



WALKAROUND

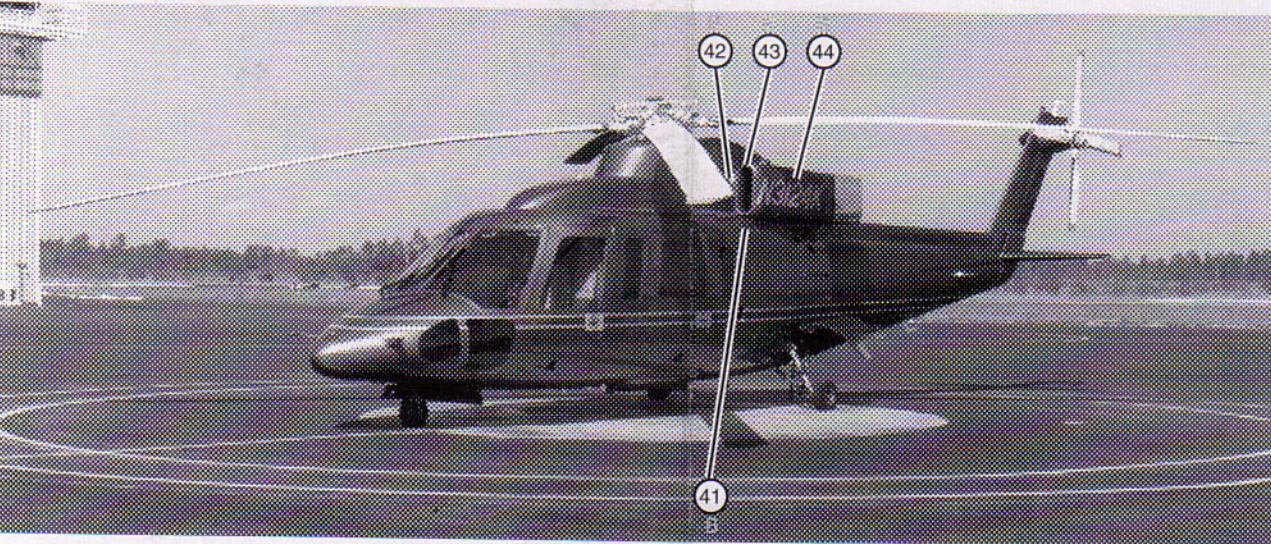
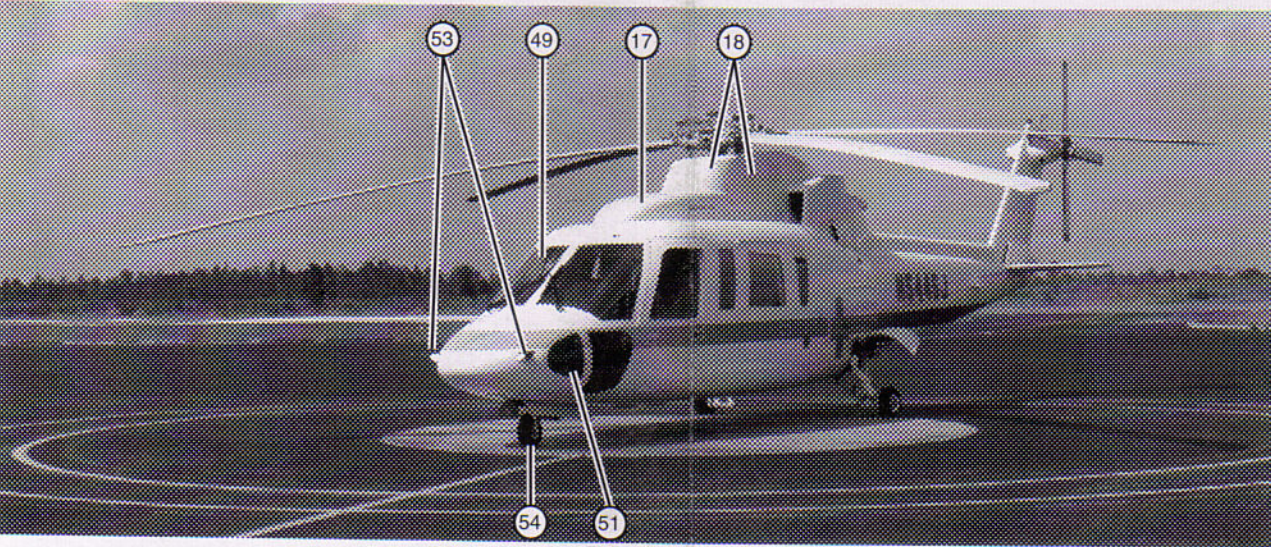
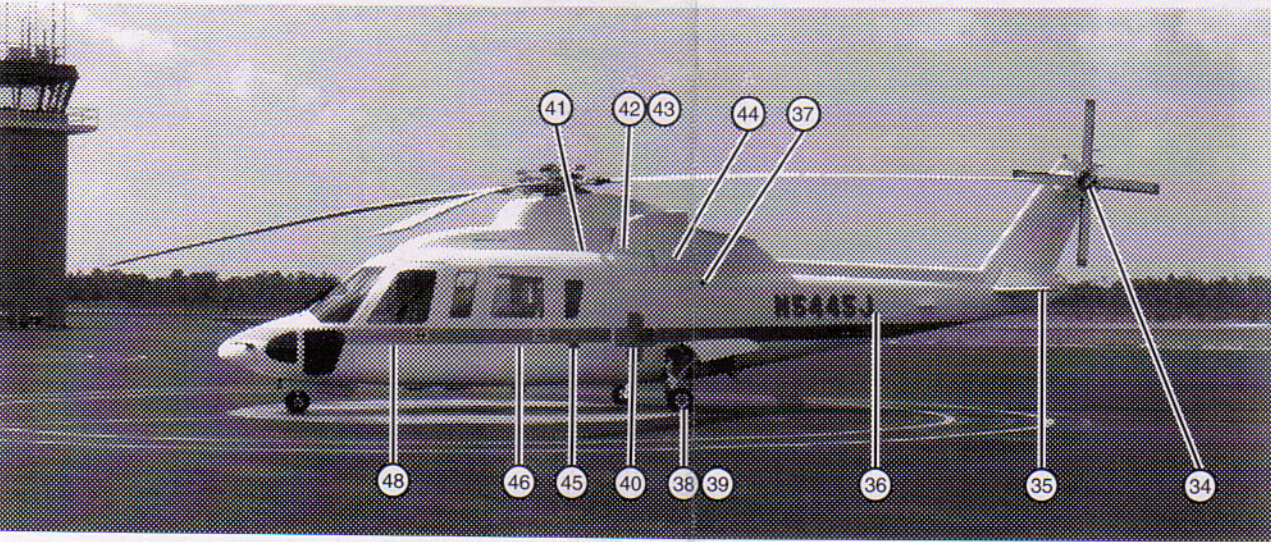
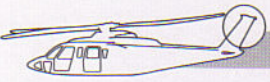
The following section is a pictorial walkaround on an S-76. It shows each item called out in the exterior power-off preflight inspection. The fold-out pages at the beginning and the end of the walkaround section should be unfolded before starting to read.

The general location photographs do not specify every checklist item. However, each item is portrayed on the large-scale photographs that follow.



SIKORSKY S-76 PILOT TRAINING MANUAL







WALKAROUND

NOTE

Numbers followed by "A" are for S-76A only; "A+" for S-76A+ only; "B" are for S-76B only; and "C" are for S-76C only.



1. **ROTOR BRAKE**—ROTOR BRAKE SWITCH ON, BATTERY SWITCH ON, ROTOR BRAKE CAUTION LIGHT ON



1. **ROTOR BRAKE (CONT)**—MANUAL ROTOR BRAKE OFF, HANDLE IN DETENT, BATTERY SWITCH ON



3. **PILOT DOOR**—EXTERNAL LOCK UNLOCKED, DOOR JETTISON HANDLE, LATCHES, HINGES, DOOR SEAL, VENT WINDOW



2. **COCKPIT INTERIOR**—FUEL QUANTITY, BATTERY(IES) SWITCH OFF, ROTOR BRAKE SWITCH RELEASED, WINDSHIELD CLEAN, AIRCRAFT DOCUMENTS



4. **CABIN DOOR**—EXTERNAL LOCKS UNLOCKED, JETTISON HANDLE, LATCHES, HINGES, DOOR SEAL



5. FLOAT INFLATION BOTTLE—PRESSURE



8. FUEL SUMP—DRAIN, AIRCRAFT BELLY, GENERAL CONDITION



6. CABIN INTERIOR—SEAT BELTS, FIRE EXTINGUISHER



9. RIGHT BAGGAGE COMPARTMENT—DOOR LOCK, SEALS, SWITCH, VISIBLE LINES, LOAD, PULL-DOWN STEP



7. RIGHT FUSELAGE—FUEL CAP, CABIN VENT



10. RIGHT MAIN GEARBOX ACCESS—CHECK FORWARD SERVO, SECOND-STAGE HYDRAULIC FLUID QUANTITY INDICATOR, SECURE COWLING*

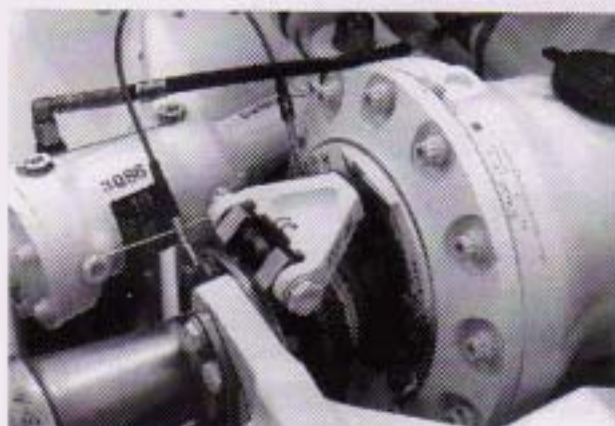
*IF AIRCRAFT HAS BEEN NONOPERATIONAL FOR MORE THAN TWO HOURS IN FREEZING TEMPERATURES, CHECK THAT FORWARD SERVO INPUT LINK MOVES FREELY WITH NO RESTRICTIONS APPROXIMATELY 1/4 INCH.



11. MAIN ROTOR HEAD—DAMPER RESERVOIR, BIFILARS, HUB



14. MAIN ROTOR SYSTEM (CONT)—PITCH-CHANGE HORN, LINK, INBOARD DAMPER BOLT



12. MAIN ROTOR SYSTEM—BLADE TOP AND BOTTOM, FLAP RESTRAINER, RETENTION BEARING, INNER RACE, DAMPER



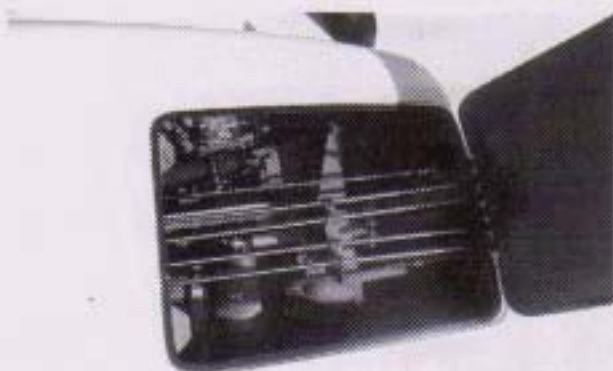
15. MAIN ROTOR HEAD (CONT)—MAST, SPHERICAL BEARING, SWASHPLATE, DUST BOOT



13. MAIN ROTOR SYSTEM (CONT)—DROOP STOP



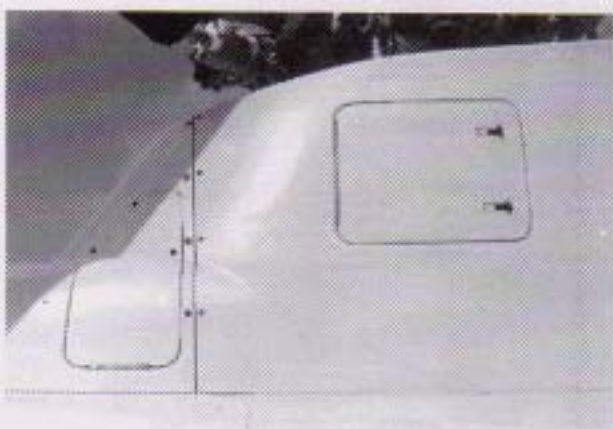
16. SECOND-STAGE HYDRAULIC ACCESS—CHECK PRIORITY VALVE, FILTER INDICATORS, LINES, WIRES; SECURE COWLING



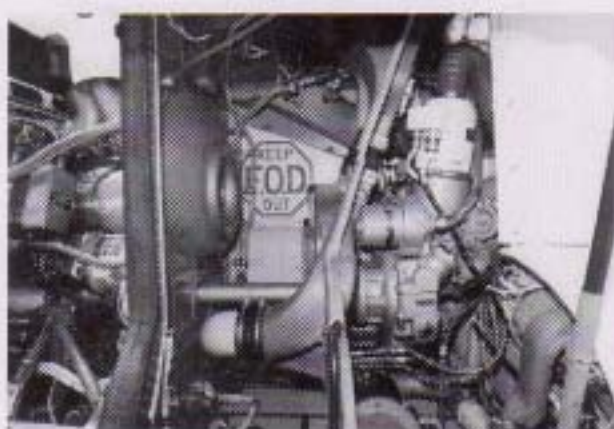
17. FLIGHT CONTROL COWLING OPEN—CHECK CONDITION AND SECURITY; SECURE COWLING



19. (B) NO. 2 ENGINE OIL RESERVOIR—PROPER FLUID LEVEL, DOOR SECURE



18. FIRST-STAGE HYDRAULIC AND LEFT MAIN GEARBOX ACCESS—CHECK LEFT SIDE; SECURE COWLINGS*

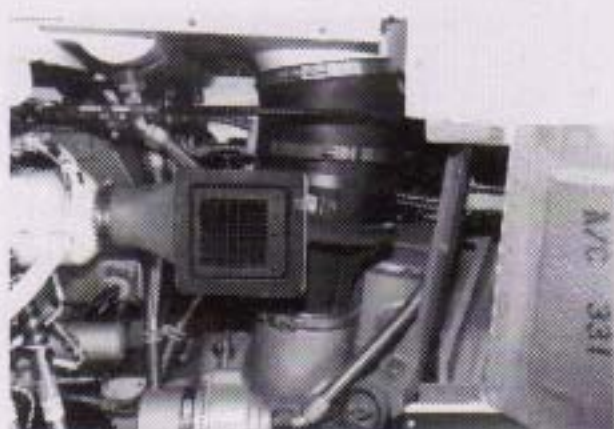


20. (A/A+C) RIGHT ENGINE AIR INTAKE ACCESS—MGB OIL LEVEL, MGB OIL FILTER BYPASS, AC GENERATOR, OIL COOLER DUCT BOOTS



19. (A/A+C) ENGINE OIL RESERVOIR—PROPER FLUID LEVEL, DOOR SECURE

*IF AIRCRAFT HAS BEEN NONOPERATIONAL FOR MORE THAN TWO HOURS IN FREEZING TEMPERATURES, CHECK THAT FORWARD SERVO INPUT LINK MOVES FREELY WITH NO RESTRICTIONS APPROXIMATELY 1/4 INCH.



