

**DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION**

| |
|---------------------------|
| 1H15 |
| Revision No 18 |
| SIKORSKY AIRCRAFT |
| MODEL |
| S-61L |
| S-61N |
| S-61R (USAF CH-3C, CH-3E) |
| S-61NM |
| January 21, 2014 |

TYPE CERTIFICATE DATA SHEET 1H15

This data sheet, which is part of Type Certificate Number 1H15, prescribes conditions and limitations under which the product for which the Type Certificate was issued meets the airworthiness requirements of the Federal Aviation Administration.

Type Certificate (TC) Holder: Sikorsky Aircraft
Stratford, CT

I. MODEL NUMBER: **S-61L (Transport Helicopter - Categories A & B)**

Approved: November 2, 1961

Engines: 2 General Electric CT58-110-1 (with Hamilton Standard Fuel Control JFC-26). See NOTE 9 for optional engines.

Fuel: Aviation Kerosene JP4 or JP5 (General Electric Company Specification Number D50T F2 or subsequent revisions thereto.)

Engine Limits: Sea Level Static - Standard Day

| | SHAFT HP | POWER TURBINE RPM | GAS GEN RPM | POWER TURBINE INLET (T5) |
|--|-------------|-------------------------------|-----------------------------|-----------------------------|
| Takeoff (5 min) | 1,250 | 21,275(112.0%N _f) | 26,300(100%N _g) | 1,250° F (677°C) |
| One engine inoperative (30 min) (See NOTE 7) | 1,250 | 21,275(112.0%N _f) | 26,300(100%N _g) | 1,250° F (677°C) |
| One engine inoperative (2 1/2 min) (See NOTE 6) | 1,350 | 21,275(112.0%N _f) | 26,840(102%N _g) | 1,300° F (704°C) |
| Maximum continuous | 1,050 | 21,275(112.0%N _f) | 26,300(100%N _g) | 1,175° F (635°C) |
| Maximum transient (2 sec) | | | | 1,544° F (840°C) |
| Starting (4 sec) | | | | 1,544° F (840°C) |
| Allowable maximum overspeed | | 23,100(122.0%N _f) | 27,600(105%N _g) | |

Takeoff and maximum continuous horsepower (hp) ratings are normally obtained at a power turbine speed of 18,966 rpm (100%N_f)

Total power for two-engine operation is limited to 2,300 hp. for takeoff and 2,100 hp. maximum continuous. (See NOTE 10 for alternate limits.)

See NOTE 11 for variation of sea-level static power limits below 59°F.

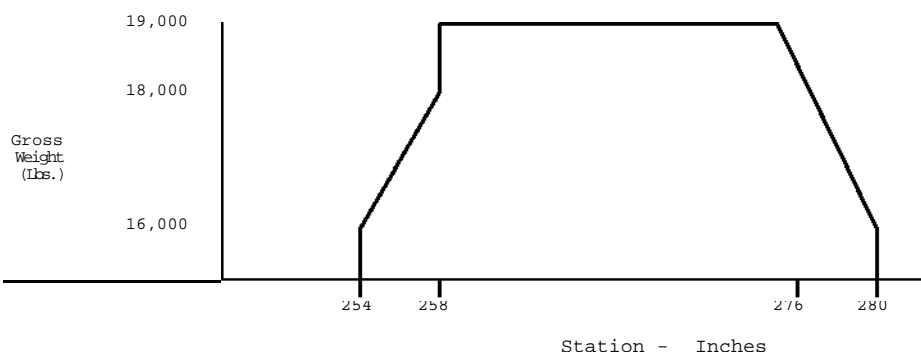
Rotor Limits: Maximum 225 r.p.m.
Minimum 184 r.p.m.

Airspeed Limits: Never exceed 146 m.p.h. (127 knots) CAS.

| | | | | | | | | | | | | | |
|----------|----|----|----|----|----|----|----|----|----|----|----|----|----|
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I. MODEL NUMBER:

C.G. Range:

S-61L (cont'd)Category A (except
vertical and edge procedures)
and Category B(+258.0) to (+276.0) at 19,000 lb
(+258.0) to (+277.3) at 18,000 lb
(+254.0) to (+280.0) at 16,000 lb or lessCategory A (+258.0) to (+276.0) at 19,000 lb or less
(Vertical and edge procedures)

Empty Weight C.G. Range:

None

Maximum Weight:

Category A: 19,000 lb. (See Rotorcraft Flight Manual for lesser maximum weights for various Category A takeoff and landing procedures.)

Category B: 19,000 lb.

(See NOTE 12 for maximum weight while carrying external loads.)

