

# Supplemental Type Certificate

*Number* SH178WE

*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 Certification basis*

*Original Product Type Certificate Number:* 4H11

*Make:* Hiller

*Model:* UH-12E, UH-12E (4 Place)

*Description of Type Design Change:* Installation of Allison 250-C20/250-C20B engine and related changes in accordance with FAA approved Progressive Aviation Drawing List No. 560-001 amended March 17, 1975, FAA approved Soloy Conversions Drawing List No. 560-001, dated May 23, 1975, or later FAA approved revision.

*Limitations and Conditions:* The limitations and conditions of Data Sheet 4H11 apply except as outlined in pages 3 through 10 of this STC. A copy of the Certificate must be maintained as part of the permanent records for the modified rotorcraft. 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; 08/19/05

*Date of issuance:* April 10, 1975

*Date amended:* 11/14/75; 07/06/76; 09/08/78;  
06/11/80; 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* SH178WE

1 – Hiller UH-12E 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 of proper oil Grade for operation in varying ambient temperatures.

Engine rating	For all operations	<u>C20</u> 301 SHP	<u>C20B</u> 301 SHP
---------------	--------------------	-----------------------	------------------------

See Note 3 for applicable conditions.

Engine limits	Gas Producer (N <sub>1</sub> )		
RPM	Max. Cont.	105% (53, 520 RPM)	106% (53, 520 RPM)
	Transient Overspeed (15 Sec.)	106% (53, 030 RPM)	106% (54, 030 RPM)

---

*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* SH178WE

Engine limits RPM	Output Shaft (N <sub>2</sub> ) For all steady state conditions	100% (6016 RPM)	
105%	Transient Overspeed  (15 Sec.)	Varies from 113% (6900 RPM) at idle to  (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. (49.0 psi)	185 lb. ft. (49.0 psi)
	Straight line variation between points given		
Turbine outlet temperature	Max. Cont Takeoff (5 Min.) Transient (10 Sec.)	1358°F (737°C) 1460°F (793°C) 1700°F (927°C)	1360°F (738°C) 1490°F (810°C) 1700°F (927°C)
Oil temperature	Engine Maximum Minimum Transmission Maximum	225°F -65°F  234°F (112°C)	225°F -65°F  234°F (112°C)
Rotor Limits	Power off – Rotor tach. Maximum Minimum Power on - N <sub>2</sub> tach. Maximum Minimum	395 rpm (107%) 314 rpm ( 85%)  100% 96%	
Airspeed Limits	Skid Gear – CAS For UH-12E With Parsons P/N 2253-1101-03/04 M/R Blades Sea level to 2,000 ft. 12, 000 ft.*		96 mph 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* SH178WE

Airspeed Limits	For UH-12E		
	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
	For UH-12E (4 Place)		
	With Parsons P/N 2253-1101-03/04 M/R Blades		
	Sea Level to 2,000 ft.		95 mph
	12,000 ft. *		70 mph
With Hiller P/N 53200-03 M/R Blades			
Gross weights of 2800 lbs. and below			
Sea Level to 5,000 ft.		95 mph	
14,000 ft. *		72 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-12E and UH-12E (4 Place)		
	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	For UH-12E and UH-12E (4 Place) with Parsons P/N 2253-1101-03/04 M/R Blades		
	Longitudinal		(+79.5) to (+84.8)
	Lateral from rotorcraft centerline		2.75 in. left 1.85 in. right

*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* SH178WE

C. G. Range For UH-12E (3 Place) with Hiller P/N 53200-03 M/R Blades  
Longitudinal (7000 ft. and below) (+79.5) to (+84.8)  
(above 7000 ft.) (+80.1) to (+84.8)

Lateral from rotorcraft centerline 2.75 in. left  
1.85 in. right

For UH-12E (4 Place) with Hiller P/N 53200-03 M/R Blades  
Longitudinal (5400 ft. and below) (+80.1) to (+84.8)  
(7000 ft. and above) (+81.4) to (+84.8)  
Straight line variation between 5400 and 7000 ft.  
Lateral from rotorcraft centerline 2.75 in. left  
1.85 in. right

Maximum 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 1. UH-12E 3 (+53)  
2. UH-12E (4 Place) 3 (+53) 1 (+25)

Maximum baggage See loading instructions in FAA Approved Rotorcraft Flight Manual

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 Rotorcraft Specification 4H11 except:

Anti-torque rotor Flapping +17°+ to -17  
Collective pitch +16.5° to - 4.25°

---

*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* SH178WE

Horizontal  
stabilizer  
rigging

1. 0° with rotorcraft level on basic Hiller Model UH-12E
2. +3° with rotorcraft level on Hiller Model UH-12E (4 Place)  
P/N 37027

Serial No.  
eligible

Same as shown on Data Sheet 4H11

Applicability

The approval of this change in type design applies to the basic Hiller Model UH-12E and UH-12E 4 Place 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 4H11.

Leveling means

Same as shown on Data Sheet 4H11.

Certification  
basis

1. Civil Air Regulations Part 6 dated December 20, 1956, with Amendments 6-1 through 6-3 thereto.
2. The following paragraph 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.

---

*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* SH178WE

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-12E (4 Place) 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-12E.
- B. FAA Approved Solyo Conversions Ltd. Rotorcraft Flight Manual revision dated November 14, 1975, or later FAA Approved revisions, which include the Model UH-12E (4 Place).
- C. FAA Approved Solyo Conversions, Ltd. Rotorcraft Flight Manual dated July 23, 1980, or later FAA Approved revisions, for the UH-12E (3 Place) with P/N 53200-03 main rotor blades.
- D. FAA Approved Solyo Conversions, Ltd. Rotorcraft Flight Manual dated October 27, 1980, or later FAA Approved revisions, for the UH-12E (4 Place) 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* SH178WE

- Equipment
4. Permanent ballast must be installed in accordance with Progressive Aviation Ltd. Dwg. 560-8900. UH-12E only.
  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 quantity

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 250-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 The retirement times of critical parts are the same as shown in Data Sheet 4H11 except where supplemented or superseded by the following:

<u>Component</u>	<u>Part Number</u>	<u>Retirement Period</u> <u>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

---

*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* SH178WE

NOTE 4

\*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:

$$\text{Life remaining} = 5,480 - X \frac{5,480}{6300}$$

When  $L_o$  is service time accrued on the Gimbal in operation with the Parsons P/N 2253-1101-03/04 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-12E and UH-12E (4 Place) Rotorcraft for Class B Jettison able Sling Load Rotorcraft – Load Combination at a maximum overall weight of 3100 pounds and maximum sling load of 1250 pounds, when modified to incorporate cargo hook installation per Hiller Dwg. 91012. The rotorcraft weight without sling load is not to exceed certificated weight of 2800 pounds (3100 lbs. when Soloy Service Bulletin 13-560 is incorporated). For limitations see pertinent FAA Approved Rotorcraft Flight Manual Revision and Rotorcraft-Load Combination

Flight Manual to be submitted by applicant for external load operator's certificate in accordance with FAR Part 133.

- END -