flown.
8. **Reserve Fuel** is the amount of fuel remaining upon arrival at the destination. For this analysis, a 45 minute reserve is used. Reserve fuel is not included in the amount of block fuel used.

All profiles assume ISA conditions and zero wind enroute. Profiles for all aircraft are based on a single pilot.

# FLIGHT PROFILES

<b>Distance</b>	<b>PWR</b>	<b>Takeoff Weight (lb)</b>	<b>Flight Time (hr:mn)</b>	<b>Block Fuel (lb/gal)</b>	<b>Num Pax</b>	<b>Total Pyld (lb)</b>	<b>Cruise Alt (ft)</b>	<b>Reserve Fuel (lb/gal)</b>
<b>200 Nautical Miles</b>								
Cessna 350	75% or Max	2,822	1:11	105/18	3	510	11,000	47/8
Cessna 400	85%	3,071	1:00	143/24	3	510	11,000	59/10
Cirrus SR22	75% or Max	2,852	1:11	124/21	3	510	11,000	59/10
Cirrus SR22 Turbo	85%	2,961	1:08	141/24	3	510	11,000	63/11
<b>400 Nautical Miles</b>								
Cessna 350	75% or Max	2,921	2:17	204/34	3	510	12,000	47/8
Cessna 400	85%	3,208	1:56	280/47	3	510	25,000	59/10
Cirrus SR22	75% or Max	2,957	2:18	230/38	3	510	12,000	59/10
Cirrus SR22 Turbo	85%	3,081	2:01	261/44	3	510	25,000	63/11
<b>600 Nautical Miles</b>								
Cessna 350	75% or Max	3,020	3:22	303/51	3	510	12,000	47/8
Cessna 400	85%	3,336	2:47	407/68	3	510	25,000	59/10
Cirrus SR22	75% or Max	3,064	3:25	337/56	3	510	12,000	59/10
Cirrus SR22 Turbo	85%	3,182	2:58	362/60	3	510	25,000	63/11



**Cessna**  
A Textron Company

## ECONOMICS

The following analysis utilizes Conklin and deDecker information to compare the "relative cost" of operating each aircraft.

<b>Estimated Operating Cost</b> For a Typical 500 Nautical Mile Trip			
	<u><b>Cessna 350</b></u>	<u><b>Cessna 400</b></u>	<u><b>Cirrus SR22</b></u>
Fuel Flow (gallons/hour) <sup>2</sup>	17	18	18
Maintenance Labor Hours (per flight hour) <sup>3</sup>	0.35	0.40	0.29
<u><b>Operating Cost per Flight Hour</b></u>			
Fuel (\$ 4.50 per gallon)	\$ 76.50	\$ 81.00	\$ 81.00
Oil	\$ 1.86	\$ 1.97	\$ 1.97
Maintenance: <sup>3</sup>			
- Labor (\$70.00 per hour)	\$ 24.50	\$ 28.00	\$ 20.30
- Parts	\$ 11.48	\$ 12.63	\$ 10.76
Engine Reserves <sup>4</sup>	\$ 14.94	\$ 14.94	\$ 14.94
Propeller Reserves <sup>5</sup>	\$ 1.11	\$ 1.11	\$ 2.06
<b>Total Cost per Flight Hour</b>	<b>\$ 130.39</b>	<b>\$ 139.65</b>	<b>\$ 131.03</b>

Note: Conklin & de Decker data not available for the Cirrus SR22 Turbo.

1. Operating cost estimates are based on information from Conklin & de Decker Associates' *The Aircraft Cost Evaluator* (Fall 2007). Cessna does not warrant this information but merely provides this data for the customer's convenience.
2. Based on a 200 nautical mile trip using performance data derived from flight manuals – includes ground fuel. Conklin adds 15% to the calculated fuel burn amount to "...account for less than ideal operating conditions."
3. Labor costs: "The average cost of routine, scheduled and unscheduled maintenance labor for the airframe and avionics." Parts costs: "The average cost of all airframe, avionics and minor engine consumable parts required for normal scheduled and unscheduled maintenance." Maintenance costs cover a 10-year period and are "...based on an analysis of data available from operator experience, manufacturer's data and surveys."
4. "A per hour allowance that is a set aside to cover overhaul of the engine at the recommended TBO."
5. "Includes both parts and labor required for overhaul of the propeller, including the cost of any life-limited parts."



