Supporting Documents

Sikorsky S-92A Type Certificate Data Sheet

The ten (10) pages that follow comprise the Department of Transportation, Federal Aviation Administration (FAA) Sikorsky S-92A Type Certificate Data Sheet.

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

R00024BO
Revision 7
Sikorsky
Model S-92A

October 16, 2006

TYPE CERTIFICATE DATA SHEET NO. R00024BO

This data sheet, which is part of Type Certificate (TC) Number R00024BO, prescribes conditions and limitations under which the product for which the Type Certificate was issued meets the airworthiness requirements of the Federal Aviation Regulations.

TYPE CERTIFICATE (TC) HOLDER:

Sikorsky Aircraft Corporation
6900 Main Street
Stratford, CT 06615-9129

MODEL NUMBER	**S-92A (Transport Helicopter, Category A, Approved 17 December 2002; Transport Helicopter, Category B, Approved May 7, 2004)**

ENGINES

2 General Electric Company Model GE CT7-8 (TC E8NE) or
2 General Electric Company Model GE CT7-8A (TC E8NE)

FUELS

JET A, JET B, JET A-1, JP-4, JP-5, JP-8
For all operations below –20°C (-4°F) ambient temperature, all fuel used must contain MIL-D-27686 or equivalent anti-icing additive.

ENGINE AND TRANSMISSIONS APPROVED OILS

See Rotorcraft Flight Manual for list of approved oils.

HYDRAULIC FLUID

MIL-PRF-87257 is authorized for use at all approved ambient temperatures.
MIL-PRF-83282 may only be used at ambient temperatures above -32°C (-25°F).

DEICING FLUID

Kilfrost DF PLUS (88)

Page	1	2	3	4	5	6	7	8	9	10
Rev	7	3	3	4	7	7	7	7	7	7

ENGINE AND TRANSMISSION LIMITS

CT7-8 Engine

DUAL ENGINE LIMITS							
Rating	**Time**	**Q (%)**	**T4.5 (°C)**	**Ng (%)**	**Np (%)**	**Rated SHP @ SLS**	**Rated Np (%)**
Max continuous		**100**	920	99.9	106	2043	105
		86 (1)	when airspeed is greater than 100 KIAS				
30 Min (2)	30 min	**100**	957	101.5	106	2336	105
Takeoff	5 min	**100**	**986**	**102.9**	106	2520	105
Transient	12 sec		987	103.2	116		
	10 sec	120 (3)					
SINGLE ENGINE LIMITS							
Rating	**Time**	**Q (%)**	**T4.5 (°C)**	**Ng (%)**	**Np (%)**	**Rated SHP @ SLS**	**Rated Np (%)**
Max continuous		**120**	920	99.9	106	2043	105
OEI	30 min	**120**	**979**	102.4	106	2498	100
OEI	2 min	**120**	**990**	102.9	106	2520	100
OEI	30 sec	**135**	**1010**	**103.7**	106	2600	100
Transient	5 sec	156(3)					
Max starting	peak		**1000**				

- Shaded box with bold number denotes a FADEC controlled limiter value.
- Q (%) values are gearbox limits.

- (1) 86% Q is not a gearbox limit. Its purpose is to limit flight control loads at high speed thereby preserving dynamic component replacement times.
  - (2) Rating applies to hovering flight only.
  - (3) Associated with "torque ramp up" due to abnormal rotor droop at FADEC controlled dual or OEI limit.
  - 100% Q corresponds to a combined power input from both engines to the MGB of 4,170 shp at a rotor speed of 105% (258 rpm). Power turbine speed (Np) of 105% corresponds to 21,945 rpm.
- Maximum continuous dual engine torque may exceed 100% on one engine to a maximum of 110% provided that the torque on the other engine is proportionally less than 100% and the sum of the individual torque values does not exceed 200%.
  - Np overspeed trip is at 120%.
  - Ng overspeed trip is at 108.5%
  - When flying at altitudes greater than 8,000 feet at outside air temperatures lower that –20 degrees C, it is possible to reach the corrected Ng speed limit of the engine. When this occurs, the engine will not produce more power. The only indication that the pilot will see when reaching this limit is that further increase in collective will commensurately droop Nr.