20. (B) RIGHT OIL COOLER BLOWER ACCESS—CHECK MGB OIL LEVEL, MGB OIL FILTER BYPASS, OIL COOLER BLOWER; SECURE OIL COOLER DUCT BOOTS AND COWLING



21. (A) EXTERNAL ENGINE OIL FILTER—BYPASS INDICATION



22. (A+C) RIGHT ENGINE INLET AREA—CHECK ENGINE INLET, OIL COOLER BLOWER, DRIVE SHAFT; SECURE COWLING



22. (A) RIGHT ENGINE INLET AREA—CHECK ENGINE INLET, OIL COOLER BLOWER, DRIVE SHAFT; SECURE COWLING



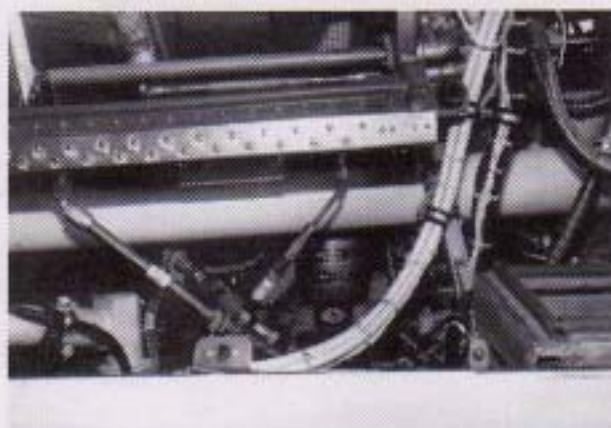
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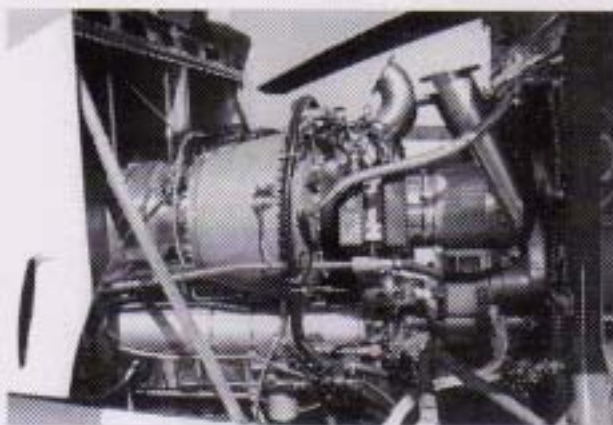
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23. (B) NO. 2 ENGINE AREA (CONT)—ENGINE AREA, FIRE BOTTLE, EEC



23. (A+C) NO. 2 ENGINE AREA (CONT)—STARTER GENERATOR, FUEL FILTER, AND BYPASS INDICATOR DRIVE SHAFT



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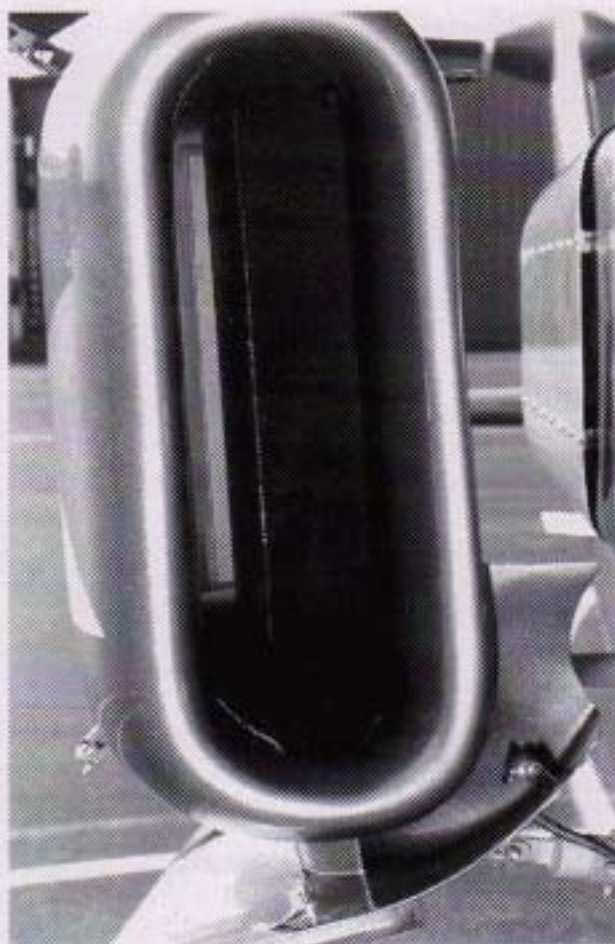
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24. (B) REAR OF ENGINE—AC GENERATOR



25. (B) EAPS DOORS—CHECK POSITION; SECURE COWLINGS



26. RIGHT MAIN GEAR—TIRE INFLATION, STRUT EXTENSION, LINES, BRAKE PADS



26. (A) DRAIN/VENT CLUSTER



27. RIGHT MAIN GEAR (CONT)—DOOR AND GEAR ACTUATOR, FLOAT BAGS



28. INFLATION BOTTLE—PRESSURE



29. LANDING GEAR CONTROL VALVE—CONDITION, LOCK-OUT INDICATION



30. LOCKPIN—REMOVE



31. ECU INTAKE AND EXHAUST—UNOBSTRUCTED



31. ECU INTAKE AND EXHAUST (CONT)—UNOBSTRUCTED



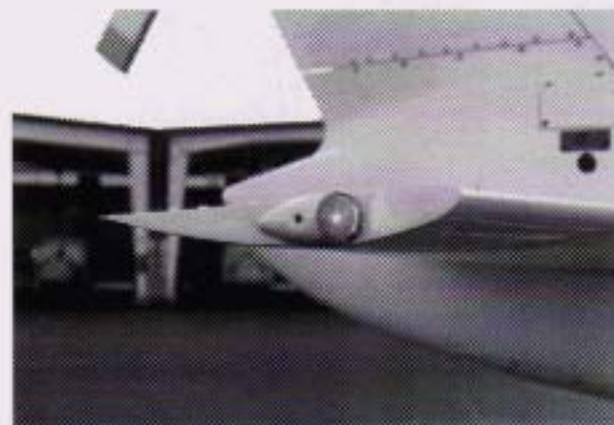
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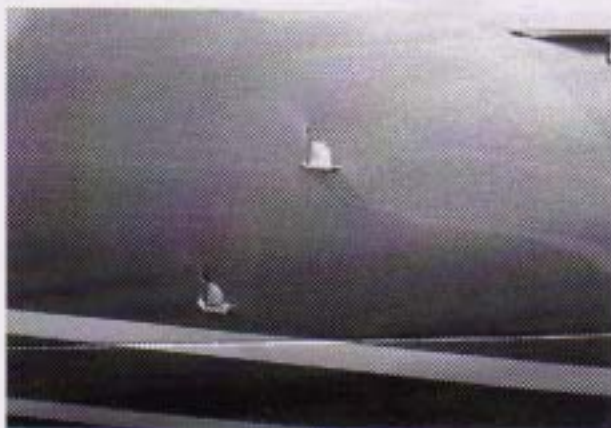
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35. (B/C) HORIZONTAL STABILIZER—POSITION LIGHTS, INTERMEDIATE GEARBOX AIR INLET



36. **TAIL CONE**—STATIC PORTS, ANTENNAS, GENERAL CONDITION



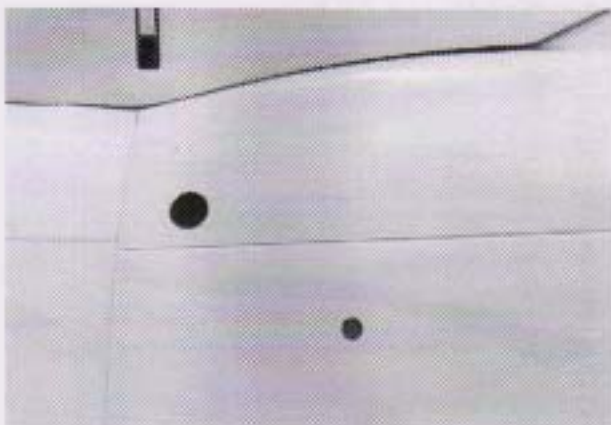
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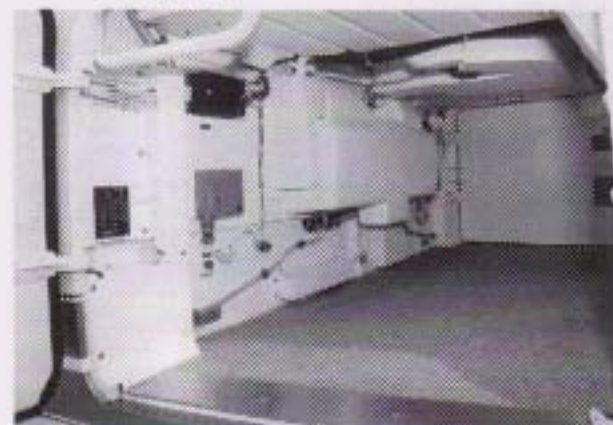
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40. (A+/C) LEFT BAGGAGE COMPARTMENT (CONT)—SMOKE DETECTOR, DOORLOCK, SEALS, SWITCH, VISIBLE LINES, OVERSPEED CONTROL UNIT, CARGO LOAD



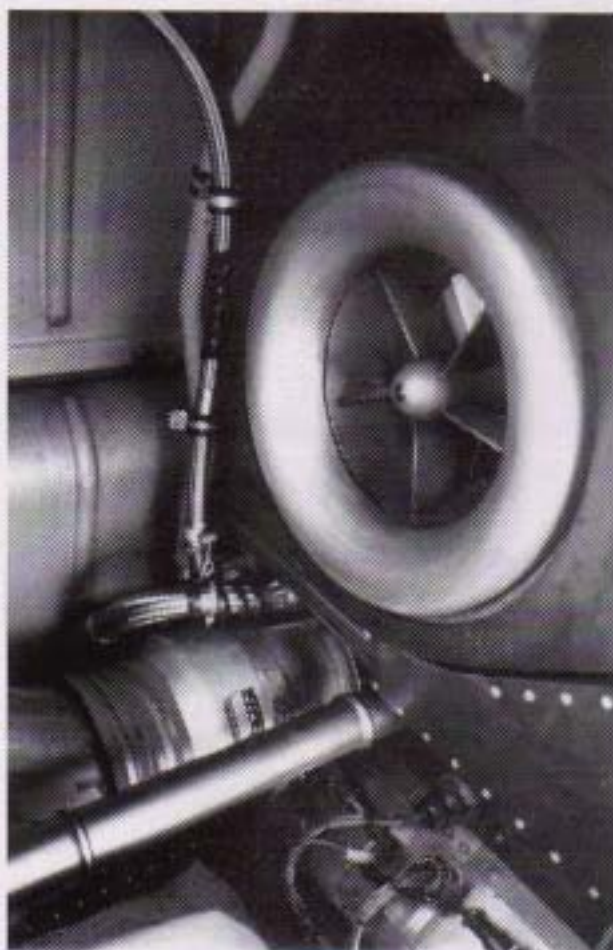
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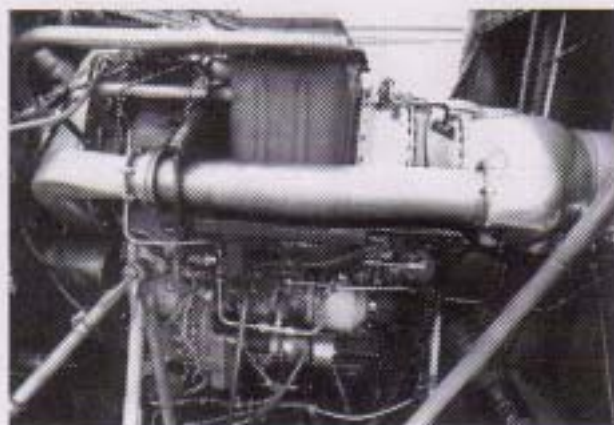
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44. (B) NO. 1 ENGINE AREA—CHECK ENGINE INLET, ENGINE GENERAL, EEC, FIRE BOTTLE; SECURE COWLING



45. LEFT FUSELAGE—FUEL CAP, CABIN VENT, GENERAL CONDITION



48. COPILOT'S DOOR—EXTERNAL LOCK UNLOCKED, DOOR JETTISON HANDLE, LATCHES, HINGES, DOOR SEAL



46. LEFT CABIN DOOR—EXTERNAL LOCKS, JETTISON HANDLE, LATCHES, HINGES, DOOR SEAL



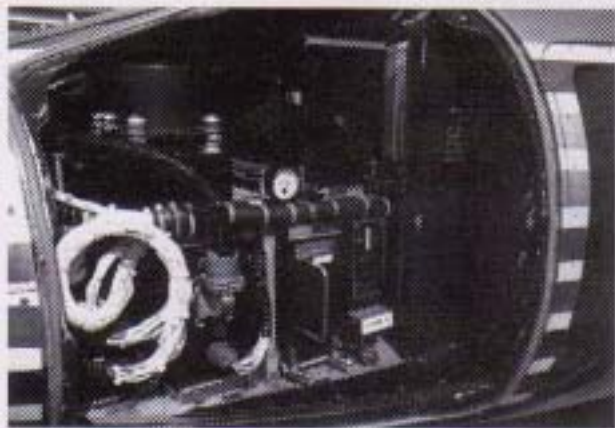
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50. COCKPIT INTERIOR (CONT)—SEAT BELTS, FLOAT BOTTLE, FIRE EXTINGUISHER, NOSEWHEEL LOCKPIN REMOVED



51. ELECTRICAL COMPARTMENT (LEFT)—CONDITION



52. WINDSHIELD AND WIPERS—CONDITION



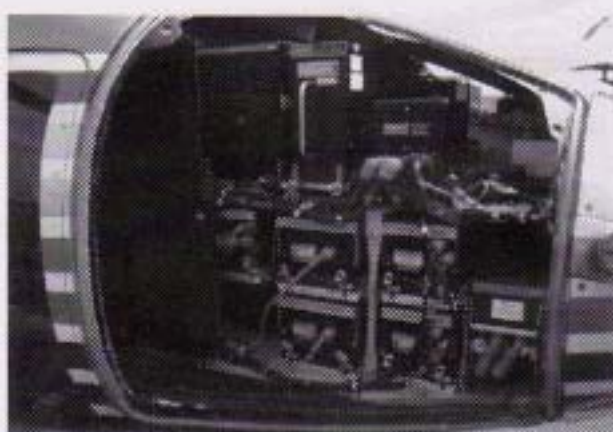
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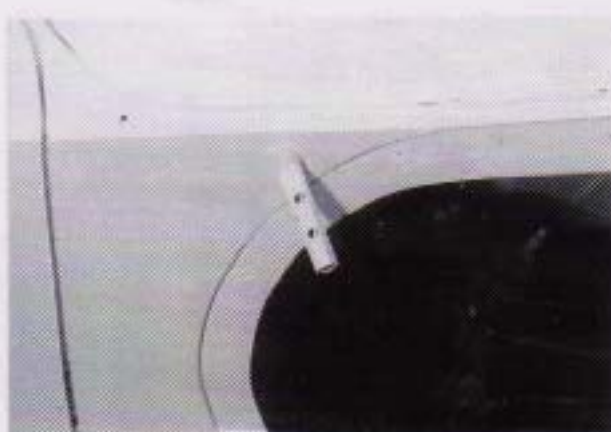
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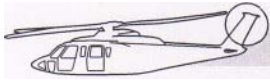
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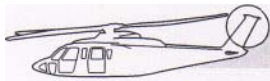
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LIMITATIONS AND SPECIFICATIONS

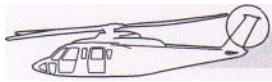
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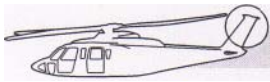
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S-76A LIMITATIONS

GENERAL

Limitations depicted herein are current up to Revision 42, Part 1, and Revision 28, Part 2, of the S-76A *RFM*.

NOTE

Compliance with the limitations in Part 1, Section 1, of the *RFM* is required by law.

The limitations presented in this chapter focus primarily on the operational capabilities of the aircraft. Specific system limitations are provided in the individual systems' chapters with the exception of instrument markings which are presented in this chapter. Refer to the FAA-approved *Rotorcraft Flight Manual (RFM)* for complete limitations listings.

Note that instrument marking limitations are grouped by type of instrument, not aircraft model. The instrument markings for both models are listed with at least one representative photograph shown for each instrument.

WEIGHT LIMITS

Maximum takeoff and landing weight is 10,500 pounds (4,763 kilograms).

NOTE

When operated at gross weight above 10,300 pounds, the helicopter must comply with Revision 14 of the Airworthiness Limitations section, dated May 14, 1985, or subsequent FAA-approved revisions of the *Airworthiness Limitations and Inspection Requirements Manual* SA 4047-76-2-1.

This helicopter is to be operated using the approved loading schedule. Refer to Loading Information in Part 2 of the *RFM*.

For minimum operating weight, refer to Figure 1-3 of the *RFM*.

Category A Operations

See Figure 1-1, *RFM*, for variation of allowable takeoff gross weight with altitude and temperature.

Category B Operations

See Figure 1-2, *RFM*, for variation of allowable takeoff gross weight with altitude and temperature.

CG (CENTER-OF-GRAVITY) LIMITS

See Figure 1-3, *RFM*, for forward and after center-of-gravity limits at various gross weights.

Lateral CG limits: Left or right 3 1/2 inches (89 mm). Left or right 4 1/2 inches (114mm) with hoist load attached, hover only.



LOADING LIMITS

Maximum allowable cabin floor loading is 75 pounds per square foot (366 kg per square meter).

The maximum allowable floor loading for the baggage compartment is 75 pounds per square foot (366 Kg per square meter) for weights up to the maximum compartment capacity of 600 pounds (272 Kg).