# CERTIFICATION

Dual carbon fiber wing spars offer added strength to the airframe of the Cessna 350 and 400. The resulting durable construction of the aircraft is verified by the aircraft's certification in the Utility Category. Aircraft certified in the Utility Category endure a higher level of testing including greater G-force loading and more aggressive maneuvers. This translates into more safety for the occupants of the Cessna 350 and 400 compared to its competitors.

Certification Category				
	Utility Category		Normal Category	
	Cessna 350	Cessna 400	Cirrus SR22	Cirrus SR22 Turbo
Maneuvers	Bank Angle up to 90°		Bank Angle up to 60°	
Spins	Spin Resistant	Spin Recoverable	Ballistic Parachute provides Equivalent Level of Safety	
Load Factors	+4.4 / -1.76 g's		+3.89* / -1.56 g's	

\* Normal Category positive load factor =  $2.1 + (24,000 / (MTOW + 10,000))$

## AVIONICS

- The Cessna 350 and 400 feature the Garmin G1000 advanced avionics system. Flight instrumentation, engine performance, weather, terrain, traffic and airspace awareness are integrated and graphically overlaid with precise GPS position, course and flight plans on the PFD and MFD. An alpha-numeric keypad allows direct data entry and enables pilots to perform PFD and MFD functions from an accessible location on the center console. Enhanced situational awareness provided by the various mapping functions increases safety. The integrated GFC700 autopilot decreases pilot workload and allows for smooth transitions in all phases of flight including coupled approaches.



- The Cirrus SR22 and SR22 Turbo are equipped with the Avidyne Entegra avionics package which displays information from other sources such as the dual Garmin GNS430s. This avionics configuration provides less total integration than the Garmin G1000 system and requires more pilot interface.



## SYSTEMS DESIGN

- The Cessna 350 and 400 are equipped with a unique side stick flight control. This device incorporates a single pivot point and provides the feel of a traditional control stick. The side stick flight controls utilize solid push rods to communicate control inputs to the control surfaces resulting in direct control feedback.
- The Cirrus SR22 and SR22 Turbo are equipped with side yokes which replicate the feel of a control yoke. The side yoke flight controls are connected to the control surfaces with springs and pulleys.

Cesna 350/400



Cirrus SR22/SR22 Turbo



- The Cessna 350 and 400 doors open in a gull-wing fashion and can be unlocked via the Remote Keyless Entry system. A latch annunciator on the PFD informs the pilot when the doors are secure after which the equipped door seals can be inflated providing an additional sound barrier for a quieter cabin. Overhead doors are less susceptible to ground damage from wind.
- The Cirrus SR22 and SR22 Turbo doors are forward hinged and do not offer door seals or remote keyless entry.

Cesna 350/400



Cirrus SR22/SR22 Turbo



## SYSTEMS DESIGN

- The Cessna 350 and 400 feature the Precise Flight Speed Brake System. This system is deployable at any airspeed up to  $V_{NE}$  and provides an alternative method to slow the aircraft without the need for an excessive power reduction.
- The Cirrus SR22 and SR22 Turbo are not equipped with speed brakes and may require a power reduction to maintain  $V_A$  in turbulent weather which may cause excessive cooling on descent.

Precise Flight Speed Brakes



- The Cessna 350 and 400 offer redundant electrical systems comprised of two 60 amp alternators connected by a crosstie switch. Each alternator is capable of supporting the aircraft's entire electrical load which provides a fully redundant source of electrical power.
- The Cirrus SR22 and SR22 Turbo is equipped with one 60 amp primary alternator and one 20 amp secondary alternator. In the event of primary alternator failure, electrical loads must be shed and various non-essential systems such as the MFD, audio panel, and flaps will not function.