CT7-8A Engine

DUAL ENGINE LIMITS							
Rating	**Time**	**Q (%)**	**T4.5 (°C)**	**Ng (%)**	**Np (%)**	**Rated SHP @ SLS**	**Rated Np (%)**
Max continuous		**100**	935	99.9	106	2043	105
		86 (1)	when airspeed is greater than 100 KIAS				
30 Min (2)	30 min	**100**	988	101.5	106	2336	105
Takeoff	5 min	**100**	**995**	**102.9**	106	2520	105
Transient	12 sec		1003	103.2	116		
	10 sec	120 (3)					
SINGLE ENGINE LIMITS							
Rating	**Time**	**Q (%)**	**T4.5 (°C)**	**Ng (%)**	**Np (%)**	**Rated SHP @ SLS**	**Rated Np (%)**
Max continuous		**120**	**988**	102.4	106	2498	105
OEI	2 min	**120**	**1006**	102.9	106	2520	100
OEI	30 sec	**141**	**1049**	**103.7**	106	2740	100
Transient	5 sec	156(3)					
Max starting	peak		**1000**				

- Shaded box with bold number denotes a FADEC controlled limiter value.
- Q (%) values are gearbox limits.

- (1) 86% Q is not a gearbox limit. Its purpose is to limit flight control loads at high speed thereby preserving dynamic component replacement times.
  - (2) Rating applies to hovering flight only.
  - (3) Associated with "torque ramp up" due to abnormal rotor droop at FADEC controlled dual or OEI limit.
  - 100% Q corresponds to a combined power input from both engines to the MGB of 4,170 shp at a rotor speed of 105% (258 rpm). Power turbine speed (Np) of 105% corresponds to 21,945 rpm.
- Maximum continuous dual engine torque may exceed 100% on one engine to a maximum of 110% provided that the torque on the other engine is proportionally less than 100% and the sum of the individual torque values does not exceed 200%.
  - Np overspeed trip is at 120%.
  - Ng overspeed trip is at 108.5%
  - When flying at altitudes greater than 8,000 feet at outside air temperatures lower that –20 degrees C, it is possible to reach the corrected Ng speed limit of the engine. When this occurs, the engine will not produce more power. The only indication that the pilot will see when reaching this limit is that further increase in collective will commensurately droop Nr.

ROTOR SPEED LIMITS

POWER OFF
Maximum 110% N_r
Minimum 95% N_r
POWER ON
Maximum 110% N_r
Minimum 95% N_r

DRIVE SYSTEM LIMITS

Dual Engine			
Torque (%)	**No Inspect Req'd**	**Serviceability Check**	**Remove/Replace MGB**
0% to 100%	Continuous		
101% to 120%	< 10 sec	≥ 10 sec	
121% to 140%		< 10 sec	≥ 10 sec
greater than 140%			Any occurrence

Single Engine			
Torque (%)	**No Inspect Req'd**	**Serviceability Check**	**Remove/Replace MGB**
0% to 120%	Continuous		
121% to 140%	< 30 sec	≥ 30 sec	
141% to 156%		< 5 sec	≥ 5 sec
greater than 156%			Any occurrence

