Sikorsky S-70i™ BLACK HAWK Helicopter

The legend continues

S-70i™ BLACK HAWK HELICOPTER TECHNICAL INFORMATION
# Specifications

## Performance

*Standard day, sea level, maximum gross weight 22,000 lb unless otherwise noted*

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum speed ($V_{ma}$)</td>
<td>195 kts 361 km/hr</td>
</tr>
<tr>
<td>Maximum cruise speed ($V_{Ma}$)</td>
<td>149 kts 276 km/hr</td>
</tr>
<tr>
<td>Economy cruise speed</td>
<td>135 kts 250 km/hr</td>
</tr>
<tr>
<td>Range (20 min reserve)</td>
<td>250 nm 463 km</td>
</tr>
<tr>
<td>Maximum rate of climb</td>
<td>2,250 ft/min 11.43 m/sec</td>
</tr>
<tr>
<td>Service ceiling</td>
<td>13,200 ft 4,021 m</td>
</tr>
<tr>
<td>Hover ceiling – OGE</td>
<td>4,300 ft 1,311 m</td>
</tr>
<tr>
<td>Hover ceiling – IGE</td>
<td>9,000 ft 2,743 m</td>
</tr>
<tr>
<td>OEI service ceiling</td>
<td>3,700 ft 1,128 m</td>
</tr>
</tbody>
</table>

## Weights

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empty weight</td>
<td>11,790 lb 5,347 kg</td>
</tr>
<tr>
<td>Maximum take-off gross weight</td>
<td>22,000 lb 9,997 kg</td>
</tr>
<tr>
<td>Maximum take-off gross weight external load</td>
<td>23,500 lb 10,658 kg</td>
</tr>
</tbody>
</table>

## Dimensions

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall length (tip-cap to tail blade)</td>
<td>64.83 ft 19.76 m</td>
</tr>
<tr>
<td>Overall width (main rotor diameter)</td>
<td>53.67 ft 16.36 m</td>
</tr>
<tr>
<td>Overall height</td>
<td>17.50 ft 5.33 m</td>
</tr>
<tr>
<td>Folded length</td>
<td>41.33 ft 12.60 m</td>
</tr>
<tr>
<td>Folded width</td>
<td>9.72 ft 2.96 m</td>
</tr>
<tr>
<td>Folded height</td>
<td>8.98 ft 2.74 m</td>
</tr>
<tr>
<td>Wheelbase</td>
<td>28.92 ft 8.82 m</td>
</tr>
<tr>
<td>Main wheel tread</td>
<td>8.88 ft 2.71 m</td>
</tr>
</tbody>
</table>

## Accommodation

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utility configuration</td>
<td>2 Pilots, 2 Cabin Crew Members and 11 troops</td>
</tr>
<tr>
<td>Cabin length</td>
<td>12.58 ft 3.84 m</td>
</tr>
<tr>
<td>Cabin width</td>
<td>7.00 ft 2.14 m</td>
</tr>
<tr>
<td>Cabin height</td>
<td>4.50 ft 1.37 m</td>
</tr>
<tr>
<td>Cabin area</td>
<td>88.00 sq ft 8.18 sq m</td>
</tr>
<tr>
<td>Volume</td>
<td>396 cubic ft 11.22 cubic m</td>
</tr>
</tbody>
</table>

## Powerplants

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number, type and controls</td>
<td>2 each T700-GE701D with 701C engine controls</td>
</tr>
<tr>
<td>2.5 Minute OEI contingency</td>
<td>1,940 shp 1,447 kw</td>
</tr>
<tr>
<td>10 Minute takeoff power</td>
<td>1,890 shp 1,409 kw</td>
</tr>
<tr>
<td>30 Minute intermediate power</td>
<td>1,800 shp 1,342 kw</td>
</tr>
<tr>
<td>MAX continuous power</td>
<td>1,662 shp 1,239 kw</td>
</tr>
</tbody>
</table>

## Fuel Capacity

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal fuel capacity</td>
<td>360 gal 1,362 l</td>
</tr>
</tbody>
</table>
### Aircraft Dimensions

Note: Aircraft image shows HIRSS, which is an available option.

