FAA APPROVED
R44 II PILOT'S OPERATING HANDBOOK

INTERSTATE AVIATION COMMITTEE AVIATION REGISTER (IAC AR) SUPPLEMENT

This supplement must be included in the FAA-approved Robinson R44 II Pilot's Operating Handbook for IAC AR-certified aircraft.

The information contained herein supplements or supersedes the basic manual only in those areas listed in this supplement. For limitations, procedures, and performance information not contained in this supplement, consult the basic R44 II Pilot's Operating Handbook.

This supplement is approved by the United States Federal Aviation Administration on behalf of the IAC AR.

Approved By: Patrick Power

Manager, Flight Test Branch ANM-160L
Federal Aviation Administration
Los Angeles Aircraft Certification Office,
Transport Airplane Directorate

Date: May 19, 2006

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SECTION 1: GENERAL

INTRODUCTION

This supplement contains the changes and additional data applicable to the R44 II helicopter certified by the Aviation Register of the IAC.

IAC AR-certified R44 IIs are equipped with an artificial horizon with inclinometer, a heated pitot, and a 121.5/406 MHz ELT as standard equipment. Three instrument calibration configurations are possible for IAC AR-certified R44 IIs:

Instrument	Configuration Units		
	Obsolete	English	Metric
Altimeter	meters	feet	meters
Airspeed	knots	knots	km/h
Vertical Speed	fpm	fpm	m/s

The obsolete configuration is only valid for helicopters exported to the Commonwealth of Independent States prior to 1 August 2014. Refer to Section 7 for operator-provided required equipment.

Garmin G500H Cockpit Reference Guide must be immediately available to the flight crew when the G500H is installed. The appropriate Aspen PFD/MFD Pilot's Guide must be immediately available to the flight crew when the Aspen PFD or PFD/MFD combination is installed.

SECTION 2: LIMITATIONS

NOTE

All airspeeds given in km/h are indicated airspeed.

AIRSPEED LIMITS

NEVER-EXCEED AIRSPEED (Vne)

Up to 900 meters density altitude:

998 kg TOGW & below	241 km/h (130 KIAS)
Over 998 kg TOGW	222 km/h (120 KIAS)
Autorotation	185 km/h (100 KIAS)

Above 900 meters density altitude, see placard on page 9-F3.7.

ADDITIONAL AIRSPEED LIMITS

185 km/h (100 KIAS) maximum at power above MCP.

185 km/h (100 KIAS) maximum with any combination of doors removed.

POWERPLANT LIMITATIONS

Manifold Pressure: See placard on page 9-F3.7 for MAP schedule.

FLIGHT AND MANEUVER LIMITATIONS

Maximum operating density altitude 4270 meters (14,000 feet).

Maximum operating altitude 2700 meters (9000 feet) AGL to allow landing within 5 minutes in case of fire.

Maximum operating pressure altitude without supplemental oxygen is 2400 meters (8000 feet) with passengers on board or 3000 meters (10,000 feet) without passengers.

Maximum hover yaw rate is 120 degrees per second.

SECTION 2: LIMITATIONS (cont'd)

FLIGHT AND MANEUVER LIMITATIONS (cont'd)

Maximum pitch angle except during flare in autorotation is 20 degrees.

Maximum bank angle with passengers on board is 45 degrees.

Maximum bank angle without passengers on board is 60 degrees up to 1000 meters (3000 feet) density altitude, reducing to 45 degrees at 3000 meters (10,000 feet) density altitude.

Maximum hover taxi maneuver speeds:
Left or Right: 46 km/h (25 knots)
Backwards: 46 km/h (25 knots)

Maximum wind speed is 46 km/h (25 knots).

Maximum lateral ground slope angle is 7 degrees.

Maximum fore/aft ground slope angle is 5 degrees.

Night flight or flight above 60 degrees north latitude is prohibited without an approved GPS installed.

Flight in vicinity of thunderstorm activity is prohibited.

Flight beyond safe autorotation distance from land is prohibited without floats installed.