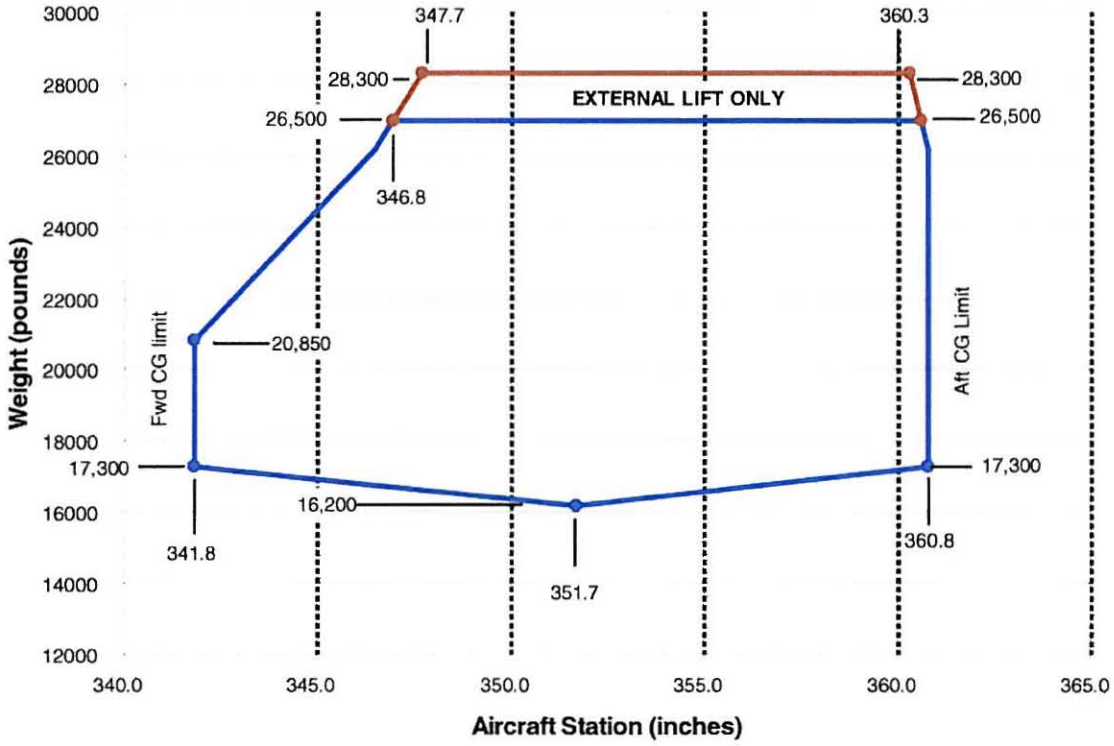
AIRSPEED LIMITS

Vne (never exceed) Power On	165 KIAS. See Rotorcraft Flight Manual for variations of Vne with gross weight and density altitude.
Vle/Vlo (gear extended/gear operating)	165 KIAS/165 KIAS.
Vne with floats "armed"	80 KIAS.
Vne Power Off	120 KIAS.
Vne Hoist Extended	120 KIAS.
Vne Upper Sliding Door Open	120 KIAS.
Vne External Cargo	120 KIAS.