Minimum Crew:

2 (pilot, copilot)

Maximum Passengers:

39, limited by emergency exit requirements

Maximum Baggage:

Serial numbers (S/N) prior to 61266:

600 lb (+130)

600 lb (+168)

300 lb (+374)

300 lb (+408)

S/Ns 61266 through 61424:

670 lb (+129)

690 lb (+168)

660 lb (+267)

590 lb (+340)

530 lb (+374)

530 lb (+407)

S/Ns 61425 and subsequent:

670 lb (+130)

690 lb (+168)

660 lb (+267)

590 lb (+340)

530 lb (+380)

450 lb (+407)

The under-floor baggage bins must not be loaded in excess of 400 lbs. per square foot within the maximum limits specified above. The cabin floor, when used for cargo purposes, should not be loaded in excess of 200 lbs. per square foot forward of Station 323 and 150 lbs. per square foot aft of Station 323.

I. MODEL NUMBER:**S-61L** (c o n t ' d

Fuel Capacity: 410 gal. (210 gal at (204), 200 gal at (306).)

Oil Capacity: 5 gal. (181) (2 tanks 2.5 gal each)

Rotor Blade & Control Movements: For rigging information, refer to Maintenance Manual.

Serial Numbers Eligible: 61031, 61032 (See NOTE 14), 61033, 61060, 61266, 61362, 61363, 61425, 61426, 61427, 61428, 61453, 61454

II. MODEL NUMBER:**S-61N (Amphibious Transport Helicopter - Categories A & B)**

(Model S-61N is the same as the Model S-61L except for the fuselage modified to provide a hull, the addition of sponsons with retractable landing gear and a modified tail rotor pylon.) See NOTE 5 for a fixed (land type) landing gear installation. See NOTE 13 for approval at higher gross weights.

Approved: September 9, 1963

Engines: 2 General Electric CT58-110-1 (with Hamilton Standard Fuel Control JFC-26). See NOTE 9 for optional engines.

Fuel: Aviation Kerosene JP4 or JP5 (General Electric Company Specification Number D50T F2 or subsequent revisions thereto)

Engine Limits: Sea level static - standard day

| | SHAFT HP | POWER TURBINE RPM | GAS GEN RPM | POWER TURBINE INLET (T5) |
|--|---------------------|-------------------------------|-----------------------------|-------------------------------------|
| Takeoff (5 min) | 1,250 | 21,275(112.0%N _f) | 26,300(100%N _g) | 1,250° F (677°C) |
| One engine inoperative (30 min) (See NOTE 7) | 1,250 | 21,275(112.0%N _f) | 26,300(100%N _g) | 1,250° F (677°C) |
| One engine inoperative (2 1/2 min) (See NOTE 6) | 1,350 | 21,275(112.0%N _f) | 26,840(102%N _g) | 1,300° F (704°C) |
| Maximum continuous | 1,050 | 21,275(112.0%N _f) | 26,300(100%N _g) | 1,175° F (635°C) |
| Maximum transient (2 sec) | | | | 1,544° F (840°C) |
| Starting (4 sec) | | | | 1,544° F (840°C) |
| Allowable maximum overspeed (15 sec.) | | 23,100(122.0%N _f) | 27,600(105%N _g) | |

Takeoff and maximum continuous horsepower ratings are normally obtained at a power turbine speed of 18,966 rpm (100%N_f)

Total power for two-engine operation is limited to 2,300 hp. for takeoff and 2,100 hp. maximum continuous. (See NOTE 10 for alternate limits.)

See NOTE 11 for variation of sea-level static power limits below 59°F.

Rotor Limits: Maximum 225 r.p.m.
Minimum 184 r.p.m.

Airspeed Limits: Never exceed 150 m.p.h. (130 knots) CAS.

II. MODEL NUMBER:

C.G. Range:

S-61N (cont'd)

Category A (except vertical and edge procedures and Category B

(+258.0) to (+276.0) at 19,000 lb
(+254.0) to (+280.0) at 16,000 lb or less

Category A (+258.0) to (+276.0) at 19,000 lb or less
(Vertical and edge procedures)

(Above values apply to aircraft with two-tank fuel system. Refer to Flight Manual for additional limitations associated with the three-tank fuel system.)



Empty Weight C.G. Range:

None

Maximum Weight:

Category A: 19,000 lb. (See Rotorcraft Flight Manual for lesser maximum weights for various Category A takeoff and landing procedures.)
Category B: 19,000 lb.