#### Cabin Dimensions

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value 1</th>
<th>Value 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cabin length</td>
<td>12.58 ft</td>
<td>3.84 m</td>
</tr>
<tr>
<td>Cabin width</td>
<td>7.00 ft</td>
<td>2.14 m</td>
</tr>
<tr>
<td>Cabin height</td>
<td>4.50 ft</td>
<td>1.37 m</td>
</tr>
<tr>
<td>Cabin area</td>
<td>88.00 sq ft</td>
<td>8.18 sq m</td>
</tr>
<tr>
<td>Cabin volume</td>
<td>396.00 cu ft</td>
<td>11.22 cu m</td>
</tr>
<tr>
<td>Storage compartment volume</td>
<td>20.34 cu ft</td>
<td>0.58 cu m</td>
</tr>
</tbody>
</table>
Standard Baseline Configuration

**Standard Baseline Configuration** is the basic list of aircraft components, mission equipment, electrical, avionics, or navigational system(s) installed in production aircraft by Sikorsky Aircraft.

**Airframe**

- Nose and transition section equipment compartments
- Two hinged jettisonable cockpit doors with emergency “pop-out” windows
- Door and ignition locks
- Crashworthy pilot and copilot comfort seats
- Active vibration control system
- Shatter resistant glass windshields with anti-ice
- Windshield and gunner station defogging & defrosting
- Windshield wipers with speed setting
- Bleed air heating system
- Blower ventilation system
- Structural provisions for transportability
- Two crew/gunner stations with structural provision for 7.62 mm to .50 cal pintle-mounted machine guns
- Two sliding window assemblies for cabin crew members
- Two cabin sliding doors with two jettisonable windows per door
- 396-cubic-foot cabin with 300psf cabin floor
- Two hand-held fire extinguishers
- Two 20 cubic foot storage compartments
- One cabin crew seat with provisions for 12 troop seats
- 9,000 lb (4,082 kg) capacity cargo hook provisions
- Upper and lower wire strike protection systems
- 3-Point main landing gear, dual-oleo shock struts with kneeling capability
- Tail landing gear with swiveling and locking capability
- Crashworthy External Fuel System (CEFS) mounting provisions
- External electric rescue hoist kit primary structural provisions
- Fast Rope Insertion/Extraction System (FRIES) structural provisions
- Manual tail pylon fold
- Slewable one-piece stabilator with automatic and manual control
- Forward sliding pylon for easy access to flight controls
- Engine cowlings open outward for use as maintenance platforms
- Covers, fairings, and panels designed for easy access during maintenance
- Cabin interior panels
- Exterior paint, single base color, flat
- Airframe corrosion protection
- NVG compatible cockpit / cabin lighting
- Standard engine exhaust, non-infrared suppression
- Fly-away kit — engine plugs, blade tie-down kit, pitot tube covers
- Aircraft survivability structural provisions
  - Radar warning
  - Missile/laser warning
  - Chaff and flare
  - IR countermeasures
  - Engine Exhaust Infrared Suppressor System
Standard Baseline Configuration

Integrated Cockpit

- Four landscape Multi-Function Displays (MFD)
  - Primary flight (3 modes)
  - Navigational modes
  - Engine instrument and fuel
  - Caution/advisory display
- Terrain Awareness Warning System (TAWS)
- Dual digital Automatic Flight Control System (AFCS) with coupled flight director
- Digital dual display control panels
- Digital standby instrument
- Digital clock
- Master warning panel (2)
- Dual heated pitot static system
- Dual air data computers
# Standard Baseline Configuration

## Rotor and Drive System
- Four-blade articulated main rotor system with one-piece titanium hub and elastomeric bearings
- Ballistically tolerant main rotor blades with titanium spars, fiberglass skins, and honeycomb cores
- Bifilar vibration suppression system
- Dual, redundant and isolated pilot flight controls
- Dual, redundant parallel primary and tail rotor servos with jam protection
- Tail rotor centering quadrant for operation following control cable failure
- Rotor brake provisions
- Dual, independent, transmission-powered 3000 psi hydraulic system
- Third, back-up, electrically-powered 3000 psi hydraulic system
- Four-blade, crossbeam tail rotor
- Main and tail rotor blade de-ice system provisions
- Ballistically tolerant transmission system with 30 minute run-dry capability
- Intermediate and tail gearbox with interconnecting drive shafts
- Magnetic chip detectors with fuzz burn-off capability and built-in test circuit