OPERATING LIMITS

Type of Operation

Category A and B

Transport

Land

Day, Night VFR

Day, Night IFR. The helicopter is not considered airworthy for operation under Instrument Meteorological Conditions (IMC) unless the following equipment is installed and operating:

1. AFCS (minimum requirement is for one operative pitch, roll, and yaw channel)
2. Copilot flight controls and flight instruments
3. AC generator electrical power system
4. Dual 5-inch vertical gyro indicators or equivalent
5. C-14A compass system
6. Cyclic stick trim
7. An operative navigation and communication system that has demonstrated compliance with the pertinent airworthiness regulations and also meets the requirements of the applicable operating regulations.

Overwater operations provided that the emergency flotation gear, P/N 76076-02002, and suitable lifesaving equipment (life jackets, rafts, etc.) as required by the operating rules and FAR 29.1411, 29.1415, and 29.1561 are installed.

Category B Rotorcraft—External Load Combinations

Class B external loads

NOTE

A Class B external load is an external load that can be jettisoned and is lifted free of land or water during rotorcraft operation.



Minimum Flight Crew

Visual meteorological conditions—One pilot (single pilot operations not permitted from left seat).

NOTE

Aircraft Serial No. 760001 and 760002 require installation of E.O. 72859 against 76550-02001 and E.O. 71195 against 76080-45010 to be eligible for one pilot operation.

Instrument meteorological conditions—Two pilots. Both pilots must be currently qualified for helicopter instrument flight.

For training flights, the cognizant FAA inspector may amend these requirements.

AIRSPEED LIMITS

NOTE

The S-76A uses Aero Mechanisms Part No. 8502C-S20LW, Aerosonic Part No. 20020-11190, or Aerosonic Part No. 20020-11293 airspeed indicator.

V_{NE} power on (maximum airspeed is 155 KIAS).

See V_{NE} placard (Figure 1-7, *RFM*) for variation of V_{NE} gross weight, temperature, and pressure altitude.

V_{NE} power off is 141 KIAS. See V_{NE} placard (Figure 1-7, *RFM*) for variation of V_{NE} with temperature and pressure altitude.

Minimum IMC airspeed is 60 KIAS.

Maximum airspeed during OEI operations with N_R below 100% is the best rate-of-climb speed.

With usable fuel per tank indicating 80 pounds or less, maximum allowable airspeed is 126 KIAS.

Maximum airspeed with landing gear down or in transit is 130 KIAS.

Maximum airspeed for windshield wiper operation is 141 KIAS.

Maximum groundspeed for landing, takeoff, or taxi is 40 knots.

Maximum groundspeed for brake application is 34 knots.

Minimum IMC airspeed is 60 KIAS (AFCS Phase II).

Minimum IMC airspeed is 50 KIAS (AFCS Phase III).

Steepest demonstrated approach gradients (AFCS Phase III):

- 7.5° at 60 and 80 KIAS
- 6.5° at 60 to 125 KIAS



(DAFCS)

- 6.5° at 60 to 130 KIAS

ALTITUDE LIMITS

Takeoff and landing: 6,900 feet density altitude

11,000 feet density altitude for helicopters modified by kit P/N 76070-30005 to relocate engine inlet temperature sensor

Enroute: 15,000 feet density altitude

AMBIENT TEMPERATURE LIMITS

-34.4° C (-30° F) to ISA + 36.7° C not to exceed 48.9° C (120° F).

FLIGHT LIMITS

See Figure 1-4, *RFM*, for altitude and airspeeds to be avoided at low altitude in case of engine failure.

No aerobatic maneuvers allowed.

360° hovering turns in less than 12 seconds prohibited.

Flight in known icing conditions prohibited.

Maximum airspeed for sideward flight or crosswind hover is 35 knots, up to and including 6,900 feet density altitude. Maximum airspeed for sideward flight or crosswind hover is 17 knots, from 6,900 feet up to and including 11,000 feet density altitude.

Maximum airspeed for rearward flight or tailwind hover is 35 knots, up to and including 6,900 feet density altitude. Maximum airspeed for rearward flight or tailwind hover is 17 knots, from 6,900 feet up to and including 11,000 feet density altitude.

Do not reengage a particular AFCS channel after a known malfunction exists in that particular channel.

Flight in falling or blowing snow is prohibited unless aircraft is fitted with snow protection kit P/N 76080-30008 or P/N 76076-30006-012 and a satisfactory functional check has been performed.

Flight in falling and blowing snow with EAPS installed is prohibited.

Cockpit ventilation must be provided by any of the following:

1. Overhead vents
2. Pilot's window



3. Heater blower
4. Heater bleed air
5. ECU

Fuel crossfeed operation is limited to:

1. Fuel crossfeed operation is prohibited in flight except in strict accordance with the emergency procedure, Fuel Crossfeed after Engine Failure section of the *RFM*.
2. Fuel crossfeed operation with vent line check valves (kit P/N 76070-30029-011) installed is limited to:
 - a. Category A—Emergency operation only
 - b. Category B—Cruising flight only

Engine ANTI-ICE on at $+2^{\circ}$ and below, with visible moisture.

External door locks must be unlocked before flight.

SLIDING CABIN DOOR LIMITS

Right sliding cabin door, unless modified by kit P/N 76070-20015-011, must be closed for all flight operations.

Left sliding cabin door and right sliding cabin door modified by kit P/N 76070-20015-011 may be opened for flight operations with these restrictions:

Maximum airspeed for opening and closing sliding cabin door in flight is 50 KIAS and is limited to level flight or descent.

Maximum airspeed with sliding cabin door in full open and locked position is 74 KIAS.

IMC flight is prohibited with sliding cabin door open.

An operable flashlight must be available in the cabin if the sliding door is to be opened in flight at night.

FLOTATION SYSTEM LIMITS

Maximum airspeed for inflation of the emergency flotation gear is 75 KIAS.

Maximum airspeed with emergency flotation gear inflated is 75 KIAS.

Maximum water contact speed with emergency flotation system inflated is 33 knots.

Landing gear must be down prior to float inflation.



Maximum demonstrated airspeed for sideward flight or crosswind hover is 20 knots.

Maximum pressure altitude with emergency flotation gear inflated is 5,000 feet.

EXTERNAL CARGO HOOK LIMITS

External hook operations must be conducted by a qualified flight crew under the provisions of the operating rules for rotorcraft external load operations for loads that are jettisonable and are lifted free of the surface (Class B loads). Normal operations are permitted with the external cargo hook installed, but not used.

The height-velocity diagram in the *RFM* does not constitute a limitation when conducting rotorcraft external-load operations.

Weight Limits

Maximum weight of the external cargo is 3,300 pounds (1,500 kg).

Airspeed Limits

Maximum airspeed with an external cargo weight of 1,900 pounds (863.6 kg) or less is 136 KIAS.

Maximum airspeed must be reduced with increases in external cargo weight. Refer to Figure 1-4A, *RFM*.

NOTE

It should be noted that operational use of the cargo sling is a highly specialized industrial procedure. Extreme caution must be taken to be sure that the loads carried and the speed range throughout which operation is intended do not adversely affect the controllability characteristics of the helicopter. It is the responsibility of the operator to establish safe and sound limitations for each operation.

NOTE

The external cargo hook is located forward of the main rotor shaft. Releasing a load will cause the aircraft to pitch nose up.

UTILITY HOIST LIMITS

Utility hoist operations must be conducted by a qualified flight crew under the provisions of the operating rules for rotorcraft external load operations for loads that are jettisonable and are lifted free of the surface (Class B loads). Normal operations are permitted with the utility hoist installed, but not used.

NOTE

It should be noted that operational use of the utility hoist is a highly specialized procedure. Extreme caution must be taken to be sure that the loads carried and the speed range throughout which operation is intended do not adversely affect the controllability characteristics of the helicopter. It is the responsibility of the operator to establish safe limitations for each operation.



The height-velocity diagram in the *RFM* does not constitute a limitation when conducting rotorcraft-utility hoist operations.

A cabin intercom system with operational “hot mike” capability is required for hoist operations in which loads are brought into or out of the cabin.

The last 20 feet of hoist cable (colored red) is unusable.

Weight Limits

The maximum utility hoist load is 600 pounds (272 kg).

The maximum weight of the rotorcraft external-load combination is 10,500 pounds (4,763 kg).

Maximum baggage compartment load is limited to 600 pounds (272 kg). The weight to the left (port) or right (starboard) of the centerline of the baggage compartment should not be over 300 pounds (136 kg).

The hoist load may be restricted by lateral loading limits. See Hoist Loading Information, Part 2, Section III, *RFM*.

Minimum Flight Crew

Minimum flight crew for utility hoist operations is two pilots and a hoist operator in communication with the pilot.

Airspeed Limits

With a load on the utility hoist, the maximum airspeed for sideward flight or crosswind is 30 knots.

With load on the utility hoist, the maximum airspeed in forward flight may be restricted by stability of the load and is not to exceed 74 KIAS.

S-76A+ LIMITATIONS

GENERAL

Limitations depicted herein are current up to Revision 10, Part 1, and Revision 6, Part 2, of the S-76A+ *RFM*.

NOTE

Compliance with the limitations in Part 1, Section 1, of the *RFM* is required by law.

The limitations presented in this chapter focus primarily on the operational capabilities of the aircraft. Specific system limitations are provided in the individual systems' chapters with the exception of instrument markings which are presented in this chapter. Refer to the FAA-approved *Rotorcraft Flight Manual (RFM)* for complete limitations listings.



Note that instrument marking limitations are grouped by type of instrument, not aircraft mode. The instrument markings for both models are listed with at least one representative photograph shown for each instrument.

WEIGHT LIMITS

Maximum takeoff and landing weight is 10,800 pounds (4,898 kg) for aircraft serial number 760364 and subsequent.

Maximum takeoff and landing weight is 10,800 pounds (4,898 kg) for aircraft prior to serial number 760364 when modified by kit number 76070-20100.

Maximum takeoff and landing weight is 10,500 pounds (4,763 kg) for all other aircraft.

NOTE

Prior to operating at gross weights between 10,300 and 10,500 pounds, the helicopter must comply with Revision 14 of the "Airworthiness Limitations" section, dated May 14, 1985, or subsequent FAA-approved revisions of the *Airworthiness Limitations and Inspection Requirements Manual* SA 4047-76-2-1.

When operating above 10,500 pounds, the helicopter must comply with Supplement No. 1 to *Airworthiness Limitations and Inspection Requirements Manual* SA 4047-76-2-1, dated Oct. 31, 1989, or subsequent FAA-approved revisions.

This helicopter is to be operated using the approved loading schedule. Refer to "Loading Information", in Part 2 of the *RFM*.

NOTE

The V_{NE} placards on the instrument panel are annotated to specify if the aircraft is equipped with a 09600 series main gearbox.

Category A Operations

See Figures 1-1 through 1-1E of the *RFM* inclusive for variation of maximum takeoff and landing gross weight with altitude and temperature. Select the appropriate chart that reflects the installed main gearbox and intended EAPS and anti-ice combination.

Category B Operations

See Figures 1-2 through 1-2G of the *RFM* inclusive for variation of maximum takeoff and landing gross weight with altitude and temperature. Select the appropriate chart that reflects the installed main gearbox and intended EAPS and anti-ice combination.



CG (CENTER-OF-GRAVITY) LIMITS

See Figure 1-3 of the *RFM* for forward and aft center-of-gravity limits at various gross weights.

Lateral CG limits: Left or right 3-1/2 inches (89 mm) up to 10,500 pounds gross weight.
Left or right 2-1/2 inches (63.5 mm) above 10,500 pounds gross weight.

LOADING LIMITS

Maximum allowable cabin floor loading is 75 pounds per square foot (366 kg per square meter).

Maximum baggage compartment load is 600 pounds (272 kg).

OPERATING LIMITS

Types of Operation

Category A and B

Transport

Land

Day, Night, VFR

Day, Night IFR. The helicopter is not considered airworthy for operation under Instrument Meteorological Conditions (IMC) unless the following equipment is installed and operating:

1. AFCS (minimum requirement is for one operative pitch, roll, and yaw channel)
2. Copilot flight controls and flight instruments
3. AC generator electrical power system
4. Dual 5-inch vertical gyro indicators or equivalent
5. C14A compass system
6. Cyclic stick trim
7. An operative navigation and communication system that has demonstrated compliance with the pertinent airworthiness regulations and also meets the requirements of the applicable operating regulations.

Overwater operations provided that the emergency flotation gear, P/N 76076-02002, and suitable lifesaving equipment (life jackets, rafts, etc.) as required by the operating rules and FAR 29.1411, 29.1415, and 29.1561 are installed.



Category B Rotorcraft—External Load Combinations

Class B external loads

NOTE

A Class B external load is an external load that can be jettisoned and is lifted free of land or water during rotorcraft operation.

Minimum Flight Crew

Visual meteorological conditions—One pilot (single pilot operations are not permitted from left seat).

NOTE

Aircraft Serial No. 760001 and 760002 require installation of E.O. 72859 against 76550-02001 and E.O. 71195 against 76080-45010 to be eligible for one pilot operation.

Instrument meteorological conditions—Two pilots. Both pilots must be currently qualified for helicopter instrument flight.

For training flights, the cognizant FAA inspector may amend these requirements.

AIRSPEED LIMITS

NOTE

The S-76A+ uses Aero Mechanisms Part No. 8502C-S20LW, Aerosonic Part No. 20020-11190, or Aerosonic Part No. 20020-11293 airspeed indicator.

V_{NE} power on (maximum airspeed) is 155 KIAS.

See V_{NE} placard in the *RFM* for variation of V_{NE} gross weight, temperature, and pressure altitude.

V_{NE} power off is 141 KIAS. See V_{NE} placard in the *RFM* for variation of V_{NE} with temperature and pressure altitude.

Minimum IMC airspeed is 60 KIAS.

Maximum airspeed during OEI operations with N_R below 100% is the best rate-of-climb speed.

With usable fuel per tank indicating 80 pounds or less, maximum allowable airspeed is 126 KIAS.

Maximum airspeed with landing gear down or in transit is 130 KIAS.

Maximum airspeed for windshield wiper operation is 141 KIAS.

Maximum groundspeed for landing, takeoff, or taxi is 40 knots.



Maximum groundspeed for brake application is 34 knots.

Steepest demonstrated approach gradients:

- 7.5° at 60 and 80 KIAS
- 5° at 60 to 125 KIAS

ALTITUDE LIMITS

Takeoff and landing: 11,000 feet density altitude

CAUTION

When operating above 4,000 feet density altitude at gross weights above 10,500 pounds, N_R must be set to 107% for airspeeds greater than best rate of climb.

The altitude-temperature combination of the power on V_{NE} placard showing values less than 155 KTS may be considered to be 4,000 feet density altitude or greater.

AMBIENT TEMPERATURE LIMITS

-34.4° C (-30° F) to ISA + 36.7° C not to exceed 48.9° C (120° F)

FLIGHT LIMITS

See Figure 1-4, *RFM*, for altitude and airspeeds to be avoided at low altitude in case of engine failure.

No aerobatic maneuvers allowed.

360° hovering turns in less than 12 seconds prohibited.

Flight in known icing conditions prohibited.

Maximum airspeed for sideward flight or crosswind hover is 35 knots, up to and including 6,900 feet density altitude. Maximum airspeed for sideward flight or crosswind hover is 17 knots, from 6,900 feet up to and including 11,000 feet density altitude.

Maximum airspeed for rearward flight or tailwind hover is 35 knots, up to and including 6,900 feet density altitude. Maximum airspeed for rearward flight or tailwind hover is 17 knots, from 6,900 feet up to and including 11,000 feet density altitude.

Do not reengage a particular AFCS channel after a known malfunction exists in that particular channel.

Flight in falling or blowing snow is prohibited unless aircraft is fitted with snow protection kit P/N 76080-30008 or P/N 76076-30006-012 and a satisfactory functional check has been performed.

Flight in falling and blowing snow with EAPS installed is prohibited.

Cockpit ventilation must be provided by any of the following:

1. Overhead vents



2. Pilot's window
3. Heater blower
4. Heater bleed air
5. ECU

Fuel crossfeed operation is limited to:

1. Fuel crossfeed operation is prohibited in flight except in strict accordance with the emergency procedure, Fuel Crossfeed after Engine Failure section of the *RFM*.
2. Fuel crossfeed operation with vent line check valves (kit P/N 76070-30029-011) installed is limited to:
 - a. Category A—Emergency operation only
 - b. Category B—Cruising flight only

Engine ANTI-ICE on at +2° and below, with visible moisture.

External door locks must be unlocked before flight.

SLIDING CABIN DOOR LIMITS

Right sliding cabin door, unless modified by kit P/N 76070-20015-011, must be closed for all flight operations.