Minimum Crew:

2 (pilot, copilot)

Maximum Passengers:

39, limited by emergency exit requirements

Maximum Baggage:

Forward Compartment:

Above floor: 650 lb (+153) (if galley not installed) or
590 lb (+151) (if galley installed)

Below floor: 1,500 lb (+148)

Aft Compartment (below floor): 1,000 lb (+340)

Baggage Rack: 500 lb (+370)

Below-floor areas of forward compartment should not be loaded in excess of 86.5 lbs per square foot and aft compartment in excess of 65 lbs per square foot, within the total limits identified above.

The cabin floor, when used for cargo purposes, should not be loaded in excess of 200 lbs per square foot forward of Station 323 and 150 lbs per square foot aft of Station 323.

Fuel Capacity:

410 gal (210 gal at (204), 200 gal at (306).) (Two-tank system)
654 gal (210 gal at (204), 244 gal at (265), 200 gal at (306).) (Three-tank system)

Oil Capacity:

5 gal. (181) (2 tanks 2.5 gal each).

Rotor Blade & Control Movements:

For rigging information, refer to Maintenance Manual.

Serial Numbers Eligible:

61032 (See NOTE 14), 61143, 61159, 61164, 61216, 61220 through 61225, 61242, 61257, 61258, 61267, 61268, 61269, 61270, 61297, 61298, 61299, 61361, 61364, 61365, 61424, 61465 through 61476, 61487 through 61493, 61702 through 61705, 61711 through 61722, 61735 through 61757, 61758 through 61762, 61764, 61765, 61766 through 61778, 61806 through 61827.

III. MODEL NUMBER:**S-61R (Amphibious Transport Helicopter - Category B)**

(Model S-61R is the same as the Model S-61L except for the fuselage modified for a complete hull, a rear-loading ramp, airfoil shaped sponsons, retractable landing gear and a modified tail rotor pylon.)

Approved: December 30, 1963

Engines: 2 General Electric CT58-110-1 (with Hamilton Standard Fuel Control JFC-26). See NOTE 9 for optional engines.

Fuel: Aviation Kerosene JP4 or JP5 (General Electric Company Specification Number D50TF2 or subsequent revisions thereto)

Engine Limits: Sea level static - standard day

| | SHAFT POWER TURBINE HP | RPM | GAS GEN RPM | POWER TURBINE INLET (T5) |
|--|-----------------------------------|-------------------|------------------------------|-------------------------------------|
| Takeoff (5 min) | 1,250 | 21,275(112.0% Nf) | 26,300(100% N _g) | 1,250° F (677°C) |
| Maximum continuous | 1,050 | 21,275(112.0% Nf) | 26,300(100% N _g) | 1,175° F (635°C) |
| Maximum transient (2 sec) | | | | 1,544° F (840°C) |
| Starting (4 sec) | | | | 1,544° F (840°C) |
| Allowable maximum overspeed (15 sec.) | | 23,100(122.0% Nf) | 27,600(105% N _g) | |

Takeoff and maximum continuous horsepower ratings are normally obtained at a power turbine speed of 18,966 rpm (100% Nf)

Total power for two-engine operation is limited to 2,500 hp. for takeoff and 2,100 hp. maximum continuous.

See NOTE 11 for variation of sea-level static power limits below 59°F.

Rotor Limits: Maximum 225 r.p.m.
Minimum 184 r.p.m.

Airspeed Limits: Never exceed 165 m.p.h. (143 knots) CAS.

C.G. Range: (+258.0) to (+276.0)

Empty Weight C.G. Range: None

Maximum Weight: 19,500 lb.

Minimum Crew: 2 (pilot, copilot)

Maximum Passengers: None

Maximum Baggage: The cabin floor area between Stations 137.0 and 379.5 is structurally satisfactory for a uniformly distributed loading of 200 p.s.f. when used for cargo purposes.

Fuel Capacity: 683 gal. (337 gal at (+215.3), 346 gal at (+317.3))

Oil Capacity: 5.9 gal. (182.5) (2 tanks 2.95 gal each).

Rotor Blade & Control Movements: For rigging information, refer to Maintenance Manual.

Serial Numbers Eligible: 61501 through 61507, 61510 through 61517, 61521 through 61551, 61554 through 61575, 61583 through 61585, 61587 through 61592, 61594, 61596, 61604 through 61606, 61608 through 61617, 61620 through 61621, 61628.

IV. MODEL NUMBER:**S-61NM (Transport Helicopter - Categories A & B)**

(The model S-61NM consists of S-61N components (tail cone and pylon, stabilizer and landing gear) combined with an S-61L fuselage.)