One of two 70 amp alternators  
Cessna 350/400



# WARRANTY

<b>Warranty Highlights</b>				
	Cessna 350	Cessna 400	Cirrus SR22	Cirrus SR22 Turbo
Major Airframe	2 years	2 years	2 years / 1,000 hours	2 years / 1,000 hours
Paint and Graphics	1 year	1 year	2 years / 1,000 hours	2 years / 1,000 hours
Standard Avionics	2 years	2 years	2 years	2 years
Engine	5 years / 2,000 hours	5 years / 2,000 hours	2 years / 1,000 hours	2 years / 1,000 hours
Propeller	3 years	1 year / 1,000 hours	1 year / 1,000 hours	1 year / 1,000 hours

# SPECIFICATIONS

Performance Specifications		
	Cessna 350	Cirrus SR22
<b>Speed &amp; Range</b>		
Maximum Speed (ktas)	191 (8,000 ft)	185 (sea level)
Cruise Speed (ktas)	181 (75% @ 12,000 ft)	177 (75% @ 12,000 ft)
Max Cruise Range (nm)	1,127 (45 minute reserve, Max)	876 (45 minute reserve, Max)
Endurance Cruise Range (nm)	1,412 (45 minute reserve, 55%)	970 (45 minute reserve, 55%)
<b>Takeoff Distance - Sea Level, ISA, MTOW (ft)</b>		
Ground Roll	1,300	1,028
To Clear 50 Feet Obstacle	2,300	1,594
<b>Landing Distance - Sea Level, ISA, MLW (ft)</b>		
Ground Roll	1,550	1,141
To Clear 50 Feet Obstacle	2,350	2,344
<b>Climb &amp; Ceiling</b>		
Rate of Climb at Sea Level (ft/min)	1,225	1,304
Service Ceiling (ft) <sup>1</sup>	18,000	17,500
Certified Ceiling (ft)	18,000	17,500
<b>Weights (lb)</b>		
Maximum Ramp Weight	3,400	3,400
Maximum Takeoff Weight	3,400	3,400
Maximum Landing Weight	3,230	3,400
Usable Fuel Capacity (gal)	102	92
Typically-Equipped Empty Weight <sup>2</sup>	2,300	2,225
Useful Load <sup>3</sup>	1,100	1,175
Full-Fuel Payload <sup>4</sup>	488	623

1. Maximum altitude at which the aircraft can maintain a climb rate of 50 ft/min.

2. Typically-equipped, empty weight includes aircraft avionics, typical options, interior, engine oil, trapped fluids, and unusable fuel. Does not include a weight allowance for a pilot.

3. Amount of payload and/or fuel than can be carried. Based on Ramp Weight minus Typically-Equipped Empty Weight.

4. Amount of payload that can be carried when the fuel tanks are full.



# SPECIFICATIONS

Basic Specifications		
	Cessna 350	Cirrus SR22
<b>Certification Basis</b>	Part 23	Part 23
<b>Aircraft Dimensions</b> (ft in)		
Length	25' 2"	26' 0"
Height	9' 0"	8' 10"
Wing Span	35' 10"	38' 4"
Wing Loading (lb/in <sup>2</sup> )	24.1	23.4
<b>Cabin Dimensions</b>		
Length (ft in) <sup>1</sup>	11' 8"	10' 2"
Height (in)	49"	39 - 50"
Width (in)	49"	40 - 49"
<b>Accommodations</b>		
Number of Passenger Seats (standard - maximum)	3 - 3	3 - 3
Baggage Capacity (ft <sup>3</sup> /lb)	20 / 120	32 / 130
<b>Engine</b>		
Manufacturer	Teledyne Continental	Teledyne Continental
Model	IO-550-N	IO-550-N
Power Output	310 hp (2,700 rpm)	310 hp (2,700 rpm)
Overhaul Interval (hr)	2,000	2,000
<b>Propeller</b>		
Manufacturer	McCauley	Hartzell
Description	3 blade metal, constant speed	3 blade metal, constant speed
Diameter (in)	78	78
Ground Tip Clearance (in)	10.5	9.0
Overhaul Interval (hr)	2,400	N/A