Left sliding cabin door and right sliding cabin door modified by kit P/N 76070-20015-011 may be opened for flight operations with these restrictions:

Maximum airspeed for opening and closing sliding cabin door in flight is 50 KIAS and is limited to level flight or descent.

Maximum airspeed with sliding cabin door in full open and locked position is 74 KIAS.

IMC flight is prohibited with sliding cabin door open.

An operable flashlight must be available in the cabin if the sliding door is to be opened in flight at night.

FLOTATION SYSTEM LIMITS

Maximum airspeed for inflation of the emergency flotation gear is 75 KIAS.

Maximum airspeed with emergency flotation gear inflated is 75 KIAS.

Maximum water contact speed with emergency flotation system inflated is 33 knots.

Landing gear must be down prior to float inflation.

Maximum demonstrated airspeed for sideward flight or crosswind hover is 20 knots.

Maximum pressure altitude with emergency flotation gear inflated is 5,000 feet.



EXTERNAL CARGO HOOK LIMITS

External hook operations must be conducted by a qualified flight crew under the provisions of the operating rules for rotorcraft external load operations for loads that are jettisonable and are lifted free of the surface (Class B loads). Normal operations are permitted with the external cargo hook installed but not used.

The height-velocity diagram in the *RFM* does not constitute a limitation when conducting rotorcraft external-load operations.

Weight Limits

Maximum weight of the external cargo is 3,300 pounds (1,500 kg).

Airspeed Limits

Maximum airspeed with an external cargo weight of 1,900 pounds (863.6 kg) or less is 136 KIAS.

Maximum airspeed must be reduced with increases in external cargo weight. Refer to the *RFM*.

NOTE

It should be noted that operational use of the cargo sling is a highly specialized industrial procedure. Extreme caution must be taken to be sure that the loads carried and the speed range throughout which operation is intended do not adversely affect the controllability characteristics of the helicopter. It is the responsibility of the operator to establish safe and sound limitations for each operation.

NOTE

The external cargo hook is located forward of the main rotor shaft. Releasing a load will cause the aircraft to pitch nose up.

UTILITY HOIST LIMITS

Utility hoist operations must be conducted by a qualified flight crew under the provisions of the operating rules for rotorcraft external load operations for loads that are jettisonable and are lifted free of the surface (Class B loads). Normal operations are permitted with the utility hoist installed, but not used.

NOTE

It should be noted that operational use of the utility hoist is a highly specialized procedure. Extreme caution must be taken to be sure that the loads carried and the speed range throughout which operation is intended do not adversely affect the controllability characteristics of the helicopter. It is the responsibility of the operator to establish safe limitations for each operation.



The height-velocity diagram of the *RFM* does not constitute a limitation when conducting rotorcraft-utility hoist operations.

A cabin intercom system with operational "hot mike" capability is required for hoist operations in which loads are brought into or out of the cabin.

The last 20 feet of hoist cable (colored red) is unusable.

Weight Limits

The maximum utility hoist load is 600 pounds (272 kg).

The maximum weight of the rotorcraft external-load combination is 10,500 pounds (4,763 kg), unless modified by kit number 76070-20100, in which case it is 10,800 pounds (4,898 kg).

Maximum baggage compartment load is limited to 600 pounds (272 kg). The weight to the left (port) or right (starboard) of the centerline of the baggage compartment should not be over 300 pounds (136 kg).

The hoist load may be restricted by lateral loading limits. See Hoist Loading Information, Part 2, Section III, *RFM*.

Minimum Flight Crew

Minimum flight crew for utility hoist operations is two pilots and a hoist operator in communication with the pilot.

Airspeed Limits

With a load on the utility hoist, the maximum airspeed for sideward flight or crosswind is 30 knots.

With load on the utility hoist, the maximum airspeed in forward flight may be restricted by stability of the load and is not to exceed 74 KIAS.

S-76B LIMITATIONS

GENERAL

Limitations contained herein are current up to Revision No. 14, Part 1, and Revision No. 8, Part 2, of the S-76B *RFM*.

NOTE

Compliance with the limitations in Part 1, Section 1, of the *RFM* is required by law.

The limitations presented in this chapter focus primarily on the operational capabilities of the aircraft. Specific system limitations are provided in the individual systems' chapters with the exception of instrument



markings which are presented in this chapter. Refer to the FAA-approved *Rotorcraft Flight Manual (RFM)* for complete limitations listings.

Note that instrument marking limitations are grouped by type of instrument, not airplane model. The instrument markings for both models are listed with at least one representative photograph shown for each instrument.

WEIGHT LIMITS

Maximum takeoff and landing weight is 11,700 pounds (5,307 kilograms). This helicopter is to be operated using the approved loading schedule. Refer to Loading Information in the approved *RFM*.

For minimum operating weight, refer to Figure 1-2 of the *RFM*.

Towing is limited to 11,400 pounds gross weight.

Category A Operations

See Figure 1-0, *RFM*, for variation of allowable takeoff gross weight with altitude and temperature.

Category B Operations

See Figure 1-1, *RFM*, for variation of allowable takeoff gross weight with altitude and temperature.

CG (CENTER-OF-GRAVITY) LIMITS

See Figure 1-2, *RFM*, for forward and after center-of-gravity limits at various gross weights.

Lateral CG limits: Left or right 4-1/2 inches (114.3 mm) with hoist load attached at gross weights up to 10,800 pounds (4,899 kg), hover only.

Left or right 3-1/2 inches (89 mm) except as restricted to left or right 2-1/2 inches (63.5 mm) at gross weights above 11,400 pounds (5,171 kg) for taxi, takeoff, and landing.

LOADING LIMITS

Maximum allowable cabin floor and baggage floor loading is 75 pounds per square foot (366 kg per square meter).

Maximum baggage compartment load is 600 pounds (272 kg).



OPERATING LIMITS

Types of Operation

Category A and B

Transport

Day, Night, VFR

Day, Night, IFR. The following equipment must be installed and operating for operation under Instrument Flight Rules (IFR):

1. AFCS (one pitch, roll, and yaw channel)
2. Copilot flight controls and flight instruments
3. Dual 5-inch attitude indicators or equivalent
4. C-14A compass system
5. Pitch bias actuator (PBA)
6. Cyclic stick trim

Not approved for ditching unless the emergency flotation gear, P/N 76076-02002, and suitable lifesaving equipment (life jackets, rafts, etc.) as required by the operating rules are installed and compliance with FAR 29.1411, 29.1415, and 29.1561 is shown.

Category B Rotorcraft—External Load Combinations

Class B external loads

NOTE

A Class B external load is an external load that can be jettisoned and is lifted free of land or water during rotorcraft operation.

Minimum Flight Crew

Visual flight rules—One pilot unless otherwise required by operating rules (single pilot operations not permitted from left seat).

Instrument flight rules—Two pilots



AIRSPPEED LIMITS

NOTE

The S-76B uses an Aerosonic Part No. 20020-11293 airspeed indicator. For Category A operation, the airspeed indicator must be equipped with a Sporty's Pilot Shop P/N 2415A airspeed bug, or a Qualitair P/N 702C-000-41 airspeed bug.

V_{NE} power on (maximum airspeed) is 155 KIAS.

See V_{NE} placard (Figure 1-7, *RFM*) for variation of V_{NE} with temperature, pressure altitude, and gross weight.

V_{NE} above 10,000 feet density altitude at actual gross weights greater than 11,000 pounds is BROC (best rate-of-climb) airspeed (see appropriate V_{NE} placard [Figure 1-7, *RFM*]).

V_{NE} power off is 136 KIAS. See V_{NE} placard (Figure 1-7, *RFM*) for variation of V_{NE} with temperature and pressure altitude.

Maximum IFR airspeed is 60 KIAS (50 KIAS—DAFCS).

With usable fuel per tank indicating 80 pounds or less, avoid sustained nosedown pitch attitudes in excess of 5° nose low.

Maximum airspeed for main landing gear down or in transit is 130 KIAS.

Maximum airspeed for windshield wiper operation is 141 KIAS.

Maximum groundspeed for landing, takeoff, or taxi is 54 knots.

Maximum groundspeed for brake application is 34 knots.

ALTITUDE LIMITS

Takeoff and landing, Category A: 5,000 feet density altitude

Takeoff and landing, Category B: 11,000 feet density altitude

Enroute: 15,000 feet density altitude

AMBIENT TEMPERATURE LIMITS

Takeoff and landing:

-34.4° C (-30° F) to ISA +38° C not to exceed 49° C (120° F) with bleed-air ECU off or not installed

-34.4° C (-30° F) to ISA +35° C not to exceed 43° C (109° F) with bleed-air ECU on



FLIGHT LIMITS

See Figure 1-3, *RFM*, for altitude and airspeeds to be avoided at low altitude in case of engine failure.

No aerobatic maneuvers allowed.

360° hovering turns in less than 12 seconds prohibited.

Flight in known icing conditions prohibited.

(PT6B-36A)

Maximum airspeed for sideward flight or crosswind hover is 35 knots, up to and including 8,500 feet density altitude, reducing to 17 knots from 8,500 feet up to and including 11,000 feet density altitude.

(PT6B-36A)

Maximum airspeed for rearward flight or tailwind hover is 35 knots, up to and including 8,500 feet density altitude, reducing to 17 knots from 8,500 feet up to and including 11,000 feet density altitude.

(PT6B-36B)

For normal Category A and Category B gross weight loadings, maximum airspeed for sideward flight/crosswind hover and rearward flight/tailwind hover is 35 knots.

For above SPEC performance Category B gross weight loadings, see Figure 1-3A of the *RFM* for restricted operation in right crosswinds.

Do not reengage a particular AFCS channel after a known malfunction exists in that particular channel.

Cockpit ventilation must be provided by any of the following:

1. Overhead vents or door vents
2. Pilot's window
3. Heater blower
4. Heater bleed air
5. ECU

Fuel crossfeed operation is limited to:

1. With vent line check valves (P/N 76070-30029-013) installed:
 - a. Category A—Emergency operation only
 - b. Category B—Cruising flight only
2. Without vent line check valves (P/N 76070-30029-013) installed, crossfeed operations are prohibited except as follows:
 - a. Engine Restart in Flight
 - b. Fuel Crossfeed of the Remaining Engine After Engine Failure



EAPS ON at +2° C and below, with visible moisture.

External door locks must be unlocked before flight.

SLIDING CABIN DOOR LIMITS

Sliding cabin door(s) may be opened for flight operations with these restrictions:

Maximum airspeed for opening and closing sliding cabin door in flight is 50 KIAS and is limited to level flight or descent.

IFR flight prohibited with sliding cabin door open.

An operable flashlight must be available in the cabin if the sliding door is to be opened in flight at night.

FLOTATION SYSTEM LIMITS

Maximum airspeed for inflation of the emergency flotation gear is 75 KIAS.

Maximum airspeed with emergency flotation gear inflated is 75 KIAS.

Maximum water contact speed with emergency flotation system inflated is 33 knots.

Landing gear must be down prior to float inflation

Maximum demonstrated airspeed for sideward flight or crosswind hover is 20 knots.

Maximum pressure altitude with emergency flotation gear inflated is 5,000 feet.

EXTERNAL CARGO HOOK LIMITS

External hook operations must be conducted by a qualified flight crew under the provisions of the operating rules for rotorcraft external load operations for loads that are jettisonable and are lifted free of the surface (Class B loads). Normal operations are permitted with the external cargo hook installed, but not used.

The height-velocity diagram in the *RFM* does not constitute a limitation when conducting rotorcraft external-load operations.

Weight Limits

Maximum weight of the external cargo is 3,300 pounds (1,497 kg).

Maximum weight of the helicopter external-load combination is 11,700 pounds (5,307 kg).

Airspeed Limits

Maximum airspeed with an external cargo weight of 1,900 pounds (862 kg) or less is 136 KIAS.

Maximum airspeed must be reduced with increases in external cargo weight. Refer to Figure 1-4, *RFM*.



Altitude Limits

The density altitude is 8,000 feet.

UTILITY HOIST LIMITS

Utility hoist operations must be conducted by a qualified flight crew under the provisions of the operating rules for rotorcraft external-load operations for loads that are jettisonable and are lifted free of the surface (Class B loads). Normal operations are permitted with the utility hoist installed, but not used.

NOTE

It should be noted that operational use of the utility hoist is a highly specialized procedure. Extreme caution must be taken to be sure that the loads carried and the speed range throughout which operation is intended do not adversely affect the controllability characteristics of the helicopter. It is the responsibility of the operator to establish safe limitations for each operation.

The height-velocity diagram in the *RFM* does not constitute a limitation when conducting rotorcraft utility hoist operations.

A cabin intercom system with operational "hot mike" capability is required for hoist operations in which loads are brought into or out of the cabin.

The last 20 feet of hoist cable (colored red) is unusable.

Weight Limits

The maximum utility hoist load is 600 pounds (272 kg).

The maximum weight of the rotorcraft external-load combinations is 11,700 pounds (5,307 kg).

The hoist load may be restricted by lateral loading limits. See Hoist Loading Information, Part 2, Section III, *RFM*.

Minimum Flight Crew

Minimum flight crew for utility hoist operations is two pilots and a hoist operator in communication with the pilots.

Airspeed Limits

With a load on the utility hoist, the maximum airspeed for sideward flight or crosswind is 35 knots.

With load on the utility hoist, the maximum airspeed in forward flight may be restricted by stability of the load and is not to exceed 74 KIAS.



S-76C LIMITATIONS

GENERAL

Limitations contained herein are current up to Revision No. 5, Part 1, and Revision No. 3, Part 2, of the S-76C *RFM*.

NOTE

Compliance with the limitations in Part 1, Section 1, of the *RFM* is required by law.

The limitations presented in this chapter focus primarily on the operational capabilities of the aircraft. Specific system limitations are provided in the individual systems' chapters with the exception of instrument markings which are presented in this chapter. Refer to the FAA-approved *Rotorcraft Flight Manual (RFM)* for complete limitations listings.

Note that instrument marking limitations are grouped by type of instrument, not airplane model. The instrument markings for both models are listed with at least one representative photograph shown for each instrument.

WEIGHT LIMITS

Maximum takeoff and landing weight is 11,700 pounds (5,307 kilograms). This helicopter is to be operated using the approved loading schedule. Refer to Loading Information in the approved *RFM*.

For minimum operating weight, refer to the *RFM*.

Category A Operations

See the *RFM* for variation of allowable takeoff gross weight with altitude and temperature.

Category B Operations

See the *RFM* for variation of allowable takeoff gross weight with altitude and temperature.

CG (CENTER-OF-GRAVITY) LIMITS

See the *RFM* for forward and aft center-of-gravity limits at various gross weights.

Lateral CG Limits: Left or right 3-1/2 inches (89 mm) except as restricted to left or right 2-1/2 inches (63.5 mm) at gross weights above 11,400 pounds (5,171 kg) for taxi, takeoff, and landing. Left or right 4-1/2 inches (114.3 mm) with hoist load attached at gross weights up to 10,800 pounds (4,899 kg), hover only.



LOADING LIMITS

Maximum allowable cabin floor and baggage floor loading is 75 pounds per square foot (366 kg per square meter).

Maximum baggage compartment load is 600 pounds (272 kg).

OPERATING LIMITS

Types of Operation

Category A and B

Transport

Day, Night, VFR

Day, Night, IFR. The following equipment must be installed and operating for operation under Instrument Flight Rules (IFR):

1. AFCS (one pitch, roll, and yaw channel)
2. Copilot flight controls and flight instruments
3. Dual 5-inch attitude indicators or equivalent
4. C-14A compass system
5. Pitch bias actuator (PBA)
6. Cyclic stick trim
7. An operative navigation and communication system that has demonstrated compliance with the pertinent airworthiness regulations and also meets the requirements of the applicable operating regulations.

Not approved for ditching unless the emergency flotation gear, P/N 76076-02002, and suitable lifesaving equipment (life jackets, rafts, etc.) as required by the operating rules are installed and compliance with FAR 29.1411, 29.1415, and 29.1561 is shown.

Category B Rotorcraft—External Load Combinations

Class B external loads

NOTE

A Class B external load is an external load that can be jettisoned and is lifted free of land or water during rotorcraft operation.



Minimum Flight Crew

Visual flight rules—One pilot unless otherwise required by operating rules (single pilot operations not permitted from left seat).

Instrument flight rules—Two pilots

AIRSPEED LIMITS

NOTE

For Category A operation, the airspeed indicator must be equipped with a Qualitair P/N 702C-000-41 airspeed bug.

V_{NE} power on (maximum airspeed) is 155 KIAS.

See V_{NE} placard in the *RFM* for variation of V_{NE} with temperature, pressure altitude, and gross weight.