Approved:

July 12, 1974

Engines:

2 General Electric CT58-110-1 (with Hamilton Standard Fuel Control JFC-26). See NOTE 9 for optional engines.

Fuel:

Aviation Kerosene JP4 or JP5 (General Electric Company Specification Number D50T F2 or subsequent revisions thereto)

Engine Limits: Sea level static - standard day

| | SHAFT HP | POWER TURBINE RPM | GAS GEN RPM | POWER TURBINE INLET (T5) |
|--|-------------|----------------------|----------------|-----------------------------|
| Takeoff (5 min) | 1,250 | 21,275(112.0%Nf) | 26,300(100%Ng) | 1,250° F (677°C) |
| One engine inoperative (30 min) (See NOTE 7) | 1,250 | 21,275(112.0%Nf) | 26,300(100%Ng) | 1,250° F (677°C) |
| One engine inoperative (2 1/2 min) (See NOTE 6) | 1,350 | 21,275(112.0%Nf) | 26,840(102%Ng) | 1,300° F (704°C) |
| Maximum continuous | 1,050 | 21,275(112.0%Nf) | 26,300(100%Ng) | 1,175° F (635°C) |
| Maximum transient (2 sec) | | | | 1,544° F (840°C) |
| Starting (4 sec) | | | | 1,544° F (840°C) |
| Allowable maximum overspeed (15 sec.) | | 23,100(122.0%Nf) | 27,600(105%Ng) | |

Takeoff and maximum continuous horsepower ratings are normally obtained at a power turbine speed of 18,966 rpm (100%Nf)

Total power for two-engine operation is limited to 2,300 hp. for takeoff and 2,100 hp. maximum continuous. (See NOTE 10 for alternate limits.)

See NOTE 11 for variation of sea-level static power limits below 59°F.

Rotor Limits:

Maximum 225 r.p.m.
Minimum 184 r.p.m.

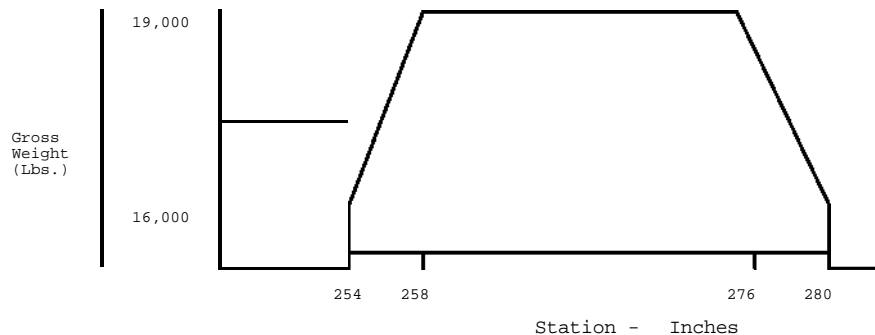
Airspeed Limits:

Never exceed 150 m.p.h. (130 knots) CAS.

C.G. Range:

Category A (except vertical and edge procedures) and Category B (+258.0) to (+276.0) at 19,000 lb
(+254.0) to (+280.0) at 16,000 lb or less

Category A (+258.0) to (+276.0) at 19,000 lb or less
(Vertical and edge procedures)



IV. MODEL NUMBER:**S-61NM** (cont'd)

Empty Weight C.G. Range:

None

Maximum Weight:

Category A: 19,000 lb. (See Rotorcraft Flight Manual for lesser maximum weights for various Category A takeoff and landing procedures.)

Category B: 19,000 lb.

Minimum Crew:

2 (pilot, copilot)

Maximum Passengers:

39, limited by emergency exit requirements

Maximum Baggage:

670 lb (+130)

690 lb (+168)

660 lb (+267)

590 lb (+340)

530 lb (+380)

450 lb (+407)

The under-floor baggage bins must not be loaded in excess of 400 lbs per square foot within the maximum limits specified above. The cabin floor, when used for cargo purposes, should not be loaded in excess of 200 lbs per square foot forward of Station 323 and 150 lbs per square foot aft of Station 323.

Fuel Capacity:

410 gal (210 gal at (204), 200 gal at (306).)

Oil Capacity:

5 gal. (181) (2 tanks 2.5 gal each).

Rotor Blade & Control Movements:

For rigging information, refer to Maintenance Manual.

Serial Number Eligible:

61454

THE FOLLOWING DATA IS PERTINENT TO ALL MODELS OF THIS SERIES:

Datum:

267.4 in. forward of main rotor centroid

Leveling Means:

Leveling plates on sill and upper frame of forward door

Certification Basis:

CAR 7, August 1, 1956, including Amendments 7-1 through 7-4 and Special Conditions for Turbine Power Rotorcraft in FAA letter to Sikorsky Aircraft, March 31, 1961. FAA Administrator telegram, Performance Requirements, dated August 7, 1961. Amendment 29-3 to Part 29 of the Federal Aviation Regulations, effective February 25, 1968, eliminated the requirements of CAR 7.350(e) by deleting FAR 29.771(e) and FAR 29.771(f).

