

# ARCHIVED REPORT

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## Sikorsky S-333

### Outlook

- Sikorsky has canceled production of the S-434 and is no longer taking orders for the S-333
- R66 has similar performance, range and payload but costs far less
- Bell's new 505 Jet Ranger X will soon enter the market, adding to the competition

### Orientation

**Description.** Three- to four-place, single-turbine-powered light helicopter.

**Sponsor.** Privately sponsored by Schweizer, which was later acquired by Sikorsky.

**Status.** In production.

**Total Produced.** Through 2014, Schweizer and Sikorsky produced a total of approximately 32 Model S-330s, 67 Model S-333s, and 10 S-434s.

**Application.** Flight training, police patrol, forestry / environmental protection, and other utility missions.

**Price Range.** S-333, \$1.4 million, typically equipped. The cost of the S-434 is estimated at \$1.6 million.

## Sikorsky S-333



Sikorsky S-333

Source: Sikorsky

## Contractors

## Prime

<b>Sikorsky Aircraft Corp</b>	<a href="http://www.sikorsky.com">http://www.sikorsky.com</a> , 6900 Main St, Stratford, CT 06614 United States, Tel: + 1 (203) 386-4000, Fax: + 1 (203) 386-7300, Prime
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## Subcontractor

<b>Rolls-Royce Corp</b>	<a href="http://www.rolls-royce.com/northamerica/na/">http://www.rolls-royce.com/northamerica/na/</a> , 2001 S Tibbs Ave, Indianapolis, IN 46206 United States, Tel: + 1 (317) 230-2000, Fax: + 1 (317) 230-4020 (250-C20W Turboshaft)
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Contractors are invited to submit updated information to Editor, International Contractors, Forecast International, 22 Commerce Road, Newtown, CT 06470, USA; [rich.pettibone@forecast1.com](mailto:rich.pettibone@forecast1.com)

## Technical Data

## (S-333)

**Design Features.** Conventional, single-main-rotor, light helicopter with three-blade main and two-blade tail rotor systems. Three-abreast seating has been modified, with the center seat elevated and set back approximately

1 foot. Four-post skid landing gear is mounted to the fuselage. A single tubular tail boom carries the tail rotor on the left side, with a canted vertical fin and single ventral fin.

**Dimensions**

Length overall, rotors turning  
Height overall

**Metric**

9.54 m  
3.35 m

**U.S.**

31.25 ft  
11.0 ft

## Sikorsky S-333

Cabin width at seat	1.707 m	5.6 ft
Cabin height at seat	1.34 m	4.41 ft
Main rotor diameter	8.39 m	27.5 ft
Tail rotor diameter	1.30 m	4.25 ft
<b>Weight</b>		
Empty weight	590 kg	1,300 lb
Max gross, normal	1,157 kg	2,550 lb
Useful load	567 kg	1,250 lb
<b>Performance</b>		
Max cruise speed	176 kmph	95 kt
Max range	574 km	310 nm
Hover ceiling IGE @ 2,300 lb	3,749 m	12,300 ft
Hover ceiling OGE @ 2,300 lb	2,835 m	9,200 ft
<b>Propulsion</b>		
333	(1) Model 250-C20W rated at 313.2 kW (420 shp) but derated to 208 kW (280 shp) max continuous.	
434	(1) Model 250-C20W rated at 313.2 kW (420 shp) but derated to 238 kW (320 shp) max continuous.	

**Seating**

Standard seating for three, with four seats in a high-density configuration.

## Variants/Upgrades

**330.** Turbine-powered evolution of the Model 300C piston helicopter. A new cockpit and rear fuselage fairing resulted in altered external appearance. Cabin widened by 17 inches and lengthened by 24 inches. Streamlined fairings were incorporated into the tail boom and rear fuselage, and the max fuel capacity was increased by 50 U.S. gallons.

**330SP.** Introduced in the spring of 1997, the 330SP features larger rotor blades, higher-stance landing gear, and a larger main rotor hub, resulting in a 13 percent increase in max cruise speed, a 17 percent increase in max range, and a 7 percent increase in max endurance, as well as an increase in max gross weight to 2,260 pounds from 2,230 pounds. An SP upgrade is available as a retrofit to existing 330s.

**333/S-333.** Upgraded Model 330, offering a 100-pound increase in useful load and featuring a redesigned rotor system and larger-diameter blades. Certification and initial deliveries took place in September 2000. Redesignated the "S-333" as part of the Sikorsky rebranding effort.