V_{NE} above 10,000 feet density altitude at actual gross weights greater than 11,000 pounds is BROC (best rate-of-climb) airspeed (see appropriate V_{NE} placard in the *RFM*).

V_{NE} power off is 136 KIAS. See V_{NE} placard in the *RFM* for variation of V_{NE} with temperature and pressure altitude.

Minimum IFR airspeed is 60 KIAS (50 KIAS—DAFCS).

With usable fuel per tank indicating 80 pounds or less, avoid sustained nosedown pitch attitudes in excess of 5° nose low.

Maximum airspeed for main landing gear down or in transit is 130 KIAS.

Maximum airspeed for windshield wiper operation is 141 KIAS.

Maximum groundspeed for landing, takeoff, or taxi is 54 knots.

Maximum groundspeed for brake application is 34 knots.

ALTITUDE LIMITS

Takeoff and landing, Category A: 5,000 feet density altitude

Takeoff and landing, Category B: 11,000 feet density altitude

Enroute: 15,000 feet density altitude



AMBIENT TEMPERATURE LIMITS

Takeoff and landing:

-34.4° C (-30° F) to ISA +37° C not to exceed 49° C (120° F)

FLIGHT LIMITS

See the *RFM* for altitude and airspeeds to be avoided at low altitude in case of engine failure.

No aerobatic maneuvers allowed.

360° hovering turns in less than 12 seconds prohibited.

Flight in known icing conditions prohibited.

Maximum airspeed for sideward flight or crosswind hover is 35 knots, up to and including 8,500 feet density altitude, reducing to 17 knots from 8,500 feet, up to and including 11,000 feet density altitude.

Maximum airspeed for rearward flight or tailwind hover is 35 knots, up to and including 8,400 feet density altitude, reducing to 17 knots from 8,500 feet, up to and including 11,000 feet density altitude.

Do not reengage a particular AFCS channel after a known malfunction exists in that particular channel.

Cockpit ventilation must be provided by any of the following:

1. Overhead vents
2. Pilot's window
3. Heater blower
4. Heater bleed air

Fuel crossfeed operation is limited to:

- Category A—Emergency operation only
- Category B—Cruising flight only

EAPS ON at +2° C and below, with visible moisture.

External door locks must be unlocked before flight.



SLIDING CABIN DOOR LIMITS

Restrictions for either or both the right hand or the left hand are:

Maximum airspeed for opening and closing cabin sliding doors is 127 KIAS. This includes up to 125 knots maximum continuous power (MCP) climb and up to 125K autorotation. See Figure 1-8 of the *RFM* for variation of maximum airspeed with temperature and pressure altitude.

Maximum airspeed with either sliding door open or both open is 125 KIAS. This includes up to 125 knots maximum continuous power (MCP) climb and up to 125 K autorotation. See Figure 1-8 of the *RFM* for variation of maximum airspeed with temperature, and pressure altitude.

IMC flight with either sliding door open or both doors open is prohibited.

Category A Maximum Takeoff Gross Weight

With one or both external sliding cabin doors open, reduce maximum takeoff gross weight determined from *S-76C Flight Manual* by 100 pounds.

FLOTATION SYSTEM LIMITS

Maximum airspeed for inflation of the emergency flotation gear is 75 KIAS.

Maximum airspeed with emergency flotation gear inflated is 75 KIAS.

Maximum water contact speed with emergency flotation system inflated is 33 knots.

Landing gear must be down prior to float inflation.

Maximum demonstrated airspeed for sideward flight or crosswind hover is 20 knots.

Maximum pressure altitude with emergency flotation gear inflated is 5,000 feet.

EXTERNAL CARGO HOOK LIMITS

External hook operations must be conducted by a qualified flight crew under the provisions of the operating rules for rotorcraft external load operations for loads that are jettisonable and are lifted free of the surface (Class B loads). Normal operations are permitted with the external cargo hook installed, but not used.

The height-velocity diagram in *RFM* does not constitute a limitation when conducting rotorcraft external-load operations.

Weight Limits

Maximum weight of the external cargo is 3,300 pounds (1,497 kg).

Maximum weight of the helicopter external-load combination is 11,700 pounds (5,307 kg).



Airspeed Limits

Maximum airspeed with an external cargo weight of 1,900 pounds (862 kg) or less is 136 KIAS.

Maximum airspeed must be reduced with increases in external cargo weight. Refer to Figure 1-4, *RFM*.

Altitude Limits

The density altitude is 8,000 feet.

UTILITY HOIST LIMITS

Utility hoist operations must be conducted by a qualified flight crew under the provisions of the operating rules for rotorcraft external-load operations for loads that are jettisonable and are lifted free of the surface (Class B loads). Normal operations are permitted with the utility hoist installed, but not used.

NOTE

It should be noted that operational use of the utility hoist is a highly specialized procedure. Extreme caution must be taken to be sure that the loads carried and the speed range throughout which operation is intended do not adversely affect the controllability characteristics of the helicopter. It is the responsibility of the operator to establish safe limitations for each operation.

The height-velocity diagram in the *RFM* does not constitute a limitation when conducting rotorcraft utility hoist operations.

A cabin intercom system with operational "hot mike" capability is required for hoist operations in which loads are brought into or out of the cabin.

The last 20 feet of hoist cable (colored red) is unusable.

Weight Limits

The maximum utility hoist load is 600 pounds (272 kg).

The maximum weight of the rotorcraft external-load combinations is 11,700 pounds (5,307 kg).

The hoist load may be restricted by lateral loading limits. See Hoist Loading Information, Part 2, Section III, *RFM*.

Minimum Flight Crew

Minimum flight crew for utility hoist operations is two pilots and a hoist operator in communication with the pilots.



Airspeed Limits

With a load on the utility hoist, the maximum airspeed for sideward flight or crosswind is 35 knots.

With load on the utility hoist, the maximum airspeed in forward flight may be restricted by stability of the load and is not to exceed 74 KIAS.

FUEL SYSTEM

CROSSFEED

With vent line check valves installed, fuel crossfeed operation for the S-76 is limited to:

- Category A—Emergency operations only
- Category B—Cruising flight only

LOADING

Lateral center-of-gravity limits permit indiscriminate lateral loading of passengers or cargo if fuel loading imbalance is kept below 250 pounds with the baggage compartment symmetrically loaded.

For longitudinal and lateral computations of centers of gravity refer to the applicable sections of the *Rotorcraft Flight Manual*.

AIRSPEED

S-76A

With usable fuel per tank indicating 80 pounds or less, maximum allowable airspeed is 126 KIAS.

S-76 (B/A+/C)

With the usable fuel per tank indicating 80 pounds or less, avoid sustained nosedown attitudes in excess of 5°.

ICE AND RAIN PROTECTION

Engine anti-ice must be turned on at +2° C and below if moisture is visible.

The system for the No. 1 engine operates from the No. 1 DC primary bus and is protected by an AI CONT circuit breaker. The system for the No. 2 engine operates from the No. 2 DC primary bus and is protected by another AI CONT circuit breaker.

This is an anti-ice system and must be turned on before encountering icing conditions.



Flight in known icing conditions is prohibited. Flight in falling or blowing snow is prohibited unless the aircraft is fitted with a snow protection kit and a satisfactory function check has been performed (A/A+/C).

A full functional system check of the snow protection kit is required daily when flight in falling or blowing snow is anticipated. Refer to the *Flight Manual*, Part I, Section II.

Maximum airspeed for windshield wiper operation is 141 KIAS.

POWERTRAIN

S-76A/A+ MAIN GEARBOX AND ROTOR LIMITATIONS (9500 SERIES GEARBOX)

Oil

MIL-L-21260 Type I, Grade 30

Low temperature limit -9°C (15°F)

Dexron II ATF

Low temperature limit -34°C (-30°F)

Oil Temperature Limits

Maximum 120°C

Minimum -20°C

Oil Pressure Limits

Maximum 120 psi

Minimum 20 psi

Rotor Limits

Power Off

Maximum 115% N_R

Minimum 87% N_R

Transient 78% N_R



Power On

Maximum 107% N_R

Minimum
(dual-engine operation) 100% N_R

Minimum (one-engine operation) 96% N_R

96% to 99% N_R is limited to one-engine operation up to best rate of climb speed or dual engine operation up to V_{NE} when executing emergency procedures.

Transient 82% N_R

Transient 70% N_R (at touchdown during
single-engine landings and
rejected takeoffs)

Rotor Brake Limits

Rotor Stopped

Engine operation (one or two) is limited to idle with rotor brake on.

Rotor Turning

(A Model)

Rotor brake application is limited to one engine only operating at idle or both engines shut down.

(A+ Model)

Rotor brake application is limited to one or two engines operating at idles or both shut down.

Maximum rotor speed for normal rotor brake application is 65% N_R .

Maximum rotor speed for emergency rotor brake application with both engines shut down is 107% N_R .

A rotor shutdown using the rotor brake shall not be performed more than one time in any 10-minute period.

S-76B/C MAIN GEARBOX AND ROTOR LIMITATIONS

Oil

MIL-L-21260 Type I, Grade 30

Low temperature limit -9°C (15°F)

Dexron II ATF

Low temperature limit -34°C (-30°F)



MIL-L-23699

Low temperature limit -34°C (-30°F)

Oil Temperature Limits

Minimum -20°C

Maximum 135°C

Oil Pressure Limits

Minimum 20 psi

Maximum 120 psi

Rotor Limits

Power Off

Minimum $91\% N_R$

Transient (minimum) $74\% N_R$

Transient (minimum) $68\% N_R$ (at touchdown while executing an autorotative landing)

Maximum $115\% N_R$

Transient (maximum) $121\% N_R$

Power On

Transient $91\% N_R$

Transient $68\% N_R$ (at touchdown while executing a single-engine landing)

Minimum
(one-engine inoperative) $100\% N_R$

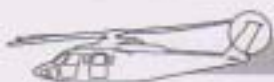
One-engine operation up to best
rate-of-climb speed 100 to $108\% N_R$

One-engine operation above
best rate-of-climb speed 106 to $108\% N_R$

Minimum
(dual-engine operation) $106\% N_R$

Maximum $108\% N_R$

Maximum with torque
below 26% (B Model) $110\% N_R$



Rotor Brakes Limits

Rotor Stopped

S-76B engine operation (one or two) is limited to idle with rotor brake on.

Rotor Turning

S-76B rotor brake application is limited to one engine only operating at idle or both engines shut down.

S-76C rotor brake application is limited to one or both engine at idle or both shut down.

Maximum rotor speed for normal rotor brake application is 65% N_R .

Maximum rotor speed for emergency rotor brake application with both engines shut down is 107% N_R .

A rotor shutdown using the rotor brake shall not be performed more than one time in any ten-minute period.

HYDRAULIC POWER SYSTEM

The maximum ground speed for brake application is 34 knots.

CAUTION

During high speed running landings, allow two minutes of intervening forward flight time above 50 KIAS or ten minutes of intervening ground time between maximum performance wheel brake applications to permit brake disc cool-down.

Maximum airspeed for landing gear operation is 130 KIAS.

The S-76A/A+ maximum ground speed for landing, takeoff, or taxi is 40 knots.

The S-76B/C maximum ground speed for landing, takeoff, or taxi is 54 knots.

HYDRAULIC PRESSURE

Maximum—3,300 psi

Normal range—2,800 to 3,200 psi

Minimum—2,700 psi



FLIGHT CONTROL LIMITATIONS

360 degree turns in less than 12 seconds are prohibited.

The maximum airspeed for sideward flight or crosswind hover is 35 knots, up to and including 6,900 feet (A+ model), 8,500 feet (B/C model) density altitude. Maximum airspeed for sideward flight, crosswind hover, and rearward flight above 6,900 feet (A/A+ models), 11,000 feet (B/C models), density altitude is 17 knots.

S-76B (PT6B-36B)

For normal Category A and Category B gross weight loadings, maximum airspeed for sideward flight/crosswind hover and rearward flight/tailwind hover is 35 knots.

For above SPEC performance Category B gross weight loadings, see Figure 1-3A of the *RFM* for restricted operation in right crosswinds.

At least one operable pitch, roll, and yaw channel is required for IMC flight.

Minimum IMC airspeed is 60 KIAS.

Do not reengage a particular AFCS channel after a known malfunction exists in that particular channel.

Minimum IMC airspeed is 50 KIAS (AFCS Phase III).

Steepest demonstrated approach gradients (AFCS Phase III):

- 60 to 80 KIAS 7.5°
- 60 to 125 KIAS 6.5°

SPZ-7000 SYSTEM LIMITATIONS

The SPZ-7000 system provides the same basic AFCS capabilities as AFCS Phase II and Phase III, plus the system is approved for single-pilot IFR flight. While in IFR flight, external cargo loads and opening or removing doors are prohibited. The pilot is required to fly in the right seat. To be eligible for single-pilot IFR flight, the following must be installed and operating:

- Two autopilot systems operating in the ATT mode
- Two independent sources of AC power
- Cyclic stick force trim
- Standby attitude indicator with emergency battery
- CDI located on the pilot's side of the instrument panel (standby CDI)
- Two DC generators
- A navigation and communication system that has demonstrated compliance with the pertinent FAA requirements
- Copilot audio station with emergency headset



For two-pilot operation, the previous items apply, with the following exceptions:

- One operative autopilot system operating in the ATT mode (must be AP2)
- CDI is not required.
- Copilot's instruments and controls must be installed and operable.

IFR airspeeds are limited to 60 knots indicated minimum and 155 knots indicated maximum. Sideward and rearward flight are limited to 35 knots (VFR/IFR). Maximum operating altitude is 15,000 feet (IFR). The maximum approved precision approach angle is 6.5°. The maximum lateral center of gravity is 3-1/2 inches left or right.

The flight director should not be coupled below 60 knots indicated airspeed.

Some S-76B limits are different. If coupled in three-cue operation, the maximum precision approach angle is 3°. When operating in two-cue operation, coupled or uncoupled, the maximum precision approach angle is 6.5°. The minimum IFR airspeed is 50 knots indicated. S-76B maximum density altitude is 15,000.

SPZ-7600 SYSTEM LIMITATIONS

The SPZ-7600 system provides the same basic AFCS capabilities as AFCS Phase II and Phase III, plus the system is approved for single-pilot IFR flight. While in IFR flight, external cargo loads and opening or removing doors are prohibited. The pilot is required to fly in the right seat. To be eligible for single-pilot IFR flight, the following must be installed and operating:

- Two autopilot systems operating in the ATT mode
- Two independent sources of AC power
- Cyclic stick force trim
- Standby attitude indicator with emergency battery
- CDI located on the pilot's side of the instrument panel (standby CDI)
- Two DC generators
- A navigation and communication system that has demonstrated compliance with the pertinent FAA/CAA requirements
- Copilot audio station with emergency headset



For two-pilot operation, the previous items apply, with the following exceptions:

- One operative autopilot system operating in the ATT mode (must be AP2)
- CDI is not required
- Copilot's instruments and controls must be installed and operable.

IFR airspeeds are limited to 50 knots indicated minimum and 155 knots indicated maximum. Sideward and rearward flight are limited to 35 knots (VFR/IFR). Maximum operating altitude is 15,000 feet (IFR). The maximum lateral center of gravity is 3-1/2 inches left or right.

Minimum indicated airspeed for coupling flight director is 50 knots.

ENVIRONMENTAL SYSTEMS

Cockpit ventilation must be provided by any of the following:

- Overhead vents
- Pilot's window
- Heater blower
- Heater bleed air
- ECU

UTILITY HOIST LIMITATIONS

OPERATION

Utility hoist operations must be conducted by a qualified flight crew under the provisions of the operating rules for rotorcraft external load operations for loads that are jettisonable and are lifted free of the surface (Class B loads). Normal operations are permitted when the utility hoist is installed but is not being used.

NOTE

The operational use of the utility hoist is a highly specialized procedure. Extreme caution must be taken to be sure that the loads carried and the speed range throughout which operation is intended do not adversely affect the controllability characteristics of the helicopter. It is the responsibility of the operator to establish safe limitations for each operation.

The height-velocity diagram does not constitute a limitation when conducting rotorcraft-utility hoist operations.

A cabin intercom system with operational "hot mike" capability is required for hoist operations in which loads are brought into or out of the cabin.



The last 20 feet of hoist cable (colored red) is unusable.

WEIGHT LIMITS

The maximum utility hoist load is 600 pounds (272 kg).

The maximum weight of the rotorcraft-external load combination is 10,500 pounds (4,763 kg) (A model), 10,800 pounds (4,898 kg) (A+ model), 11,700 pounds (5,307 kg) (B/C models).