Flight in ambient temperatures below -30°C and above +38°C is prohibited.

NOTE

In ambient temperatures below -5°C, refer to cold weather operation procedures in Section 4 of this supplement.

SECTION 2: LIMITATIONS (cont'd)

FUEL LIMITATIONS

Approved Fuel Grade:

Б95/130 grade aviation fuel

INSTRUMENT MARKINGS

AIRSPEED INDICATOR (METRIC VERSION ONLY)

Green Arc	0 to 204 km/h (0 to 110 KIAS)
Yellow arc*	204 to 241 km/h (110 to 130 KIAS)
Red cross-hatch	185 km/h (100 KIAS)
Red line	241 km/h (130 KIAS)

*Earlier English units airspeed indicators without yellow arc must have the following placard adjacent:

DO NOT EXCEED 110 KIAS EXCEPT IN SMOOTH AIR

*Earlier metric units airspeed indicators without yellow arc must have the following placard adjacent:

DO NOT EXCEED 204 KM/H EXCEPT IN SMOOTH AIR

OIL LIMITATIONS

Use only Robinson Helicopter part number A257-2 gear oil in main rotor and tail rotor gearboxes.

AVIONICS LIMITATIONS

If indications displayed on primary flight displays (G500H or Aspen PFD) and corresponding analog instruments differ by more than 70 ft (21 meters) altitude and/or 2 knots (4 km/h) airspeed, refer only to analog instruments.

Terrain Proximity function of GTN 6XX/7XX is not approved.

SECTION 2: LIMITATIONS (cont'd)

PLACARDS

In clear view and readable by pilot in flight on helicopters equipped with a metric altimeter (metric and obsolete configurations):

LIMIT MANIFOLD PRESSURE - IN. HG

MAXIMUM CONTINUOUS POWER								
PRESS ALT-M	OAT - °C							
	-30	-20	-10	0	10	20	30	40
SL	21.5	21.8	22.1	22.4	22.6	22.9	23.1	23.3
500	21.0	21.3	21.6	21.8	22.1	22.3	22.6	22.8
1000	20.5	20.8	21.1	21.4	21.6	21.9	22.1	22.3
1500	20.1	20.4	20.7	21.0	21.2	21.5	21.7	21.9
2000	19.7	20.0	20.3	20.6	20.8	21.1	21.3	21.5
2500	19.4	19.7	19.9	20.2	20.5	20.7	20.9	
3000	19.0	19.3	19.6	FULL THROTTLE				
3500								
FOR MAX TAKEOFF POWER (5 MIN), ADD 2.8 IN.								

In clear view and readable by pilot in flight on helicopters equipped with a metric altimeter and airspeed indicator (metric configuration):

NEVER EXCEED SPEED - KM/H

998 KG TOGW & BELOW								
PRESS ALT-M	OAT - °C							
	-30	-20	-10	0	10	20	30	40
SL	241							
500							236	229
1000					238	230	223	216
1500			240	232	225	217	210	202
2000		235	227	219	212	203	194	186
2500	231	222	214	205	196	187	178	169
3000	217	209	199	189	179	170	161	
3500	203	192	182	172	162	NO FLIGHT		
4000	185	175	165					
OVER 998 KG TOGW, SUBTRACT 18 KM/H FOR AUTOROTATION, SUBTRACT 56 KM/H								

SECTION 2: LIMITATIONS (cont'd)

PLACARDS (cont'd)

On helicopters equipped with a metric altimeter only (obsolete configuration):

NEVER EXCEED SPEED - KIAS

2200 LB TOGW & BELOW								
PRESS	OAT - °C							
ALT-M	-30	-20	-10	0	10	20	30	40
SL	130							
500							128	124
1000					129	125	121	117
1500				126	121	117	114	109
2000		127	123	119	115	110	105	100
2500	125	120	116	111	106	101	96	91
3000	117	113	107	102	96	91	86	
3500	109	103	98	93	88	NO FLIGHT		
4000	100	94	89	NO FLIGHT				
OVER 2200 LB TOGW, SUBTRACT 10 KIAS FOR AUTOROTATION, SUBTRACT 30 KIAS								