Model S-61L: Exemption No. 178, dated August 9, 1961, and Exemption No. 186, dated October 6, 1961, and Exemption No. 244, dated January 30, 1963.

Models S-61N and S-61NM: Exemption No. 186A, dated November 28, 1962.

Model S-61R: Exemption No. 292, dated January 3, 1964.

Model S-61N at 19,000 to 20,500 lbs gross weight: FAR 29.563, FAR 29.801, and FAR 29.807 of Amendment 12, effective February 1, 1977, to FAR Part 29.

Type Certificate (TC) issued:

November 2, 1961

Date of Application:

October 21, 1959

Production Basis:

Production Certificate No. 105

Equipment: The basic required equipment as prescribed in the applicable airworthiness regulations (see certification basis) must be installed in the helicopter for certification. In addition, the following items of equipment are required:

- (a) FAA Approved Rotorcraft Flight Manual, Model S-61L Helicopter (Publication No. SA 4045-30), dated November 2, 1961, reissued August 1, 1962. Revised January 29, 1982 (S/Ns prior to 61425)
 - (i) Supplement No. 1, dated November 2, 1961. Reissued August 1, 1962. (S-61L Acceptable Engine Fuels and Oils)
 - (ii) Supplement No. 3, dated September 9, 1963. Revised January 28, 1964. (S-61N Limited Amphibian)
 - (iii) Supplement No. 5, dated August 27, 1964. Revised September 27, 1972. (S-61L AFCS)
 - (iv) Supplement No. 11, dated October 6, 1964. Revised January 12, 1965. (S-61L HIR - Basic)
 - (v) Supplement No. 12, dated October 6, 1964. Revised January 12, 1965. (S-61L HIR Operational)
 - (vi) Supplement No. 13, dated June 8, 1965. Revised September 27, 1972. (S-61L Cargo Sling)
 - (vii) Supplement No. 14, dated October 29, 1965. Reissued May 5, 1967. Revised May 20, 1980. (S-61L, CT58-140-1 and -2 engine)
 - (viii) Supplement No. 15, dated December 30, 1965. Revised May 27, 1969. (S-61L, S/N 61266)
 - (ix) Supplement No. 17, dated May 7, 1968. Revised September 12, 1979. (S-61, Vertical Operations, Ground-Level and Pinnacle Heliports)
 - (x) Supplement No. 18, dated May 7, 1968. Revised September 12, 1979. (S-61L, Vertical Operations, Pinnacle Heliport)
 - (xi) Supplement No. 19, dated May 31, 1968. Reissued August 9, 1968. Revised September 12, 1979. (S-61L Edge Procedures)
 - (xii) Supplement No. 20, dated July 12, 1968. (S-61L, CT58-110-2 Engine)
 - (xiii) Supplement No. 21, dated August 13, 1970. (S-61L, Engine Inlet Screens)
 - (xiv) Supplement No. 22, dated December 6, 1973. Reissued November 21, 1974. Revised May 20, 1980. (S-61L, Icing Equipment, -1401 and -2 engines)
 - (xv) Supplement No. 23, dated February 22, 1974. Revised October 3, 1980. (S-61L, 22,000 Pounds Operation)
- (b) FAA Approved Rotorcraft Flight Manual, Model S-61L Helicopter (Publication No. SA 4045-100), dated April 10, 1970. Revised January 29, 1982. (S/Ns 61425 and subsequent)
 - (i) Supplement No. 1, dated May 15, 1970. Revised September 12, 1979. (Vertical Operation, Ground-level Heliports)
 - (ii) Supplement No. 2, dated May 15, 1970. Revised September 12, 1979. (Vertical Operations, Elevated Heliports)
 - (iii) Supplement No. 3, dated September 9, 1970. Revised September 12, 1979. (Edge Procedures)
 - (iv) Supplement No. 4, dated December 6, 1973. Reissued November 21, 1974. Revised May 20, 1980. (Icing Equipment, -140 engines)
 - (v) Supplement No. 5, dated August 13, 1970. (Engine Inlet Screens)
 - (vi) Supplement No. 6, dated April 15, 1974. Revised October 3, 1980. (22,000 Pound Operation)
- (c) FAA Approved Rotorcraft Flight Manual, Model S-61N Helicopter, (Publication No. SA 4045-82), dated September 9, 1963. Reissued December 17, 1971. Revised November 27, 1981.
 - (i) Supplement No. 11, dated July 12, 1974. (S-61NM)
 - (ii) Supplement No. 12, dated November 25, 1975. Revised April 14, 1978. (S/N 61749 only)
 - (iii) Supplement No. 13, dated February 10, 1977. (S/N 61761 only)
 - (iv) Supplement No. 14, dated March 30, 1977. Revised October 5, 1977. (S/N 61764 only)
 - (v) Supplement No. 15, dated September 9, 1977. Revised September 12, 1979.
 - (vi) Supplement No. 16, dated October 20, 1977. Revised October 3, 1980.
- (d) FAA Approved Rotorcraft Flight Manual, Model S-61R Helicopter (Publication No. SA 4045-78), dated December 30, 1963. Reissued May 8, 1964. Revised December 11, 1964.
 - (i) Supplement No. 1, dated October 29, 1965. Revised June 22, 1966. (CT58-140-1 engine)
 - (ii) Supplement No. 2, dated October 20, 1977.