Maximum baggage compartment load is limited to 600 pounds (272 kg). The weight to the left (port) or right (starboard) of the centerline of the baggage compartment should not be over 300 pounds (136 kg).

The hoist load may be restricted by lateral loading limits. See hoist loading information, Part 2, Section III, of the *RFM*.

MINIMUM FLIGHT CREW

The minimum flight crew for utility hoist operation is two pilots and a hoist operator in communication with the pilot.

AIRSPEED LIMITS

With a load on the utility hoist, the maximum airspeed for sideward flight or crosswind hover is 30 knots (A/A+ models), 35 knots (B/C models).

With a load on the utility hoist, the maximum airspeed in forward flight may be restricted by stability of the load and is not to exceed 74 KIAS.

CARGO HOOK LIMITATIONS

GENERAL

External hook operations must be conducted by a qualified flight crew under the provisions of the operating rules for rotorcraft external load operations for loads that are jettisonable and are lifted free of the surface (Class B loads). Normal operations are permitted with the external cargo hook installed but not used.

The height-velocity diagram in the *Flight Manual* does not constitute a limitation when conducting rotorcraft-external load operations.

WEIGHT

Maximum weight of the external cargo is 3,300 pounds (1,500 kg).



AIRSPEED

Maximum airspeed with an external cargo weight of 1,900 pounds (862 kg) or less is 136 KIAS.

Maximum airspeed must be reduced with increases in external cargo weight.

ENGINE AIR PARTICLE SEPARATOR (EAPS—S-76A MODEL ONLY) LIMITATION

Flight in falling and blowing snow with EAPS installed is prohibited.

EMERGENCY FLOTATION SYSTEM LIMITATIONS

Maximum airspeed for inflation of the emergency flotation gear is 75 KIAS.

Maximum airspeed with emergency flotation gear inflated is 75 KIAS.

Maximum water contact speed with emergency flotation system installed is 33 knots.

Landing gear must be down prior to float inflation.

Maximum demonstrated airspeed for sideward flight or crosswind hover is 20 knots.

Maximum pressure altitude with emergency flotation gear inflated is 5,000 feet.

Maximum rate of descent for water entry is 300 fpm.


Table APP-1. CONVERSION FACTORS

<u>Multiply</u>	<u>By</u>	<u>To Obtain</u>
centimeters	0.3937	inches
kilograms	2.2046	pounds
kilometers	0.621	statute miles
kilometers	0.539	nautical miles
liters	0.264	gallons
liters	1.05	quarts (liquid)
meters	39.37	inches
meters	3.281	feet
millibars	0.02953	in. Hg (32° F)
feet	0.3048	meters
gallons	3.7853	liters
inches	2.54	centimeters
in. Hg (32° F)	33.8639	millibars
nautical miles	1.151	statute miles
nautical miles	1.852	kilometers
pounds	0.4536	kilograms
quarts (liquid)	0.946	liters
statute miles	1.609	kilometers
statute miles	0.868	nautical miles

Table APP-2. FAHRENHEIT AND CELSIUS TEMPERATURE CONVERSION

-459.4 to -220			-210 to 0			1 to 25			26 to 50			51 to 75			76 to 100			101 to 340			341 to 400			401 to 750		
C.	C. or F.	F.	C.	C. or F.	F.	C.	C. or F.	F.	C.	C. or F.	F.	C.	C. or F.	F.	C.	C. or F.	F.	C.	C. or F.	F.	C.	C. or F.	F.	C.	C. or F.	F.
-273	-459.4		-134	-210	-348	-17.2	1	33.8	-3.33	26	78.8	-10.6	51	123.8	24.4	76	188.8	43	110	230	177	360	662	260	500	932
-268	-460		-129	-200	-338	-16.7	2	35.6	-2.78	27	80.6	11.1	52	125.6	25.0	77	170.6	49	120	248	182	360	680	266	510	950
-262	-440		-123	-190	-310	-16.1	3	37.4	-2.22	28	82.4	11.7	53	127.4	25.8	78	172.4	54	130	266	188	370	698	271	520	968
-257	-430		-118	-180	-292	-15.6	4	39.2	-1.67	29	84.2	12.2	54	129.2	26.1	79	174.2	60	140	284	193	380	716	277	530	986
-251	-420		-112	-170	-274	-15.0	5	41.0	-1.11	30	86.0	12.8	55	131.0	26.7	80	176.0	66	150	302	199	390	734	282	540	1004
-246	-410		-107	-160	-256	-14.4	6	42.8	-0.56	31	87.8	13.3	56	132.8	27.2	81	177.8	71	160	320	204	400	752	288	550	1022
-240	-400		-101	-150	-238	-13.9	7	44.6	0	32	89.6	13.9	57	134.6	27.8	82	179.8	77	170	338	210	410	770	293	560	1040
-234	-390		-95.6	-140	-220	-13.3	8	46.4	0.56	33	91.4	14.4	58	136.4	28.3	83	181.4	82	180	356	216	420	788	299	570	1058
-229	-380		-90.0	-130	-202	-12.8	9	48.2	1.11	34	93.2	15.0	59	138.2	28.9	84	183.2	88	190	374	221	430	806	304	580	1076
-223	-370		-84.4	-120	-184	-12.2	10	50.0	1.67	35	95.0	15.6	60	140.0	29.4	85	185.0	93	200	392	227	440	824	310	590	1094
-218	-360		-78.8	-110	-166	-11.7	11	51.8	2.22	36	96.8	16.1	61	141.8	30.0	86	186.8	99	210	410	232	450	842	316	600	1112
-212	-350		-73.3	-100	-148	-11.1	12	53.6	2.78	37	98.6	16.7	62	143.6	30.6	87	188.6	100	212	413	236	460	860	321	610	1130
-207	-340		-67.8	-90	-130	-10.6	13	55.4	3.33	38	100.4	17.2	63	145.4	31.1	88	190.4	104	220	428	243	470	878	327	620	1148
-201	-330		-62.2	-80	-112	-10.0	14	57.2	3.89	39	102.2	17.8	64	147.2	31.7	89	192.2	110	230	446	249	480	896	332	630	1166
-196	-320		-56.7	-70	-94	-9.44	15	59.0	4.44	40	104.0	18.3	65	149.0	32.2	90	194.0	116	240	464	254	490	914	338	640	1184
-190	-310		-51.1	-60	-76	-8.89	16	60.8	5.00	41	105.8	18.9	66	150.8	32.8	91	195.8	121	250	482				343	650	1202
-184	-300		-45.6	-50	-58	-8.33	17	62.6	5.56	42	107.6	19.4	67	152.6	33.3	92	197.6	127	260	500				349	660	1220
-179	-290		-40.0	-40	-40	-7.78	18	64.4	6.11	43	109.4	20.0	68	154.5	33.9	93	199.4	132	270	518				354	670	1238
-173	-280		-34.4	-30	-22	-7.22	19	66.3	6.67	44	111.2	20.6	69	156.2	34.4	94	201.2	138	280	536				360	680	1256
-169	-270	-459.4	-28.9	-20	-4	-6.67	20	68.0	7.22	45	113.0	21.1	70	158.0	35.0	95	203.0	143	290	554				366	690	1274
-163	-270	-454	-23.3	-10	14	-6.11	21	69.8	7.78	46	114.8	21.7	71	159.8	35.6	96	204.8	149	300	572				371	700	1292
-163	-260	-436				-5.56	22	71.8	8.33	47	116.6	22.2	72	161.6	36.1	97	206.6	154	310	590				377	710	1310
-157	-250	-418				-5.00	23	73.4	8.89	48	118	22.8	73	163.4	36.7	98	208.4	160	320	608				382	720	1328
-151	-240	-400				-4.44	24	75.2	9.44	49	120.2	23.3	74	165.2	37.2	99	210.2	166	330	626				388	730	1346
-145	-230	-382				-3.89	25	77.0	10.0	50	122.0	23.9	75	167.0	37.8	100	212.0	171	340	644				393	740	1364
-140	-220	-364																						399	750	1382
751 to 1000			1001 to 1250			1251 to 1490			1491 to 1750			1751 to 2000			2001 to 2250			2251 to 2490			2491 to 2750			2751 to 3000		
C.	C. or F.	F.	C.	C. or F.	F.	C.	C. or F.	F.	C.	C. or F.	F.	C.	C. or F.	F.	C.	C. or F.	F.	C.	C. or F.	F.	C.	C. or F.	F.	C.	C. or F.	F.
404	760	1400	543	1010	1850	682	1260	2300	816	1500	2732	960	1760	3200	1099	2010	3650	1238	2290	4100	1371	2500	4532	1518	2780	5000
410	770	1418	549	1020	1868	688	1270	2318	821	1510	2750	966	1770	3218	1104	2020	3668	1243	2270	4118	1377	2510	4550	1521	2770	5018
416	780	1436	554	1030	1886	693	1280	2336	827	1520	2768	971	1780	3236	1110	2030	3686	1249	2280	4136	1382	2520	4568	1527	2780	5036
421	790	1454	560	1040	1904	699	1290	2354	832	1530	2786	977	1790	3254	1116	2040	3704	1254	2290	4154	1388	2530	4586	1532	2790	5054
427	800	1472	566	1050	1922	704	1300	2372	838	1540	2804	982	1800	3272	1121	2050	3722	1260	2300	4172	1393	2540	4604	1538	2800	5072
432	810	1490	571	1060	1940	710	1310	2390	843	1550	2822	988	1810	3290	1127	2060	3740	1266	2310	4190	1399	2550	4622	1543	2810	5090
438	820	1508	577	1070	1958	716	1320	2408	849	1560	2840	993	1820	3308	1132	2070	3758	1271	2320	4208	1404	2560	4640	1549	2820	5108
443	830	1526	582	1080	1976	721	1330	2426	854	1570	2858	999	1830	3326	1138	2080	3776	1277	2330	4226	1410	2570	4658	1554	2830	5126
449	840	1544	588	1090	1994	727	1340	2444	860	1580	2876	1004	1840	3344	1143	2090	3794	1282	2340	4244	1416	2580	4676	1560	2840	5144
454	850	1562	593	1100	2012	732	1350	2462	866	1590	2894	1010	1850	3362	1149	2100	3812	1288	2350	4262	1421	2590	4694	1566	2850	5162
460	860	1580	599	1110	2030	738	1360	2480	871	1600	2912	1016	1860	3380	1154	2110	3830	1293	2360	4280	1427	2600	4712	1571	2860	5180
466	870	1598	604	1120	2048	743	1370	2498	877	1610	2930	1021	1870	3398	1160	2120	3848	1299	2370	4298	1432	2610	4730	1577	2870	5198
471	880	1616	610	1130	2066	749	1380	2516	882	1620	2948	1027	1880	3416	1166	2130	3866	1304	2380	4316	1438	2620	4748	1582	2880	5216
477	890	1634	616	1140	2084	754	1390	2534	888	1630	2966	1032	1890	3434	1171	2140	3884	1310	2390	4334	1443	2630	4766	1588	2890	5234
482	900	1652	621	1150	2102	760	1400	2552	893	1640	2984	1038	1900	3452	1177	2150	3902	1316	2400	4352	1448	2640	4784	1593	2900	5252
488	910	1670	627	1160	2120	766	1410	2570	899	1650	3002	1043	1910	3470	1182	2160	3920	1321	2410	4370	1453	2650	4802	1599	2910	5270
493	920	1688	632	1170	2138	771	1420	2588	904	1660	3020	1049	1920	3488	1188	2170	3938	1327	2420	4388	1458	2660	4820	1604	2920	5288
499	930	1706	638	1180	2156	777	1430	2606	910	1670	3038	1054	1930	3506	1193	2180	3956	1332	2430	4406	1463	2670	4838	1610	2930	5306
504	940	1724	643	1190	2174	782	1440	2624	916	1680	3056	1060	1940	3524	1199	2190	3974	1338	2440	4424	1468	2680	4856	1616	2940	5324
510	950	1742	649	1200	2192	788	1450	2642	921	1690	3074	1066	1950	3542	1204	2200	3992	1343	2450	4442	1471	2690	4874	1621	2950	5342
516	960	1760	654	1210	2210	793	1460	2660	927	1700	3092	1071	1960	3560	1210	2210	4010	1348	2460	4460	1482	2700	4892	1627	2960	5360
521	970	1778	660	1220	2228	799	1470	2678	932	1710	3110	1077	1970	3578	1216	2220	4028	1354	2470	4478	1488	2710	4910	1632	2970	5378
527	980	1796	666	1230	2246	804	1480	2696	938	1720	3128	1082	1980	3596	1221	2230	4046	1360	2480	4496	1493	2720	4928	1638	2980	5396
532	990	1814	671	1240	2264	810	1490	2714	943	1730	3146	1088	1990	3614	1227	2240	4064	1366	2490	4514	1499	2730	4946	1643	2990	5414
538	1000	1832	677	1250	2282				949	1740	3164	1093	2000	3632	1232	2250	4082				1504	2740	4964	1649	3000	5432
									954	1750	3182										1510	2750	4982			

NOTE: — The numbers in the bold face type refer to the temperature either in degrees Celsius or Fahrenheit which it is desired to convert into the



SIKORSKY S-76 PILOT TRAINING MANUAL

Table APP-3. INCHES TO MILLIMETERS (0.0001 INCH TO 10 INCHES)

INCHES	0.0000	0.0001	0.0002	0.0003	0.0004	0.0005	0.0006	0.0007	0.0008	0.0009
MILLIMETERS										
0.000		0.0025	0.0050	0.0076	0.0101	0.0127	0.0152	0.0177	0.0203	0.0228
0.001	0.254	0.0279	0.0304	0.0330	0.0355	0.0381	0.0406	0.0431	0.0457	0.0482
0.002	0.0508	0.0533	0.0558	0.0584	0.0609	0.0635	0.0660	0.0685	0.0711	0.0736
0.003	0.0762	0.0787	0.0812	0.0838	0.0863	0.0889	0.0914	0.0939	0.0965	0.0990
0.004	0.1016	0.1041	0.1066	0.1092	0.1117	0.1143	0.1168	0.1193	0.1219	0.1244
0.005	0.1270	0.1295	0.1320	0.1346	0.1371	0.1447	0.1422	0.1447	0.1473	0.1498
0.006	0.1524	0.1549	0.1574	0.1600	0.1625	0.1701	0.1676	0.1701	0.1727	0.1752
0.007	0.1778	0.1803	0.1828	0.1854	0.1879	0.1955	0.1930	0.1955	0.1981	0.2006
0.008	0.2032	0.2057	0.2082	0.2108	0.2133	0.2209	0.2184	0.2209	0.2235	0.2260
0.009	0.2286	0.2311	0.2336	0.2362	0.2387	0.2463	0.2438	0.2463	0.2489	0.2514

INCHES	0.000	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.009
MILLIMETERS										
0.00		0.025	0.050	0.076	0.101	0.127	0.152	0.177	0.203	0.228
0.01	0.254	0.279	0.304	0.330	0.355	0.381	0.406	0.431	0.457	0.482
0.02	0.508	0.533	0.558	0.584	0.609	0.635	0.660	0.685	0.711	0.736
0.03	0.762	0.787	0.812	0.838	0.863	0.889	0.914	0.939	0.965	0.990
0.04	1.016	1.041	1.066	1.092	1.117	1.143	1.168	1.193	1.219	1.244
0.05	1.270	1.295	1.320	1.346	1.371	1.447	1.422	1.447	1.473	1.498
0.06	1.524	1.549	1.574	1.600	1.625	1.701	1.676	1.701	1.727	1.752
0.07	1.778	1.803	1.828	1.854	1.879	1.955	1.930	1.955	1.981	2.006
0.08	2.032	2.057	2.082	2.108	2.133	2.209	2.184	2.209	2.235	2.260
0.09	2.286	2.311	2.336	2.362	2.387	2.463	2.438	2.463	2.489	2.514

INCHES	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
MILLIMETERS										
0.0		0.254	0.508	0.762	1.016	1.270	1.524	1.778	2.032	2.286
0.1	2.540	2.794	3.048	3.302	3.556	3.810	4.064	4.318	4.572	4.826
0.2	5.080	5.334	5.588	5.842	6.096	6.350	6.604	6.858	7.112	7.366
0.3	7.620	7.874	8.128	8.382	8.636	8.890	9.144	9.398	9.652	9.906
0.4	10.160	10.414	10.668	10.922	11.176	11.430	11.684	11.938	12.192	12.446
0.5	12.700	12.954	13.208	13.462	13.716	13.970	14.224	14.478	14.732	14.986
0.6	15.240	15.494	15.748	16.002	16.256	16.510	16.764	17.018	17.272	17.526
0.7	17.780	18.034	18.288	18.542	18.796	19.050	19.304	19.558	19.812	20.066
0.8	20.320	20.574	20.828	21.082	21.336	21.590	21.844	22.098	22.352	22.606
0.9	22.860	23.114	23.368	23.622	23.876	24.130	24.384	24.638	24.892	25.146