## Powerplant and Fuel System
- Two General Electric T700-GE-701D engines with “701C” engine controls and integral particle separators
- APU for engine start, ground power, and in-flight emergency power
- Dual suction fuel systems with self-sealing lines, breakaway fittings and crossfeed capability
- Dual crashworthy, self-sealing fuel tanks with a total capacity of 360 gallons/1,363 liters
- Fuel boost pumps for prime and high altitude operation
- Gravity and pressure (single point) fueling and defueling
- Low level fuel warning system
- Engine and APU fire detection & extinguishing systems
- Engine anti-icing system
- Engine magnetic chip detectors with fuzz burn-off capability (w/built-in-test circuit)
- Structural provisions for external auxiliary fuel 400 / 800 gal
- 200 gal internal auxiliary fuel provisions

## Electrical
- Two 30/45 KVA AC generators
- Two 400 amp DC converters
- Single 20/23.8 KVA APU-driven AC generator
- Dual 5.0 amp-hour sealed lead acid battery
- External power monitor panel
- Retractable landing light
- Dual mode (standard and IR) controllable searchlight
- Standard and IR position lights
- NVG compatible formation lights
- Two anti-collision strobe lights
- Portable maintenance/inspection light
- Dual 115 VAC and single 28 VDC cabin receptacle
Standard Baseline Configuration

Avionics
- APN-209 radar altimeter
- Dual MXF-4027 VHF/UHF-AM/FM communication radios
- Communications back-up control panel
- Digital ICS (4 station)
- APX-117 IFF transponder
- ARN-147(V) VOR/ILS
- ARN-149(V) LF/ADF
- H746 dual GPS/INS inertial navigation systems
- Emergency locator transmitter (ELT) C406N
- Digital map
- WX 500 Storm Scope – provisions

Flight Data as viewed on the Multi-Functional Flight Displays

Standard Search and Rescue Configuration

Standard Baseline Configuration plus the following:
- External electric rescue hoist
- Forward Looking Infra-red
- SAR direction finder
- WX 500 Storm Scope Completion
- Rotor Brake Completion
- SAR AFCS
- Integrated Vehicle Health Management System (IVHMS) with CVR / FDR
Available Options

Mission Equipment

- Enhanced performance package: T701D with “D” engine controls, wide-chord composite main rotor blades and composite folding stabilator
- Cargo hook
- Main and tail rotor blade de-ice completion kit
- Rotor brake completion kit
- Crashworthy Extended-Range Fuel System (CEFS), two 200 gallon/757 liter external fuel tanks
- External Stores Support System (ESSS)
- Crashworthy internal fuel tank system 200 gallon/757 liter
- Environmental control system (ECS)
- Armored pilot seats and side panels
- Medical litter provisions, 3 patient or 6 patient arrangement
- Camouflage or VIP aircraft paint schemes
- Rappelling equipment completion
- Fast Rope Insertion-Extraction System (FRIES) Completion*
- Snow-ski landing gear kit
- External electric rescue hoist
- Firefighting water bucket
- Weapon pintle mounts
- Additional cabin troop seats
- Executive interior
- Transportability kit
- Medical attendant seat(s)
- Forward Looking Infra-red
- APU air inlet barrier filter system

Avionics

- VHF/UHF SAR direction finder
- Additional cabin ICS Panels
- WX 500 Storm Scope completion
- SAR AFCS
- Integrated Vehicle Health Management System (IVHMS)
- Underwater beacon

Aircraft Survivability Equipment

- Radar warning system*
- Missile/laser warning system*
- Chaff and flare dispenser*
- IR countermeasures*
- Hover InfraredSuppressor System (HIRSS)*

Future Options

- High intensity searchlight
- Window washer system
- Armament Kits*
- Loud hailer
- Additional cabin seat arrangements
- FMS database
- Distance measuring equipment
- Improved Heads-Up Display (IHUD)
- Firefighting tank system
- Wireless ICS
- SATCOM*
- HF Radio*
- TACAN*
- TCAS
- Communication security*
- Personnel locator system
- Color weather radar
- Armored floor*
- Engine air inlet barrier filter system
- Digital data link*