NOTE 1: Current weight and balance report including list of required equipment and list of equipment included in certificated empty weight, and loading instructions when necessary, must be provided for each helicopter at the time of original certification.

NOTE 2: The following placard must be displayed in front of and in clear view of the pilot:

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

NOTE 3: Information essential to the proper maintenance of the helicopter is contained in the manufacturer's maintenance manual provided with each helicopter, which specifies that service life limited parts be retired in accordance with the following:

Models S-61L, S-61N, and S-61NM

Section 2C. "List of retireable parts and time limits," of Sikorsky Service Bulletin No. 61B General-1L, dated December 16, 1981 or latest revision.

| Model S-61R | Part Number | Service Life (Hours) |
|---|---------------|-------------------------|
| Main Rotor Blade Assembly | S6117-20101 | 8,000 |
| Primary Servo Trunnion Assembly | S6165-20232 | 7,700 |
| Primary Servo Housing Assembly | S6165-20202 | 8,100 |
| Control Horn Eyebolt | S6112-23072 | 10,600 |
| Main Transmission T.T.O. Bearing (As installed in MGB P/N S6137-23000-1 thru -9 or subsequent approved MGB. See note 9) | SB2103-2 | 200 |
| Rotary Wing Head Damper Piston | S6110-26019-0 | 3,400 |
| Rod Assembly | S6110-26019-1 | 3,400 |
| Rotary Wing Head, Damper, Cylinder and Head Assembly | S6110-26403-2 | 5,100 |
| Rotary Wing Head, Damper, Piston Rod | S6110-26020-2 | 5,400 |
| Rotary Wing Head, Damper, Lower Attachment Bracket Bolts | NAS 627-H-14 | 4,400 |
| Rotary Wing Head, Damper, Trunnion | S6110-26045-7 | 2,400 |

NOTE 4: Prior to civil certification, military Model CH-3C and CH-3E helicopters must be modified in accordance with instructions provided by Sikorsky Aircraft.

NOTE 5: A modification of the Model S-61N, replacing the amphibious landing gear with a Sikorsky Model S-61L fixed land type gear in accordance with Sikorsky Aircraft Drawing S6107-25112, "Modification Kit, Sponson to Fixed Landing Gear," has been approved for operations at 20,500 lbs. gross weight. With this modification, the Model S-61N is converted to a Transport Helicopter (Categories A & B).

NOTE 6: Engine controls must be set to this rating for Category A vertical operation (Ground-level and Elevated Heliports) and Category A Elevated Heliport Edge Procedures.

NOTE 7: If take-off power is used in cumulative excess of 5 minutes during any one emergency, the engine must be inspected in accordance with G.E. Commercial Engine Service Memorandum CT58-110-1, Maintenance No. 19, April 17, 1962.

NOTE 8: The hoist and cargo sling are special purpose equipment and information concerning the operating limitations for this equipment is contained in the Rotorcraft Flight Manual.

NOTE 9: Optional engines eligible for installation and the applicable limitations:

- Engines (2):
- (a) General Electric CT58-110-2 (with Hamilton Standard Fuel Control JFC-26) NOTE: Eligible on S-61L and S-61N models only.
Engine Limits: Sea Level Static - Standard Day (Same as CT58-110-1)
 - (b) General Electric CT58-140-1 (with Hamilton Standard Fuel Control JFC-26)