INCHES	0.00	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
MILLIMETERS										
0		2.54	5.08	7.62	10.16	12.70	15.24	17.78	20.32	22.86
1.	25.40	27.94	30.48	33.02	35.56	38.10	40.64	43.18	45.72	48.26
2.	50.80	53.34	55.88	58.42	60.96	63.50	66.04	68.58	71.12	73.66
3.	76.20	78.74	81.28	83.82	86.36	88.90	91.44	93.98	96.52	99.06
4.	101.60	104.14	106.68	109.22	111.76	114.30	116.84	119.38	121.92	124.46
5.	127.00	129.54	132.08	134.62	137.16	139.70	142.24	144.78	147.32	149.86
6.	152.40	154.94	157.48	160.02	162.56	165.10	167.64	170.18	172.72	175.26
7.	177.80	180.34	182.88	185.42	187.96	190.50	193.04	195.58	198.12	200.66
8.	203.20	205.74	208.28	210.82	213.36	215.90	218.44	220.98	223.52	226.06
9.	228.60	231.14	233.68	236.22	238.76	241.30	243.84	246.38	248.92	251.46X

Table APP-4. WEIGHT (MASS): OUNCES OR POUNDS TO KILOGRAMS

(1 lb = 0.453 592 4 kg)

	0	1	2	3	4	5	6	7	8	9
	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg
Oz										
0	—	0.028	0.057	0.085	0.113	0.142	0.170	0.198	0.227	0.255
10	0.283	0.312	0.340	0.369	0.397	0.425	0.454	0.482	0.510	0.539
lb										
0	—	0.45	0.91	1.36	1.81	2.27	2.72	3.18	3.63	4.08
10	4.5	5.0	5.4	5.9	6.4	6.8	7.3	7.7	8.2	8.6
20	9.1	9.5	10.0	10.4	10.9	11.3	11.8	12.2	12.7	13.2
30	13.6	14.1	14.5	15.0	15.4	15.9	16.3	16.8	17.2	17.7
40	18.1	18.6	19.1	19.5	20.0	20.4	20.9	21.3	21.8	22.2
50	22.7	23.1	23.6	24.0	24.5	24.9	25.4	25.9	26.3	26.8
60	27.2	27.7	28.1	28.6	29.0	29.5	29.9	30.4	30.8	31.3
70	31.8	32.2	32.7	33.1	33.6	34.0	34.5	34.9	35.4	35.8
80	36.3	36.7	37.2	37.6	38.1	38.6	39.0	39.5	39.9	40.4
90	40.8	41.3	41.7	42.2	42.6	43.1	43.5	44.0	44.5	44.9
100	45	46	47	47	48	48	49	49	49	49
	0	10	20	30	40	50	60	70	80	90
200	91	95	100	104	109	113	118	122	127	132
300	136	141	145	150	154	159	163	168	172	177
400	181	186	191	195	200	204	209	213	218	222
500	227	231	236	240	245	249	254	259	263	268
600	272	277	281	286	290	295	299	304	308	313
700	318	322	327	331	336	340	345	349	354	358
800	363	367	372	376	381	386	390	395	399	404
900	408	413	417	422	426	431	435	440	445	449
1000	454	458	463	467	472	476	481	485	490	494


Table APP-4. WEIGHT (MASS): OUNCES OR POUNDS TO KILOGRAMS

(1 lb = 0.453 592 4 kg)

lb	0	100	200	300	400	500	600	700	800	900
(000)*	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg
1	454	499	544	590	635	680	726	771	816	862
2	907	953	998	1043	1089	1134	1179	1225	1270	1315
3	1361	1406	1451	1497	1542	1588	1633	1678	1724	1769
4	1814	1860	1905	1950	1996	2041	2087	2132	2177	2223
5	2268	2313	2359	2404	2449	2495	2540	2585	2631	2676
6	2722	2767	2812	2858	2903	2948	2994	3039	3084	3130
7	3175	3221	3266	3311	3357	3402	3447	3493	3538	3583
8	3629	3674	3719	3765	3810	3856	3901	3946	3992	4037
9	4082	4128	4173	4218	4264	4309	4354	4400	4445	4491
10	4536	4581	4627	4672	4714	4763	4803	4853	4899	4944
11	4990	5035	5080	5126	5171	5216	5262	5307	5352	5398
12	5443	5488	5534	5579	5625	5670	4614	5761	5806	5851
13	5897	5942	5987	6033	6078	6123	6169	6214	6260	6305
14	6350	6396	6441	6486	6532	6577	6622	6668	6713	6759
15	6804	6849	6895	6940	6985	7031	7076	7121	7167	7212
16	7257	7303	7348	7394	7439	7484	7530	7575	7620	7666
17	7711	7756	7802	7847	7893	7938	7983	8029	8074	8119
18	8165	8210	8255	8301	8346	8391	8437	8482	8528	8573
19	8618	8664	8709	8754	8800	8845	8890	8936	8981	9026
20	9072	9117	9163	9208	9253	9299	9344	9389	9435	9480

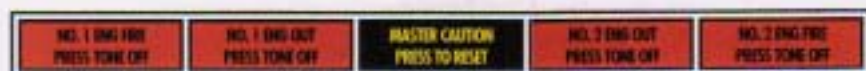
*Multiply lb value by 1000



ANNUNCIATORS

The Annunciator Section presents a color representation of all the annunciator lights in the helicopter.

Please unfold page ANN-1A+/C to the right and leave it open for ready reference as the annunciators for the S-76A+/C aircraft are cited in the text.



OR

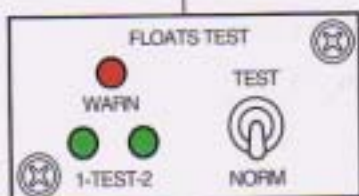


Figure ANN-1A+/C



LAPS



OR



LDG GEAR UP
PUSH TO RESET

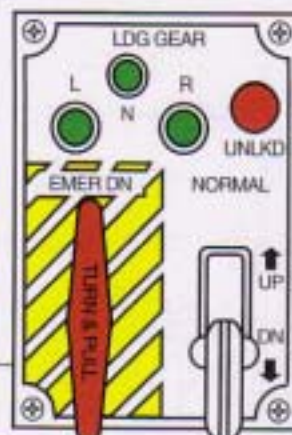


ALT
ALERT

OVERHEAD PANEL



RHDR



Annunciators—S-76A+/C



ANNUNCIATORS

The Annunciator Section presents a color representation of all the annunciator lights in the helicopter.

Please unfold page ANN-1A to the right and leave it open for ready reference as the annunciators for the S-76A aircraft are cited in the text.



OR

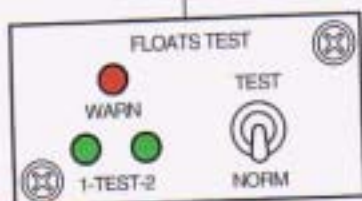
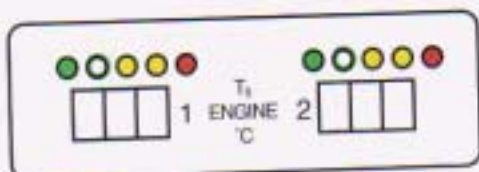
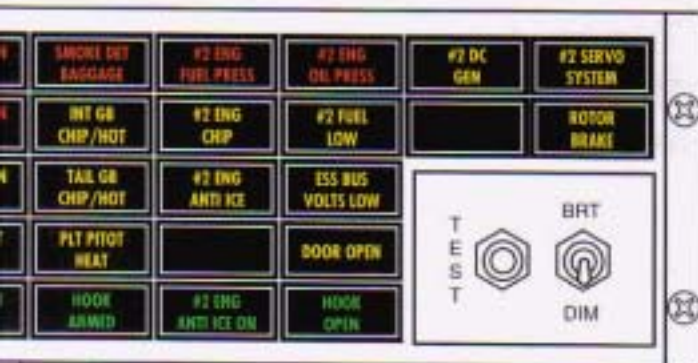


Figure ANN-1



SIKORSKY S-76 PILOT TRAINING MANUAL



EAPS



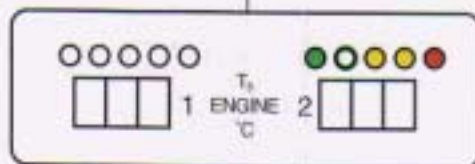
OR



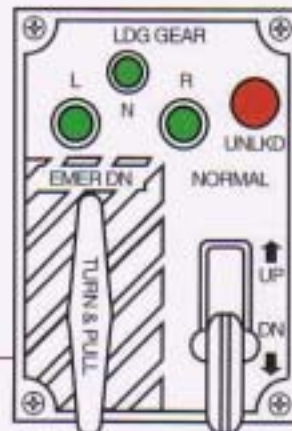
#2 ENG EMER OFF

LDG GEAR UP
PUSH TO RESET

RHDR



ALT ALERT



Annunciators—S-76A



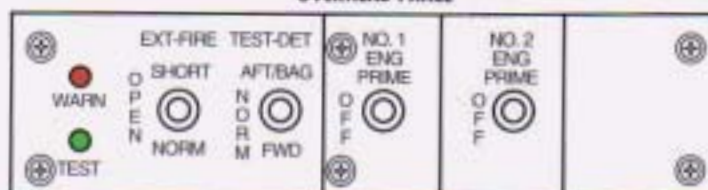
ANNUNCIATORS

The Annunciator Section presents a color representation of all the annunciator lights in the helicopter.

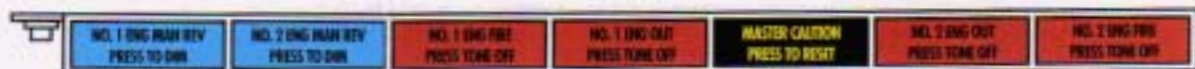
Please unfold page ANN-1B to the right and leave it open for ready reference as the annunciators for the S-76B aircraft are cited in the text.



OVERHEAD PANEL



COPILOT



FLIGHT DIREC. (COPILOT & PILOT)

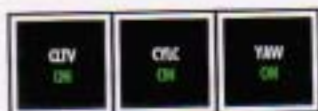
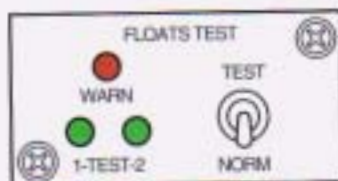
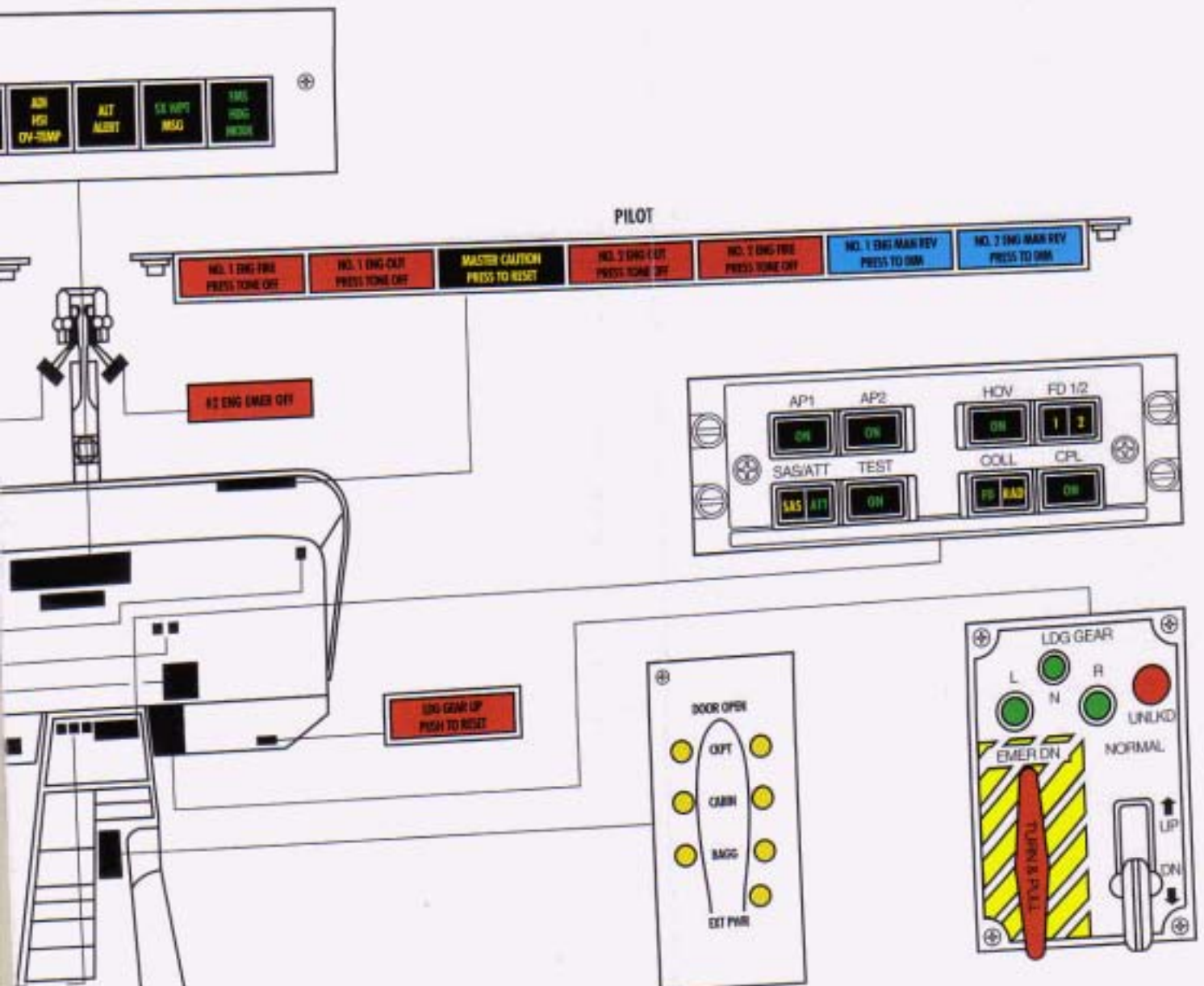


Figure ANN-1



SIKORSKY S-76 PILOT TRAINING MANUAL



B. Annunciators—S-76B

S-76 C+ Glossary of Terms

(09/02/99 Page 1)

FMU: Fuel Metering Unit – Hydromechanical control used to regulate fuel to the engine combustion chamber.

DECU: Digital Engine Control Unit – Computer used to control engine FMU

FUEL VALVE: Valve that controls start fuel flow and shut-off fuel flow.

DDR: Decu Digital Read-out – Cockpit display used by pilot to monitor DECU status.

IIDS: Integrated Instrument Display System –Alternate cockpit display used by pilot to monitor DECU status, Engine performance and other systems' status.

OEI TRAINING SWITCH:

Located under co-pilot's VNA placard. Switch is used to simulate maximum gross weight operations by biasing N1 and Torque parameters. Both single and dual engine operations are affected by switch position.

MANUAL TRAINING / START SWITCH:

Located on overhead panel in cockpit. Allows selection of manual fuel operations for manual start or for flight training purposes.

OEI LIMIT SELECT SWITCH:

Allows pilot selection of either 30-second; 2-minute or 5-minute engine toppings.

ENGINE CONTROL LIGHTS:

One capsule for each engine mounted on the glareshield next to the master warning capsules. The engine control capsule is a blue (amber for CAA) light that illuminates when the DECU fails.

ENGINE LEVER HANDLE LIGHTS:

One light mounted in each engine lever handle. Blue (amber for CAA) lamps are associated with the Engine Control Lights. Illuminates when the DECU fails.

MIXED MODE LIGHTS:

Amber caution lights mounted on the engine control quadrant aft of the engine lever "STOP" position. The light alerts the pilot that the manual engine control lever is out of its normal position.

S-76 C+ Glossary of Terms

(09/02/99 Page 2)

ARMING AND USAGE LIGHTS:

Two-minute and 30-second topping settings are indicated with green lights when armed or amber lights when in use. The lights are located within the N1 gage.

OEI TRAINING LIGHT:

An amber light located to the left of the co-pilot's VNE placard. The light alerts the pilot that the OEI or Dual Engine Training mode has been selected and is active.