SECTION 2: LIMITATIONS (cont'd)

PLACARDS (cont'd)

Near both fuel tank filler caps:

CIS FUEL GRADES: Б95/130

Adjacent to altimeter (on R44 II helicopters equipped with an altimeter calibrated in feet only):

FT x 1000	M
1	305
2	610
3	914
4	1219
5	1524
6	1829
7	2134
8	2438
9	2743
10	3048

Outside front doors:

ОПУСТИТЬ ВНИЗ РУЧКУ СДВИНУТЬ ВПЕРЕД ОТКРЫТЬ ДВЕРЬ НАРУЖУ

(Lower handle downwards
Move handle forwards
Open door outwards)

Inside each front door:

ПОДНЯТЬ РУЧКУ ЗАМКА ПЕРЕДВИНУТЬ ЕЕ ВПЕРЕД ТОЛКНУТЬ ДВЕРЬ НАРУЖУ

(Lift latch handle
Move handle forwards
Open door outwards)

SECTION 2: LIMITATIONS (cont'd)

PLACARDS (cont'd)

Inside each rear door:

НАЖАТЬ ДЛЯ ЗАКРЫТИЯ

(Push to lock)

ВЫТЯНУТЬ КНОПКУ
ПОДНЯТЬ РУЧКУ ЗАМКА
ПЕРЕДВИНУТЬ ЕЕ ВПЕРЕД
ТОЛКНУТЬ ДВЕРЬ НАРУЖУ

(Pull knob
Lift latch handle
Move it forwards
Push door outwards)

Outside each rear door:

ВЫТЯНУТЬ КНОПКУ ЧЕРЕЗ
ОТКРЫТУЮ ПЕРЕДНЮЮ ДВЕРЬ
ОПУСТИТЬ ВНИЗ РУЧКУ
СДВИНУТЬ ВПЕРЕД
ОТКРЫТЬ ДВЕРЬ НАРУЖУ

(Pull knob through open
forward door
Lower handle downwards
Move handle forwards
Open door outwards)

Inside each baggage compartment:

МАКСИМАЛЬНЫЙ ВЕС БАГАЖА 23 КГ
МАКСИМАЛЬНАЯ НАГРУЗКА НА КРЕСЛО С УЧЕТОМ
ВЕСА БАГАЖА 136 КГ

(Maximum compartment load 23 kg
Maximum seat plus compartment load 136 kg)

SECTION 2: LIMITATIONS (cont'd)

PLACARDS (cont'd)

Located near main fuel tank filler cap:

ОСНОВНОЙ БАК АВИАЦИОННЫЙ БЕНЗИН

(Main fuel tank
Aviation Gasoline)

Located near aux fuel tank filler cap:

ДОПОЛНИТЕЛЬНЫЙ БАК АВИАЦИОННЫЙ БЕНЗИН ДЛЯ ПОЛНОЙ ЗАПРАВКИ СНАЧАЛА ЗАПРАВЬТЕ ОСНОВНОЙ БАК И ДОЗАПРАВЬТЕ ЕГО ПОСЛЕ ЗАПРАВКИ ДОПОЛНИТЕЛЬНОГО БАКА

(Aux fuel tank
Aviation gasoline
To insure full fuel
top off main tank
again after filling aux)

Near each collective stick and on horizontal firewall:

НЕ ЗАГРОМОЖДАТЬ СВОБОДНАЯ ЗОНА

(No stowage
Keep area clear)

In clear view of each occupant:

НЕ КУРИТЬ

(No smoking)

SECTION 3: EMERGENCY PROCEDURES

NOTE

The following procedures are unchanged from those of the basic manual. Altitudes are converted to meters and airspeeds are converted to km/h only.

