

Supplemental Type Certificate

Number SH177WE

This Certificate issued to Siam Hiller Holdings, Inc.
925 M Street
Firebaugh, California 93622

*certifies that the change in the type design for the following product with the limitations and conditions therefor as specified hereon meets the airworthiness requirements of Part * of the*

** Regulations. * See Page 7 of this STC for Certificate basis*

Original Product Type Certificate Number: 4H10

Make: Hiller

Model: UH-12D

Description of Type Design Change: Installation of Allison and related changes in accordance with FAA approved Progressive Aviation Drawing List No. 560-001 amended March 17, 1975, approved Solyo Conversions Drawing List No. 560-001 dated May 23, 1975, or later FAA approved revision.

Limitations and Conditions: The limitations and conditions of Helicopter Specification 4H10 apply except as outlined on page 3 through 9 of this STC. A copy of the Certificate must be maintained as part of the permanent records for the modified helicopter. If the holder agrees to permit another person to use this certificate to alter the product, the holder shall give the other person written evidence of that permission.

This certificate and the supporting data, which is the basis for approval, shall remain in effect until surrendered, suspended, revoked or a termination date is otherwise established by the Administrator of the Federal Aviation Administration.

Date of application: November 27, 1967

Date reissued: 06/02/83; 10/25/84; 05/28/91;
11/30/95; 05/13/05

Date of issuance: April 10, 1975

Date amended: 11/14/75; 07/06/76; 09/08/78;
06/11/80; 07/23/80; 10/27/80; 12/12/80;
06/02/83; 05/28/91; 05/09/95



By direction of the Administrator

(Signature)

Manager, Technical & Administrative Support
Staff, Los Angeles Aircraft Certification Office
(Title)

Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 3 years, or both.

Supplemental Type Certificate

(Continuation Sheet)

Number SH177WE

Limitations and Conditions: (Continued)

1 – Hiller UH-12D as modified by this STC (Normal Category)

Engine Allison 250-C20, 250-C20B

Fuel MIL-T-5624 Grade JP-4 or JP-5, Aviation Turbine Fuels ASTM-D-1655 Jet A or A-1 (or Allison Spec. EMS) or Jet B. See FAA Approved Rotorcraft Flight Manual for alternate cold weather and emergency fuels.

Oil Engine
MIL-L-7808H or MIL-L-23699B and subsequent revisions thereto.

Transmission, Aviation Grade

- | | |
|------------------------|------------------------|
| a. +32°F and above OAT | MIL-L-6082, Grade 1100 |
| b. +32°F and below OAT | MIL-L-6086, Grade M |
| c. +60°F and above | SAE 50 |
| d. +32°F to +90°F OAT | SAE 40 |
| e. +10°F to +70°F OAT | MIL-L-6082, Grade 1065 |
| | SAE 30 |
| f. +10°F and below OAT | SAE 20 |
| g. -25°F and above OAT | Anderol 456H |

See FAA Approved Rotorcraft Flight Manual for selection proper oil grade for operation in varying ambient temperatures.

Engine rating For all operations C20 C20B
301 SHP 301 SHP

See Note 3 for applicable conditions.

Engine limits Gas Producer (N₁)

RPM	Max. Cont.	105% (53, 520 RPM)	105% (53, 520 RPM)
	Transient Overspeed (15 Sec.)	106% (53,030 RPM)	106% (54, 030 RPM)

Engine limits Output Shift (N₂)

Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 3 years, or both.

Supplemental Type Certificate

(Continuation Sheet)

Number SH177WE

RPM	For all steady state conditions	100% (6016 RPM)	
	Transient Overspeed (15 Sec.)	Varies from 113% (6900RPM) at idle to 105% (6411) at takeoff.	
Torque	For all operations		
	Sea level to 3,000 feet	273 lb. ft. (72.5 psi)	273 lb. Ft. (72.5 psi)
	14,000 (See Altitude Limit)	185 lb. ft.	185 lb. ft.
	Straight-line variation Between points given		
Turbine outlet temperature	Max. Cont	1358°F (737°C)	1360°F (738°C)
	Takeoff (5 Min.)	1460°F (793°C)	1490°F (810°C)
	Transient (10 Sec.)	1700°F (927°C)	1700°F (927°C)
Oil Temperature	Engine		
	Maximum	225°F	225°F
	Minimum	-65°F	-65°F
	Transmission		
	Maximum	234°F (112°C)	234 (112°C)
Rotor Limits	Power off – Rotor tach.		
	Maximum	395 rpm (107%)	
	Minimum	314 rpm (85%)	
	Power on N ₂ tach.		
	Maximum	100%	
	Minimum	96%	
Airspeed Limits	Skid Gear – CAS		
	For UH-12D		
	With Parsons P/N 2253-1101-03/04 M/R Blades		
	Sea level to 2,000 ft.		96 mph
	12,000 ft.*		70 mph

Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 3 years, or both.