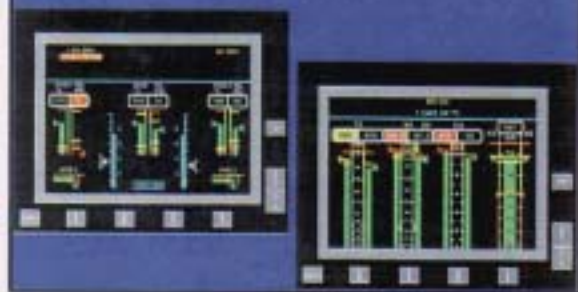
OVERSPEED LIGHTS:

Two amber overspeed capsules are located on the instrument panel in front of the pilot and labeled #1 ENG OVERSPEED or #2 ENG OVERSPEED. Illumination of either light indicates that the respective engine's overspeed protection has failed. IIDS equipped aircraft have the letters O/S displayed (in AMBER colored text) above the N2 speed indicator.

BLEED VALVE LIGHTS:

One green advisory light is integrated with each N1 speed indicator to advise the pilot of engine bleed valve position. When the light is illuminated, the bleed valve is open. IIDS equipped aircraft have the letters BV displayed (in GREEN colored text) above the N1 speed indicator.

Integrated Instrument Display System (IIDS)



Course Overview

- IIDS Displays
- IIDS Components
- IIDS Controls and Indicators
- IIDS Normal Checks & Tests
- IIDS Abnormal Procedures

Objectives

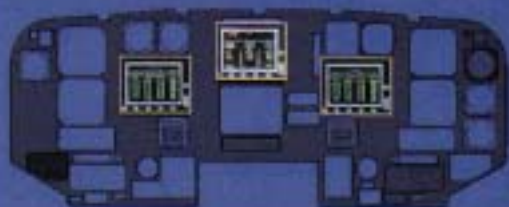
- At the conclusion of this lesson, the crew will be able to:
 - Discuss the general displays of the IIDS system
 - Locate and state functions of the system controls and components
 - Perform and discuss normal operating procedures
 - Identify and analyze system malfunctions and apply the correct abnormal checklist procedures

IIDS

- Three Liquid Crystal Displays
- Displays:
 - Engine performance
 - Oil pressure/temperature, N_H , N_E , T_{12} , Torque
 - Transmission
 - Oil pressure/temperature, N_R
 - Fuel quantity, fuel flow, fuel total
 - Hydraulic pressure
- Displays Warnings, Cautions, & Advisories
- Displays DECU fault status.

IIDS System Displays

- Performance Displays
- Engine Display



Performance Displays



- Identical displays on each side of cockpit

Performance Displays



• Digital & analog

Performance Displays



T₂, N₁, Torque, N₂ and N₃

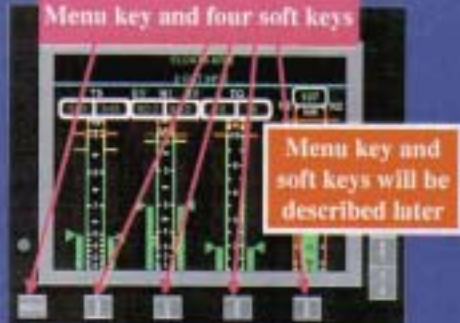
Performance Displays



• Advisory lights

Performance Displays

Menu key and four soft keys

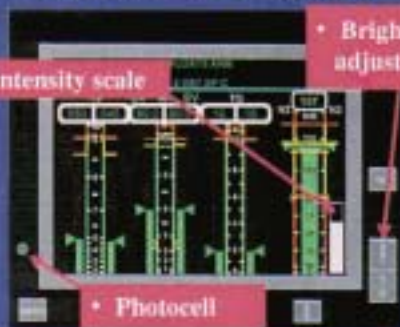


Performance Displays

• Intensity scale

• Brightness adjustment

• Photocell

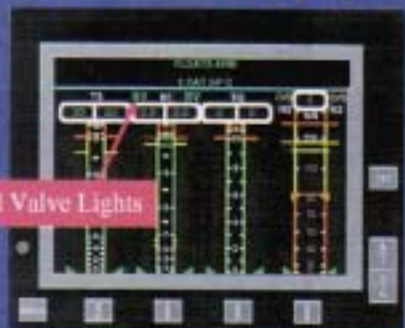


Performance Displays

• Panel Test Button



Performance Displays



Bleed Valve Lights

13

Performance Displays



Overspeed Lights

14

Performance Displays



Torque scale is linear

15

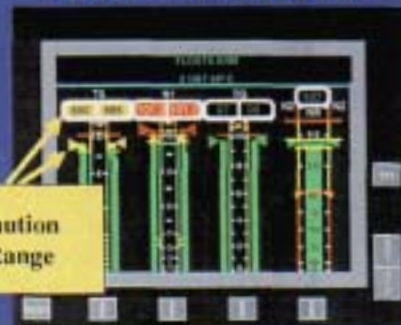
Performance Displays



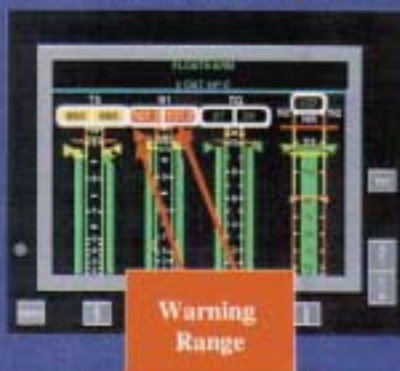
Performance Displays



Performance Displays



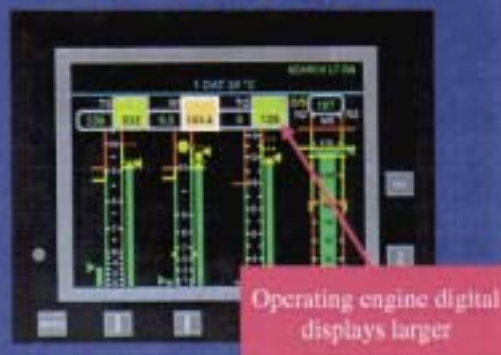
Performance Displays



Performance Displays - OEI



Performance Displays - OEI



Performance Displays - OEI



OEI Limit Lights

Engine Display



• Only one engine display

Engine Display



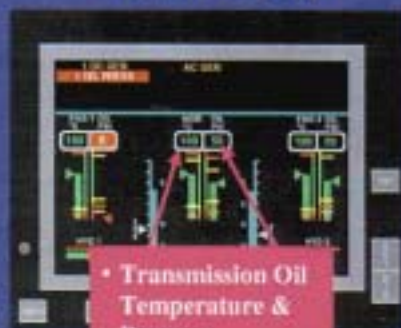
• Warning and caution lights

Engine Display



- Engine Oil Temperature & Pressure

Engine Display



- Transmission Oil Temperature & Pressure

Engine Display

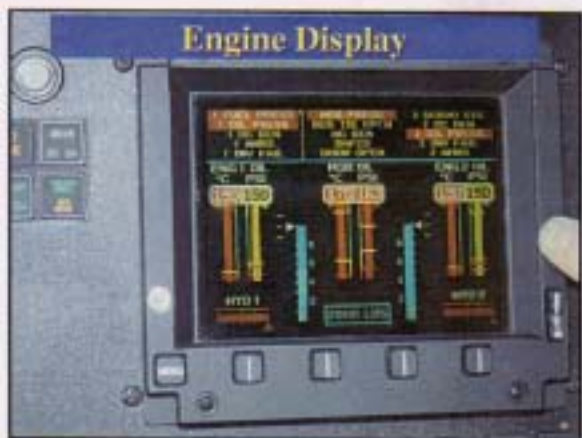


- Hydraulic pressure

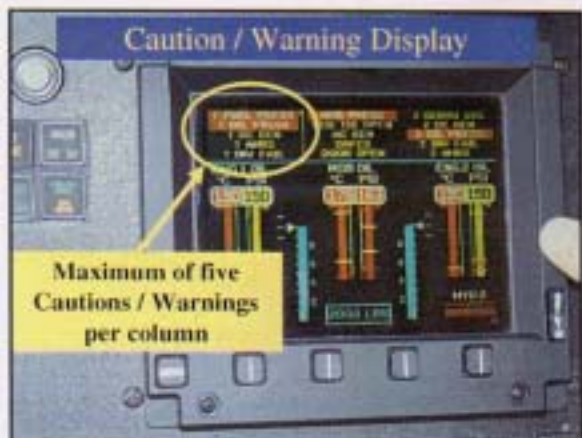
Engine Display



Engine Display



Caution / Warning Display



Caution / Warning Display

1 FUEL PRESS	1 MGB PRES
1 OIL PRESS	BUS TIE OF
1 DC GEN	AC GEN
1 AHRB	DAFCS
1 INV FAIL	DOOR OPE
ENG 1 OIL	MGB OIL
°C PSI	°C PS
180 150	175 16

Yellow arrow indicates presence of additional Cautions

Red arrow indicates presence of additional Warnings

DECU Fault Access Switch

Mounted on collective



Caution / Warning Display

1 FUEL PRESS	1 MGB PRES	1 MGB PRES
1 OIL PRESS	BUS TIE OF	BUS TIE OF
1 DC GEN	AC GEN	AC GEN
1 AHRB	DAFCS	DAFCS
1 INV FAIL	DOOR OPE	DOOR OPE
ENG 1 OIL	MGB OIL	MGB OIL
°C PSI	°C PS	°C PS
180 150	175 16	175 16

Fore-aft movement for scrolling through Cautions/Warnings



DECU Fault Display

HDS can also display DECU computer faults

DECU Faults will be explained in Powerplant lesson

DECU Fault Display

Pushing in on collective switch will access DECU Faults

Electrical Power Monitor Page

Available only on Engine Display

IIDS Components

- IIDS system includes:
 - Remote Data Acquisition Unit (RDAU)
 - Integrates data signals
 - Three identical computer processors
 - Display Units (3)
 - Data inputs
 - Engine / transmission / fuel / hydraulic sensors
 - Warning / Caution/Advisory alerts
 - DECU information - faults, counters, OET limits
 - DC electrical power (dual-powered)
 - Essential Bus
 - #2 DC Primary Bus

11

IIDS Components

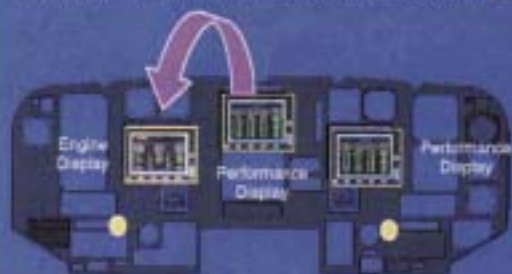


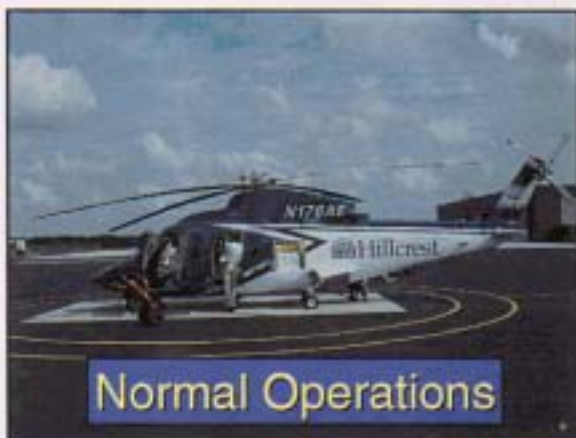
Default Locations



IIDS Reversion

Pressing Reversion Switch swaps display positions

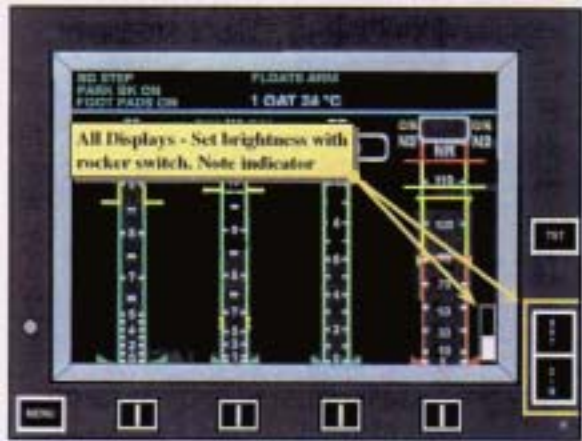


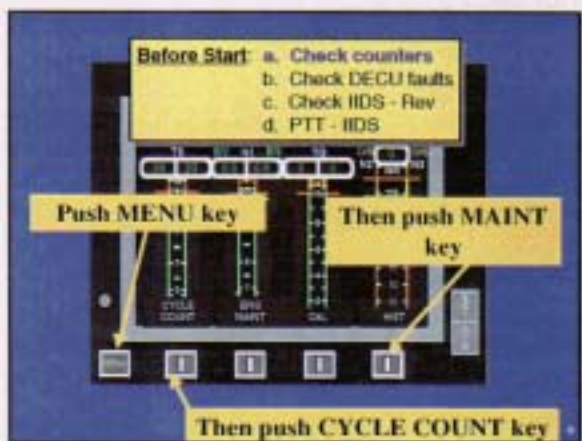


Before Start Check Power - Up Status

8000 S/W VERS: 2.30 2.30 3.00
DU S/W VERS: 2.10 2.10
A/C MODEL: S-70-C-
POSITION: PILOT
TEST: PASS

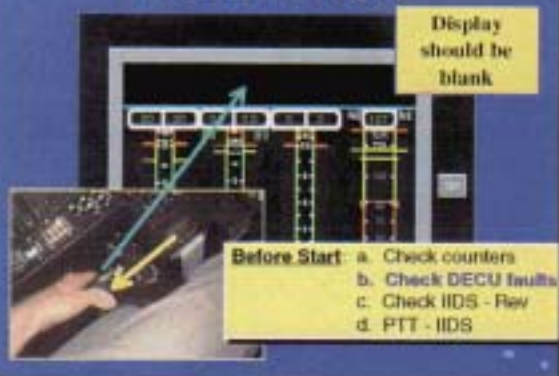
Times out within 8 seconds

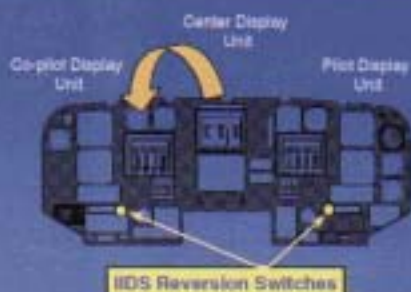






DECU Fault Display





- Before Start:**
- a. Check counters
 - b. Check DECU faults
 - c. Check IDS - Rev
 - d. P-T-T

- Before Start:**
- a. Check counters
 - b. Check DECU faults
 - c. Check IDS - Rev
 - d. Press-to-test

Engine Display

- Additional Lights:**
- Master Warning
 - ENG Control
 - LDG GR UNLOCKED
 - Fire Extinguisher
 - ENG Lever Handle
 - Mixed Mode
 - Float Test
 - O&I Training

Weight on wheels enabled.

Performance Display Press-to-test



Scales and digital read-outs to maximum

Press to Test - Fail

FAIL

Engine Start

Engine Display rearranged to
assist with start

Engine Start Display

Press engine start button,

or;

Press MENU key, then

START soft key

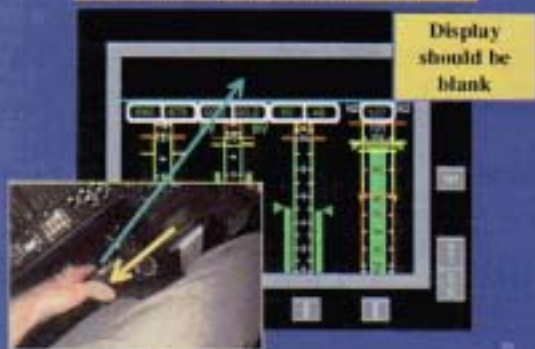
choose Eng 1 or 2 soft key



#1 Engine Start



Pre-TakeOff: a. Check DECU faults



Pre-TakeOff: b. N1 Tachometer Check



Pre-TakeOff Power Assurance Check

Push MENU key

Then follow the procedure in the RFM

Then push PWR ASSUR key

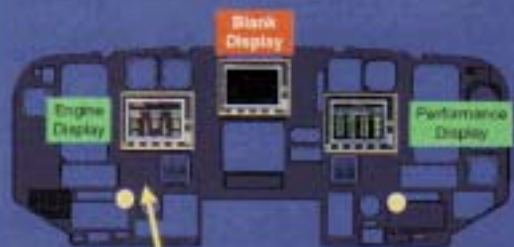
Test #1 Engine

TEST

IIDS Malfunctions

Single IIDS Failure

What can you do about this?



Pressing Reversion Switch swaps display positions

Dual IIDS Failure

What can you do about this?



MENU Key -
Press and hold 3 seconds

IIDS "COMPOSITE" Display