1. Firewall to rear bulkhead.

# SPECIFICATIONS

Performance Specifications		
	Cessna 400	Cirrus SR22 Turbo
<b>Speed &amp; Range</b>		
Maximum Speed (ktas)	235 (25,000 ft)	219 (sea level)
Cruise Speed (ktas)	220 (85% @ 25,000 ft)	204 (85% @ 25,000 ft)
Max Cruise Range (nm)	829 (45 minute reserve, 85%)	836 (45 minute reserve, 85%)
Endurance Cruise Range (nm)	1,254 (45 minute reserve, 55%)	918 (45 minute reserve, 65%)
<b>Takeoff Distance - Sea Level, ISA, MTOW (ft)</b>		
Ground Roll	1,300	1,020
To Clear 50 Feet Obstacle	1,900	1,574
<b>Landing Distance - Sea Level, ISA, MLW (ft)</b>		
Ground Roll	1,250	1,141
To Clear 50 Feet Obstacle	2,600	2,325
<b>Climb &amp; Ceiling</b>		
Rate of Climb at Sea Level (ft/min)	1,400	N/A
Service Ceiling (ft) <sup>1</sup>	25,000	25,000
Certified Ceiling (ft)	25,000	25,000
<b>Weights (lb)</b>		
Maximum Ramp Weight	3,600	3,400
Maximum Takeoff Weight	3,600	3,400
Maximum Landing Weight	3,420	3,400
Usable Fuel Capacity (gal)	102	92
Typically-Equipped Empty Weight <sup>2</sup>	2,500	2,320
Useful Load <sup>3</sup>	1,100	1,080
Full-Fuel Payload <sup>4</sup>	488	528

1. Maximum altitude at which the aircraft can maintain a climb rate of 50 ft/min.

2. Typically-equipped, empty weight includes aircraft avionics, typical options, interior, engine oil, trapped fluids, and unusable fuel. Does not include a weight allowance for a pilot.

3. Amount of payload and/or fuel than can be carried. Based on Ramp Weight minus Typically-Equipped Empty Weight.

4. Amount of payload that can be carried when the fuel tanks are full.





# SPECIFICATIONS

Basic Specifications		
	Cessna 400	Cirrus SR22 Turbo
<b>Certification Basis</b>	Part 23	Part 23
<b>Aircraft Dimensions</b> (ft in)		
Length	25' 4"	26' 0"
Height	9' 0"	8' 10"
Wing Span	35' 10"	38' 4"
Wing Loading (lb/in <sup>2</sup> )	25.5	23.4
<b>Cabin Dimensions</b>		
Length (ft in) <sup>1</sup>	11' 8"	10' 2"
Height (in)	49"	39 - 50"
Width (in)	49"	40 - 49"
<b>Accommodations</b>		
Number of Passenger Seats (standard - maximum)	3 - 3	3 - 3
Baggage Capacity (ft <sup>3</sup> /lb)	20 / 120	32 / 130
<b>Engine</b>		
Manufacturer	Teledyne Continental	Teledyne Continental
Model	TSIO-550-C	IO-550-N + TA Turbo
Power Output	310 hp (2,600 rpm)	310 hp (2,700 rpm)
Overhaul Interval (hr)	2,000	N/A
<b>Propeller</b>		
Manufacturer	Hartzell	Hartzell
Description	3 blade metal, constant speed	3 blade composite, constant speed
Diameter (in)	78	78
Ground Tip Clearance (in)	10.5	9.0
Overhaul Interval (hr)	2,400	N/A

<sup>1</sup>. Firewall to rear bulkhead.