*Subject to Government approval
Cabin Seating Configuration

Standard Baseline Configuration
One Crew Seat and Provisions for 12 Troop Seats

Standard SAR Configuration
Two Crew Seats and Four Troop Seats
or Internal Aux. Fuel 200 Gallon

Typical Utility Configuration
Two Crew Seats and 11 Troop Seats

Medical Evacuation Configuration
Two Crew Seats and Three or Six Medical Litters

External Rescue Hoist

Litter Kit for 3 patient or 6 patient
Payload/Range Performance

Takeoff at Sea Level ISA +20 C
Climb to 4000 ft at 70kts
Cruise at 99% Vbr
Descend to Sea Level
Land
20 min. Reserve

Main Fuel = 360 gallon / 1,363 liter
Internal Aux Configuration = Main Fuel +200 gallons / 757 liters
External Aux Fuel Configuration = Main Fuel +400 gallons / 1,514 liters
Hover Ceiling - In Ground Effect
Five Foot Wheel Height, Ten Minute Rating
Hover Ceiling - Out of Ground Effect
Ten Minute Rating

Pressure Altitude

Meters

Feet

20,000

ISA

ISA +20°C

Temperature

-30

-20

-10

0

10

20

30

40

50

°F

Gross Weight-
Pounds

14,000

16,000

18,000

20,000

22,000
Twin Engine Service Ceiling
IRP, 100 fpm ROC, $V_{BROC}$
Mission Performance

Single Engine Service Ceiling
IRP, 100 fpm ROC, $V_{BROC}$
Level Flight Fuel Consumption - Sea Level

**ISA**

- Maximum Continuous Power
- Long Range Cruise Speed

**ISA + 20°C**

- Maximum Continuous Power
- Long Range Cruise Speed

**Fuel Flow (lb/hour)**

- 1400
- 1200
- 1000
- 800
- 600

**True Airspeed (knots)**

- 60
- 80
- 100
- 120
- 140
- 160
- 180

**Gross Weight (lb)**

- 22,000
- 20,000
- 18,000
- 16,000
- 14,000
Mission Performance

Level Flight Fuel Consumption - 4,000 Feet

ISA

1400
1200
1000
800
600
60 80 100 120 140 160 180
True Airspeed (knots)

Fuel Flow (lb/hour)

Gross Weight (lb)
22,000
20,000
18,000
16,000
14,000

Maximum Continuous Power

Long Range Cruise Speed

ISA + 20°

1400
1200
1000
800
600
60 80 100 120 140 160 180
True Airspeed (knots)

Fuel Flow (lb/hour)

Gross Weight (lb)
22,000
20,000
18,000
16,000
14,000

Maximum Continuous Power

Long Range Cruise Speed
Level Flight Fuel Consumption - 8,000 Feet

**ISA**

- **Fuel Flow (lb/hour)**
  - 1400
  - 1200
  - 1000
  - 800
  - 600

- **True Airspeed (knots)**
  - 60
  - 80
  - 100
  - 120
  - 140
  - 160
  - 180

- **Gross Weight (lb)**
  - 22,000
  - 20,000
  - 18,000
  - 16,000
  - 14,000

- **Long Range Cruise Speed**

**ISA + 20°**

- **Fuel Flow (lb/hour)**
  - 1400
  - 1200
  - 1000
  - 800
  - 600

- **True Airspeed (knots)**
  - 60
  - 80
  - 100
  - 120
  - 140
  - 160
  - 180

- **Gross Weight (lb)**
  - 22,000
  - 20,000
  - 18,000
  - 16,000
  - 14,000

- **Long Range Cruise Speed**
Level Flight Fuel Consumption - 12,000 Feet

ISA

- 1200
- 1000
- 800
- 600

Fuel Flow (lb/hour)

- 22,000
- 20,000
- 18,000
- 16,000
- 14,000

Gross Weight (lb)

- Maximum Continuous Power

Long Range Cruise Speed

True Airspeed (knots)

ISA + 20°C

- 1200
- 1000
- 800
- 600

Fuel Flow (lb/hour)

- 20,000
- 18,000
- 16,000
- 14,000

Gross Weight (lb)

- Maximum Continuous Power

Long Range Cruise Speed

True Airspeed (knots)