Engine Limits: Sea Level Static - Standard Day

| | SHAFT HP | POWER TURBINE RPM | GAS GEN RPM | POWER TURBINE INLET (T5) |
|--|-------------|----------------------|-----------------------------|-----------------------------|
| Takeoff (5 min) | 1,400 | 21,275(112.0%Nf) | 26,300(100%N _g) | 1,285° F (696°C) |
| One engine inoperative (30 min) (See NOTE 7) | 1,400 | 21,275(112.0%Nf) | 26,300(100%N _g) | 1,285° F (696°C) |
| One engine inoperative (2 1/2 min) (See NOTE 6) | 1,500 | 21,275(112.0%Nf) | 26,800(102%N _g) | 1,330° F (721°C) |
| Maximum continuous | 1,250 | 21,275(112.0%Nf) | 26,300(100%N _g) | 1,220° F (660°C) |
| Maximum transient (2 sec) | | | | 1,545° F (840°C) |
| Starting (2 sec) | | | | 1,740° F (950°C) |
| Allowable maximum overspeed (15 sec.) | | 23,100(122.0%Nf) | 27,600(105%N _g) | |

Takeoff and maximum continuous horsepower ratings are normally obtained at a power turbine speed of 18,966 rpm (100%Nf)

Total power for two-engine operation is limited to 2,300 hp. for takeoff for S-61L/N rotorcraft (See NOTE 10 for alternate limits) and 2,500 hp. for takeoff for S-61R (CH-3E, HH-3E) rotorcraft. Maximum continuous total power for two-engine operation is limited to 2,100 hp.

See NOTE 11 for variation of sea-level static power limits below 59°F.

The use of optional engine Model CT58-140-1 in the S-61 L, S-61N and S-61NM is permitted only when main gearbox part numbers S6135-20600-12 through -15, -18 through -28, -31 through -48 is installed, and left engine cowl, part number S6130-80142, is modified for increased cooling provisions per Sikorsky Engineering Order No. 65718. Refer to Rotorcraft Flight Manual for use of engine inlet duct, part number S6130-80179, with oil tank mounting ring, part number S6132-80205.

Use of the optional engine Model CT58-140-1 in the S-61R is permitted when the main gearbox part numbers are S6137-23000-017 or -018.

- (c) General Electric CT58-140-2 (with Hamilton Standard Fuel Control 725725-1).

Engine Limits: Sea Level Static - Standard Day

| | SHAFT HP | POWER TURBINE RPM | GAS GEN RPM | POWER TURBINE INLET (T5) |
|--|-------------|----------------------|-------------------------------|-----------------------------|
| Takeoff (5 min) | 1,400 | 21,275(112.0%Nf) | 26,300(100%N _g) | 1,285° F (696°C) |
| One engine inoperative (30 min) (See NOTE 7) | 1,400 | 21,275(112.0%Nf) | 26,300(100%N _g) | 1,285° F (696°C) |
| One engine inoperative (2 1/2 min) (See NOTE 6) | 1,500 | 21,275(112.0%Nf) | 27,200(103.4%N _g) | 1,397° F (758°C) |
| Maximum continuous | 1,250 | 21,275(112.0%Nf) | 26,300(100%N _g) | 1,220° F (660°C) |
| Maximum transient (2 sec) | | | | 1,545° F (840°C) |
| Starting (2 sec) | | | | 1,740° F (950°C) |
| Allowable maximum overspeed (15 sec.) | | 23,100(122.0%Nf) | 27,600(105%N _g) | |

Total power for two-engine operation is limited to 2,300 hp. for takeoff for S-61L/N rotorcraft (See NOTE 10 for alternate limits).

See NOTE 11 for variation of sea-level static power limits below 59°F.

NOTE 9: (cont'd)

The use of optional engine Model CT58-140-2 in the S-61L, S-61N, and S-61NM is permitted only when main gearbox part numbers S6135-20600--12 through -15, -18 through -28, -31 through -48 is installed, and left engine cowl, part number S6130-80142, is modified for increased cooling provisions per Sikorsky Engineering Order No. 65718. Refer to Rotorcraft Flight Manual for use of engine inlet duct, part number S6130-80179, with oil tank mounting ring, part number S6132-80205.

Use of the optional engine Model ST-58-140-2 is not permitted in the S-61R.

NOTE 10: Two-engine operation limits are increased to 2,500 hp. for takeoff when the S6135-20600-12 through -15, -18 through -28 or -31 through -48 main transmission is installed. The maximum continuous limit of 2,100 hp. is unchanged.