CENTER OF GRAVITY (CG) LIMITS

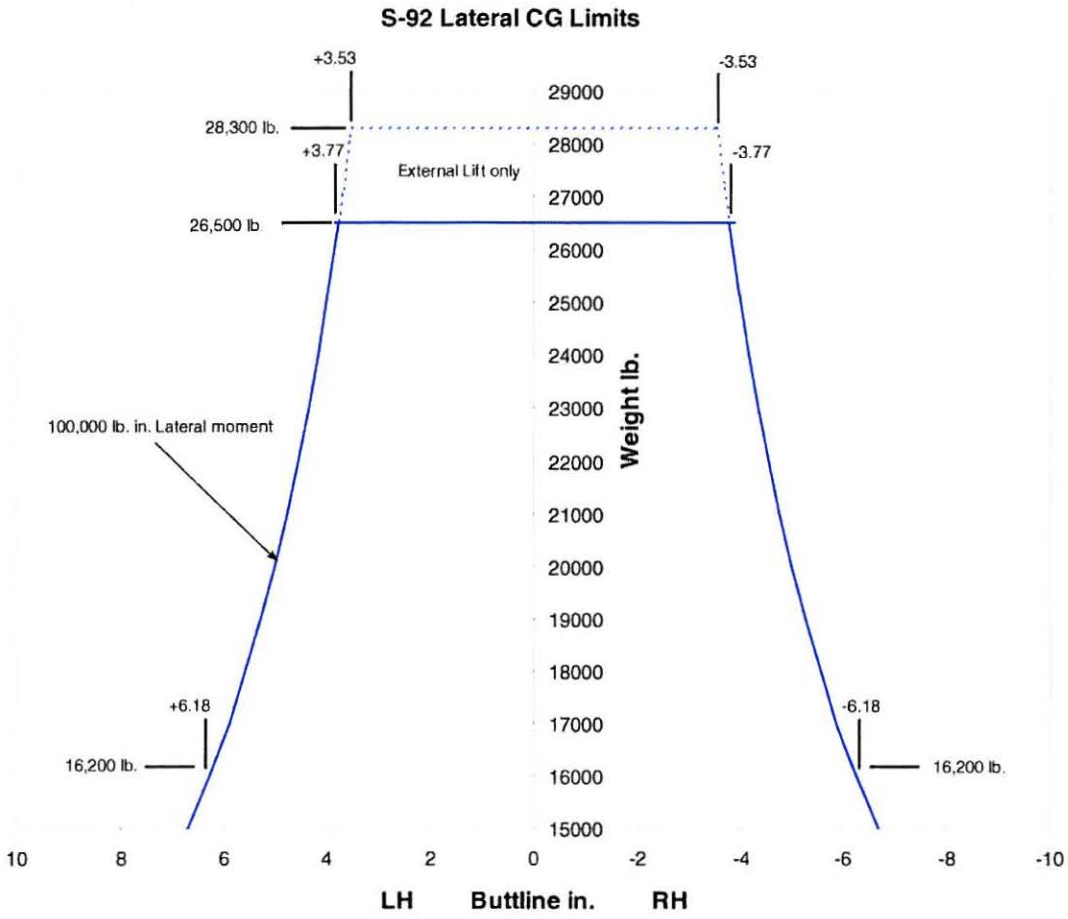
Weight and Center of Gravity Envelope

Maximum Gross Weight 26,500 Pounds



RF91056A
SA

LATERAL CG LIMITS:



RF91059A
SA

EMPTY WEIGHT C.G. RANGE	None
DATUM	341.2 inches forward of the main rotor centroid
LEVELING MEANS	Leveling plate at STA 238.3, BL 40 RH, and plumbline from top of RH forward doorframe.
MAXIMUM WEIGHT	26,500 pounds 28,300 pounds with external load
MAXIMUM EXTERNAL LOAD	8000 pounds

ALTITUDE LIMITS	Takeoff and landing 11,500 feet density altitude Enroute 15,000 feet density altitude 10,000 feet pressure altitude in icing conditions See Note 11
AMBIENT TEMPERATURE LIMITS	-40°C to ISA+35°C (see Note 9)
MINIMUM FLIGHT CREW	2 pilots
NUMBER OF SEATS	2 Crew 1 Observer 19 Passenger maximum (See Note 6)
MAXIMUM BAGGAGE	1000 pounds
FUEL CAPACITY	764 gals (pressure refuel) 713 gals. (gravity refuel) 4.8 gals. unusable at Station 362.5 (See Note 1)
OIL CAPACITY	See General Electric Installation Manual SEI-866
ROTOR BLADE CONTROL MOVEMENTS	For rigging information refer to Maintenance Manual
MANUFACTURER'S SERIAL NUMBERS	920006 and subsequent

CERTIFICATION BASIS

Type Certificate No. R00024BO
14 CFR Part 29 Amendments 29-1 to 29-47, inclusive
14 CFR Part 36 Amendment 20

Equivalent Safety Findings:

Number TC0309BO-R/F-1
14 CFR Part 29.173 Static longitudinal stability
14 CFR Part 29.175 Demonstration of static longitudinal stability.

Number TC0309BO-R/F-4
14 CFR Part 29.177 Static directional stability.

Number TC0309BO-R/P-1
14 CFR Part 29.1305(a)(24) Power Plant Instruments.

Number TC0309BO-R/P-5
14 CFR Part 29.1181(a)(4) Designated Fire Zones; Regions Included.

Special Conditions:
No. 29-011-SC for Dual-Engine 30 Minute Power
No. 29-008-SC for High Intensity Radiated Frequency

Noise Control Act of 1972

Compliance with the following optional requirements has been established: Ditching provisions FAR 29.563 including 29.801 and 29.807(d) and excluding 29.1411, 29.1415, and 29.1561 when emergency flotation system is installed. For extended over-water operations, compliance with the operating rules and FAR 29.1411, 29.1415, and 29.1561 must be shown.

PRODUCTION BASIS — PC Number 105

EQUIPMENT — The basic required equipment as prescribed in the applicable Airworthiness regulations (see Certification Basis) must be installed in the aircraft for certification.

In addition, the following item(s) of equipment is (are) required:

Rotorcraft Flight Manual as shown in FAA Approved Sikorsky document SA S92A-FMCD-000. This document specifies the applicable flight manual number for each aircraft. The applicable flight manual number is determined by the aircraft configuration. SA S92A-FMCD-000 will be revised as required to add additional rotorcraft flight manual numbers, new revisions, and new aircraft as appropriate.

- NOTES -

NOTE 1 — Current weight and balance report, including list of equipment included in certified empty weight, and loading instructions, when necessary, must be provided for each rotorcraft at the time of original certification. The certificated empty weight and corresponding C.G. locations must include un-drainable oil and unusable fuel.

See Rotorcraft Flight Manual loading section for variations of fuel weight and moment-arm with variations of fuel and fuel quantity.