Supplemental Type Certificate

(Continuation Sheet)

Number SH177WE

Airspeed Limits For UH-12D
With Hiller P/N 53200-03 M/R Blades
Gross weight of 2800 lbs. and below—
Sea level to 5,000 ft. 96 mph
14,000 ft. * 73 mph

Gross weights of 2801 lbs. to 3100 lbs.—
Sea level to 5,000 ft. 75 mph
8,000 ft. * 68 mph

*Straight-line variation between points given

Altitude Limit For UH-12D
With Parsons P/N 2253-1101-03/04 M/R Blades 12,000 ft.
With Hiller P/N 53200-03 M/R Blades
Gross weights of 2800 lbs. and below 14,000 ft.
Gross weights of 2801 lbs. to 3100 lbs. 8,000 ft.

C. G. Range Longitudinal (+79 .5) to (+84.8)
Lateral from helicopter centerline 2.81 in. left
1.85 in. right

For UH-12D with Hiller P/N 53200-03 M/R Blades
Longitudinal (7000 ft. and below) (+97.5) to (+84.8)
(above 7000 ft.) (+80.1) to (+84.8)

Lateral from helicopter centerline 2.75 in left
1.85 in. right

Maximum Weight 2800 lbs.
Note: Items 1a, 1b, and 1c of Service Bulletin No. 2031 must be incorporated.
3100 lbs. with Hiller P/N 53200-03 Main Rotor Blades

No. of seats 3(+53)

Maximum baggage See loading instructions in FAA Approved Rotorcraft Flight Manual

Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 3 years, or both.

Supplemental Type Certificate

(Continuation Sheet)

Number SH177WE

Fuel capacity	46 gallons (+82.9). See NOTE 1.			
Oil capacity	Engine	8.4 lbs. (+95.2)		
	Transmission	9.4 lbs. (+84)		
	See NOTE 1.			
Rotor blade movements	Same as shown on Helicopter Specification 4H10 except:			
Anti-torque rotor	Flapping	+17°	to	-17°
	Collective pitch	+16.25°	to	- 4.25°
Horizontal stabilizer rigging	0° with helicopter level			
Serial Nos. eligible	Same as shown on Data Sheet 4H10			
Applicability	The approval of this change in type design applies to the basic Hiller Model UH-12D rotorcraft that are otherwise unmodified. This approval should not be extended to other rotorcraft of this model on which other previously approved modifications are incorporated unless it is determined that the interrelationship between this change and any of those other previously approved modifications will introduce no adverse effect upon the airworthiness of that rotorcraft. See "Equipment" below.			

Data Pertinent to all Models

Datum	Same as shown on Data Sheet 4H10.
Leveling means	Same as shown on Data Sheet 4H10.
Certification basis	1. Civil Air Regulations Part 6 dated January 15, 1951, with Amendments 6-1 through 6-7 thereto.

Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 3 years, or both.

Supplemental Type Certificate

(Continuation Sheet)

Number SH177WE

Certification
Basis

2. The following paragraphs of Federal Aviation Part 27 including Amendment 27-1 thereto:

27.45 through 27.79, 27.143, 27.361(a), 27.901 through 27.1193, 27.1305, 27.1337, 27.1351(c), 27.1353, 27.1505, 27.1509(c), 27.1521, 27.1549 through 27.1555, 27.1557, 27.1559, 27.1583(b), and (f), 27.1587, 27.1589.

3. Special Conditions 27-1-WE-1 dated August 6, 1968, and Amendment 1 thereto dated February 28, 1975.

Production
basis

None. An in-flight operational check must be conducted in accordance with FAR 91.167(a) for each rotorcraft modified in accordance with this Supplemental Type Certificate. When original airworthiness certification has not previously been accomplished, the applicant must also comply with FAR 21.130 and 21.183(d).