NOTE 11: Below 59°F the sea-level static power limits vary as follows:

| | <u>CT58-110-1, CT58-110-2</u> | <u>CT58-140-1</u> | <u>CT58-140-2</u> |
|--------------------------------|---|---|---|
| 2-1/2 Min helicopter | No variation - engine is flat rated at 1,350 hp. at 59°F and below. | Increases linearly from 1,500 hp. at 59°F to 1,545 hp. at -65°F. | Increases linearly from 1,500 hp. at 59°F to 1,560 hp. at -65°F. |
| Takeoff and 30 Min. Helicopter | Increases from 1,250 hp. at 59°F to 1,350 hp. at +23°F and flat rated below this temperature. | Increases linearly from 1,400 hp. at 59°F to 1,510 hp. at 22°F and to 1,540 hp. at -65°F. | Increases linearly from 1,400 hp. at 59°F to 1,530 hp. at 13°F and to 1,560 hp. at -65°F. |
| Max. Continuous | Increases linearly from 1,050 hp. at 59°F to 1,230 hp. at 29°F and flat rated at 1,230 hp. at 29°F and below. | Increases linearly from 1,250 hp. at 59°F to 1,390 hp. at 39°F and flat rated at 1,390 hp. at 39°F and below. | |

NOTE 12: The maximum rotorcraft-external load weight is 22,000 lb. under the condition specified in the following Rotorcraft Flight Manual Supplements, in accordance with FAR 133 operations: S-61L Supplement No. 6; S-61N Supplement No. 16.

NOTE 13: Model S-61N (Transport Helicopter - Categories A & B)
Date Approved: September 9, 1977

The S-61N is approved for operations at gross weights from 19,000 to 20,500 pounds when the following components are installed:

Main Rotor Blades, P/Ns 61170-20201-055 and subsequent, S6115-20501-041 and subsequent, and S6115-20601-047, -048, and subsequent.

Tail Rotor Blades, P/N S6117-30101-043 and subsequent.

Engines, G.E. CT58-140-1 and 140-2.

Main Gearbox, P/Ns S6135-20600-12 through -15, -18 through -28, -31 through -048.

Bifilar Assembly, P/N S6112-23039-017 or S6112-23039-018.

Beam, Pitch Control (Tail Gearbox), P/N S6135-66705-1.

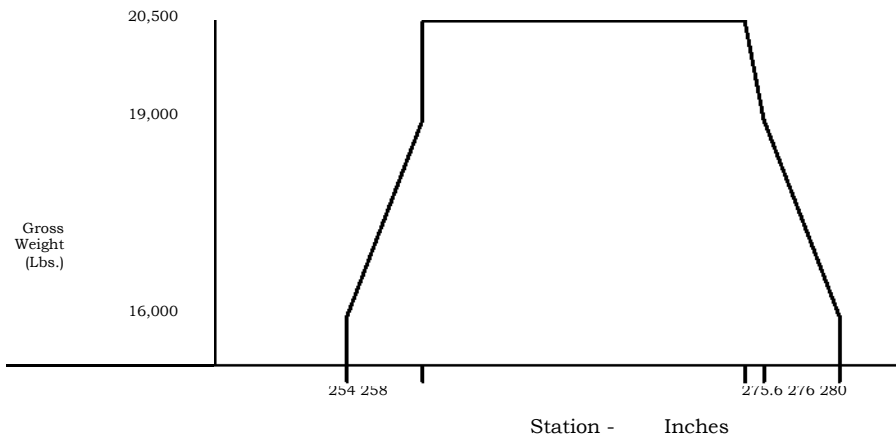
Airspeed Limits:

Category A: Never exceed 140 m.p.h. (122 knots) IAS

Category B: Never exceed 144 m.p.h. (125 knots) IAS

C.G. Range:
(258.0) to (275.6) at 20,500 lbs.
(258.0) to (276.0) at 19,000 lbs.
(254.0) to (280.0) at 16,000 lbs. or less

(Above values apply to aircraft with two-tank fuel system. Refer to Flight Manual for additional limitations associated with the three-tank fuel system.)



Empty Weight C.G. Range: None

Maximum Weight: Category A: 20,500 lb. (See Rotorcraft Flight Manual for lesser maximum weights for various Category A takeoff and landing procedures.)

 Category B: 20,000 lb.

 Above 19,000 lbs. gross weight, the helicopter is approved for over-water flights and emergency water landings provided that life saving equipment is installed that meets the requirements of FARs 29.1411, 29.1415, and 29.1561.

NOTE 14: See Carson's Rotorcraft Aircraft Records for Sikorsky Model S-61L (S/N 61032) and STC SH1261EA, amended January 22, 1982, for Rotorcraft Model status (FAA Form 8130-6, December 17, 1981, FAA Forms 337, dated December 15 and 17, 1981) - Conversion of S-61L (S/N 61032 only) to S-61N and fuel tanks and system installation (total of five fuel tanks) and required applicable FAA approved (Carson and Sikorsky) documents.

NOTE 15: The following helicopters have been converted:

| <u>Serial Number</u> | <u>Surplus Military Model</u> | <u>Eligible For Certification as Civil Model</u> | <u>Modifier</u> |
|----------------------|-------------------------------|--|-----------------------|
| 61551 | CH-3C | S-61R | Carson Services, Inc. |

END