**434/S-434.** Evolution of the 333 model that adds a seat and uses the dynamic components and four-bladed rotor of the Northrop Grumman MQ-88 Fire Scout unmanned air vehicle (UAV). It uses a more powerful version of the Rolls-Royce 250-C20W turboshaft to improve performance. Sikorsky says that the results of these improvements are increased useful load, hover performance, and cruise speed, and lower vibration. The aircraft was redesignated the "S-434" in 2009.

## Program Review

In 1987, Schweizer Aircraft announced plans to develop a turbine-powered variant of its three-place, piston-powered Model 300C helicopter. The new type, designated Model 330, was fitted with an Allison 225-C10A engine, derated to 200 shp. Production aircraft were powered by the Rolls-Royce 250-C20W, a much more fuel-efficient, powerful, and easily maintained member of the same turboshaft family. While the new 330 had the same normal gross

weight as its predecessor, the lighter weight of the Rolls engine permitted a 50-pound increase in useful load.

Schweizer's TH-330 was one of four entrants in the U.S. Army's Single Contractor Aviator Training/Initial Entry Rotary Wing program, subsequently renamed the New Training Helicopter (NTH). The other three candidates were the Enstrom TH-480, Bell 206B JetRanger, and Eurocopter AS 350. The Army selected the Bell variant in 1993.

## Sikorsky S-333

The Model 330 aircraft was later upgraded to the new Model 333. Initial deliveries took place in September 2000.

### *Sikorsky Acquisition*

Sikorsky Aircraft Corp acquired Schweizer in 2004. In the years following the takeover, Sikorsky continued to sell the S-333 under the Schweizer brand name. However, in February 2009, Sikorsky Aircraft Corp announced the creation of Sikorsky Global Helicopters, a rebranding of its existing commercial business units. The new division is responsible for producing Schweizer Aircraft in addition to existing Sikorsky platforms such as the S-76 and S-92/H-92. The rebranding effort included adding an "S-" to the designations of the Model 330, Model 333, and Model 434.

### *Model S-434 Launched*

Sikorsky launched a larger, five-seat variant of the S-333 in 2008. It was designed primarily for the flight training, law enforcement, and light utility missions. The S-434 was designed to be more powerful than the S-333 and offer better performance.

Saudi Arabia's Interior Ministry ordered nine S-434s in November 2007 as part of a wider helicopter deal that includes Sikorsky S-92s and S-72Ds.

The S-434 made its first flight in December 2008. Deliveries of the first S-434s to Saudi Arabia began in 2009. Saudi Arabia later returned several aircraft after complaining that they were wearing out too quickly.

The S-434 did not achieve civil certification by the U.S. Federal Aviation Administration (FAA) before Sikorsky terminated the program.

## Timetable

<u>Month</u>	<u>Year</u>	<u>Major Development</u>
Mid	1987	Schweizer 330 announced
Jun	1988	Prototype first flight
Late	1988	Jordan signed to assemble and market Model 330s in the Middle East
Sep	1992	330 certification
Early	1993	Initial production deliveries
Early	1997	Improved 330SP introduced
Sep	2000	Initial 333 deliveries
	2004	Sikorsky acquires Schweizer
	2008	Launch of Model S-434
	2009	Initial delivery of S-434
	2015	Sikorsky no longer taking orders for S-333

## Worldwide Distribution/Inventories

(Military only, as of June 2015)

Operator	Designation	Quantity
Dominican Republic Air Force	S-333	3
Mexico Procuraduria General de la Republica	S-333	10
Saudi Arabia Army	S-333	19
Saudi Arabia Government	S-434	6

## Forecast Rationale

Sikorsky did not report any deliveries of the S-333 in 2014. It is no longer taking orders for the S-333 as it decides whether to continue the program. With corporate parent United Technologies about to spin off or sell Sikorsky, we do not expect the company to make a final decision on the program's future anytime soon. That decision will likely be up to the new owners.

The S-333 has never fit well into Sikorsky's business line. It is an entry-level helicopter produced by a manufacturer that has no mid-range product lineup. There is an enormous gap separating the S-333 and Sikorsky's other light civil helicopter model, the S-76. Rather than being an entry point into Sikorsky's turbine product line, the S-333 exists as what amounts to a

stand-alone product sold by a manufacturer of large, high-margin helicopters.

Demand for the S-333, never strong, has been gutted by the arrival of the Robinson R66 in the entry-level turbine market segment, and the arrival of Bell's new 505 entry-level turbine will only make things worse. Both the R66 and 505 are much cheaper than the S-333, and few operators are willing to pay a high premium for an aircraft when the competition offers similar performance and payload.

We will continue to monitor the program and revise the forecast if Sikorsky announces a new direction for it.

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