NOTE 2 — The rotorcraft must be operated in accordance with the appropriate FAA-approved Rotorcraft Flight Manual as required under "EQUIPMENT". All placards required in the FAA-approved Rotorcraft Flight Manual must be installed in the rotorcraft. The following placard must be displayed in front of and in clear view of the pilots:

"THIS HELICOPTER MUST BE OPERATED IN ACCORDANCE WITH THE OPERATING LIMITATIONS SPECIFIED IN THE FAA APPROVED ROTORCRAFT FLIGHT MANUAL."

All placards listed in the approved flight manual must be installed in the specified locations.

NOTE 3 Information essential to the proper maintenance of the rotorcraft is contained in the Sikorsky S-92A Maintenance Manual, SA S92A-AMM-000 and in the Airworthiness Limitations and Inspection Requirements Manual, SA S92A-AWL-000. The values of retirement (service) life are contained in Chapter 4 of the Airworthiness Limitations and Inspection Requirements Manual, SA S92A-AWL-000. The values of retirement (service) life cannot be changed without FAA Engineering approval. Both manuals are provided with each helicopter.

NOTE 4 The term "Unlimited Life" is defined as 30,000 flight hours for the Model S-92A rotorcraft. Operation of individual aircraft beyond 30,000 flight hours is contingent upon a Life Extension Program approved by FAA Engineering

NOTE 5 The model S-92A rotorcraft employs electronic engine controls that are recognized to be more susceptible to Electromagnetic Interference (EMI) than manual (non-electronic) controls used on other rotorcraft. EMI may be the result of radiated or conducted interference. For this reason, modifications that add or change systems that have the potential for EMI, must either be qualified to an FAA acceptable standard or tested at the time of installation for interference to the engine controls. This type of testing must employ the particular engine control's diagnostic techniques and external diagnostic techniques. This testing must be accomplished in accordance with an FAA Engineering approved alternate test plan.

NOTE 6 Seating arrangements for 19 passengers maximum have been approved by the FAA. With these seating arrangements, seats located along the aisle way shall not have armrests installed on the aisle way side of any aisle seat unless the aisle way seat armrest incorporates an armrest hold down feature. Installation of the Observer Seat and/or Passenger Seat located on the forward starboard bulkhead is prohibited with the installation of the Lower Search/Rescue Door. Occupancy of the Passenger Seat located on the forward starboard bulkhead is prohibited if Observer Seat is installed. Carriage of passengers is prohibited with the installation of the Lower Search/Rescue Door. These seating arrangements are shown in the Loading Information section of the FAA-approved Rotorcraft Flight Manual. Additional optional seating arrangements or related passenger provisions may be approved in accordance with the Type Certificate Basis.

NOTE 7 Reuse of parts and assemblies that have been involved in an accident is not permitted unless approved by FAA Engineering.

NOTE 8 Any changes to the type design of this helicopter by means of an amended type certificate (TC), supplemental type certificate (STC), or amended STC, requiring instructions for continued airworthiness (ICA"S) must be submitted through the project aircraft certification office (ACO) for review and acceptance by the Fort Worth Aircraft Evaluation Group (FTW-AEG) Flight Standards District Office (FSDO) prior to the aircraft delivery, or upon issue of the first standard airworthiness certificate for the affected aircraft, whichever occurs later as prescribed by Title 14 CFR 21.50. Type design changes by means of a field approval that require ICA's must have those ICA's reviewed by the field approving FSDO.

NOTE 9 Preheat must be used for cold soak starts when the OAT is -13°F (-25°C) or below. See Rotorcraft Flight Manual for Cold Weather Procedures.

NOTE 10 External lift operations limited to 4 lifts per hour.

NOTE 11 For flight in icing conditions, aircraft must be equipped with Rotorcraft Ice Protection System (RIPS) and Rotorcraft Flight Manual as shown in FAA Approved Sikorsky

document SA S92A-FMCD-000, Revision 5 and subsequent. For flight into icing conditions, RIPS must be turned on. RIPS equipped aircraft are not approved for flight in icing conditions above 10,000 ft pressure altitude, or for flight in freezing rain, freezing drizzle or Supercooled Large Drop (SLD) icing conditions.

NOTE 12 In addition to the requirements of NOTE 8, any modifications, alterations, or other changes to the exterior of the aircraft that may effect the operation or function of the RIPS system, or create an area or surface for ice collection that may be released in flight, must be approved by FAA Engineering to allow the approval of flight in icing conditions to be continued.

.....END.....-