Equipment

The following must be installed in the rotorcraft for airworthiness certification subsequent to the incorporation of this STC.

1. The basic required equipment as prescribed in the applicable airworthiness regulations (See Certification Basis outlined above).
2. The additional required items show in FAA Sealed Progressive Aviation Master Equipment List No. 560-016 or FAA Approved Solyo Conversions Master Equipment List 560-016.

NOTE: Equipment items approved for the basic Hiller UH-12E and UH-E (4 Pace) are not eligible with the STC unless such items are also shown on the above noted equipment list.

3. A. FAA Approved Solyo Conversions Ltd. Rotorcraft Flight Manual dated April 10, 1975, or later FAA Approved revisions, which is required in lieu of that specified for the basic unmodified Model UH-12D.

B. FAA Approved Solyo Conversions Ltd. Rotorcraft Flight Manual revision dated July 23, 1980, or later FAA Approved revisions for the UH-12D with P/N 53200-03 Main Rotor Blades.

Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 3 years, or both.

Supplemental Type Certificate

(Continuation Sheet)

Number SH177WE

- Equipment
4. Permanent ballast must be installed in accordance with Progressive Aviation Ltd. Dwg. 560-8900.
 5. See NOTE 5 for cargo hook installation.

NOTE 1 Current weight and balance data, including a list of equipment included in the certificated empty weight and loading instructions when necessary, must be provided at the time of airworthiness certification for return to service.

The certificated empty weight and corresponding center of gravity location must include unusable fuel and undrainable oil (not included in oil capacity) as follows:

Fuel: 2 lbs. at (+84)

Oil: Negligible quality

NOTE 2 Refer to the applicable FAA Approved Rotorcraft Flight Manual for required placards and instrument markings.

NOTE 3 The rating shown for the Allison 230-C20 and 250-C20B engine is based on zero ram, dry inlet air, no accessory loads, and no air bleed; and is available at sea level to approximately ISA +40°F.

NOTE 4 Although a helicopter modified in accordance with this STC retains its' identity as a Model UH-12D, it has been modified in certain respects to the Model UH-12E configuration. Except where superseded or supplemented by the items listed below, the retirement times of critical parts for both of the Model UH-12D and UH-12E are applicable. The retirement times of the UH-12D are shown in the Hiller Aviation UH-12E Inspection Guide, Airworthiness Limitations Section dated November 5, 1973, (Ref. Airworthiness Directive 73-25-03), and those for the UH-12E are shown in Data Sheet 4H11. In the event, the same part number is shown to be different retirement times for the two models, the lower must be used. Note that certain critical parts eligible for use with unmodified UH-12D or UH-12E rotorcraft must be removed upon compliance with the portions of Service Bulletins 2029 and 2030 required above.

Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 3 years, or both.

Supplemental Type Certificate

(Continuation Sheet)

Number SH177WE

<u>Component</u>	<u>Part Number</u>	<u>Retirement Period Hours*</u>
Gimbal Outer Eng Mount – Hiller	P/N 63309	6300**
Drive Shaft – Soloy	P/N 660-2408-3	4000
Control Arm – Soloy	P/N 560-7522-1	21500

* Retired parts must be removed from service. These parts are not eligible for reinstallation on aircraft.

** The retirement period for the engine outer gimbal must be reduced to 5,480 hours when the Hiller P/N 53200-03 main rotor blades are installed per Soloy Service Bulletin No. 13-560. The remaining life must be calculated from the following formula:

Life remaining = $5,480 - L_O \times 5,480/6300$ when L_O service Time accrued on the Gimbal in operation with the Parsons P/N 2253-1103/04 blades. Information essential to the maintenance of the rotorcraft modified in accordance with this STC is contained in the pertinent model inspection guide, repair handbook and service and overhaul manuals; and in the Soloy Conversions Ltd. Supplements to these documents.

NOTE 5 The Type Certificate holder has demonstrated compliance with FAR 133.43 for the UH-12D Helicopters for Class B Jettisonable Sling Load Rotorcraft – Load Combination at a maximum sling load of 1250 pounds, when modified to incorporate cargo hook installation per Hiller Dwg. 91012. The helicopter weight without sling load is not to exceed certificated weight of For limitations, see Rotorcraft-Load Combination Flight Manual to be submitted by applicant for external load operator’s certificate in accordance with FAR Part 133.

- END -