POWER FAILURE ABOVE 150 METERS (500 FEET) AGL

1. Lower collective immediately to maintain rotor RPM.
2. Establish a steady glide at approximately 130 km/h (70 KIAS). (For maximum glide distance or minimum rate of descent, see page 9-F3.13).
3. Adjust collective to keep RPM between 97 and 108% or apply full down collective if light weight prevents attaining above 97%.
4. Select landing spot and, if altitude permits, maneuver so landing will be into wind.
5. A restart may be attempted at pilot's discretion if sufficient time is available (See "Air Restart Procedure", page 9-F3.14).
6. If unable to restart, turn unnecessary switches and fuel valve off.
7. At about 12 meters (40 feet) AGL, begin cyclic flare to reduce rate of descent and forward speed.
8. At about 2.4 meters (8 feet) AGL, apply forward cyclic to level ship and raise collective just before touchdown to cushion landing. Touch down in level attitude with nose straight ahead.

SECTION 3: EMERGENCY PROCEDURES (cont'd)

POWER FAILURE BETWEEN 2.4 METERS (8 FEET) AND 150 METERS (500 FEET) AGL

1. Lower collective immediately to maintain rotor RPM.
2. Adjust collective to keep RPM between 97 and 108% or apply full down collective if light weight prevents attaining above 97%.
3. Maintain airspeed until ground is approached, then begin cyclic flare to reduce rate of descent and forward speed.
4. At about 2.4 meters (8 feet) AGL, apply forward cyclic to level ship and raise collective just before touchdown to cushion landing. Touch down in level attitude and nose straight ahead.

POWER FAILURE BELOW 2.4 METERS (8 FEET) AGL

1. Apply right pedal as required to prevent yawing.
2. Allow rotorcraft to settle.
3. Raise collective just before touchdown to cushion landing.

MAXIMUM GLIDE DISTANCE CONFIGURATION

1. Airspeed approximately 167 km/h (90 KIAS).
2. Rotor RPM approximately 90%.
3. Best glide ratio is about 4.7:1 or one kilometer per 213 meters (one nautical mile per 1300 feet) AGL.

MINIMUM RATE OF DESCENT CONFIGURATION

1. Airspeed approximately 102 km/h (55 KIAS).
2. Rotor RPM approximately 90%.
3. Minimum rate of descent is about 410 meters per minute (1350 feet per minute). Glide ratio is about 4:1 or one kilometer per 250 meters (one nautical mile per 1500 feet) AGL.

CAUTION

Increase rotor RPM to 97% minimum when autorotating below 150 meters (500 feet) AGL.

SECTION 3: EMERGENCY PROCEDURES (cont'd)

AIR RESTART PROCEDURE

CAUTION

Do not attempt restart if engine malfunction is suspected or before safe autorotation is established. Air restarts not recommended below 600 meters (2000 ft) AGL.

1. Mixture – Off.
2. Throttle – Closed.
3. Starter – Engage.
4. Mixture – Move slowly rich while cranking.

LOSS OF TAIL ROTOR THRUST IN FORWARD FLIGHT

Failure is usually indicated by nose right yaw which cannot be corrected by applying left pedal.

1. Immediately enter autorotation.
2. Maintain at least 130 km/h (70 KIAS) if practical.
3. Select landing site, roll throttle off into detent spring, and perform autorotation landing.

NOTE

When a suitable landing site is not available, the vertical stabilizer may permit limited controlled flight at low power settings and airspeeds above 130 km/h (70 KIAS); however, prior to reducing airspeed, enter full autorotation.

SECTION 4: NORMAL PROCEDURES

RECOMMENDED AIRSPEEDS

Takeoff and Climb	111 km/h (60 KIAS)
Maximum Rate of Climb (V_Y)	102 km/h (55 KIAS)
Maximum Range	185 km/h (100 KIAS)*
Maximum Cruise (Do not exceed except in smooth air, and then only with caution)	204 km/h (110 KIAS)*
Significant Turbulence	111 to 130 km/h (60 to 70 KIAS)
Landing Approach	111 km/h (60 KIAS)
Autorotation	111 to 130 km/h* (60 to 70 KIAS)

*Certain conditions may require lower airspeeds. See placard on page 9-F3.7.

CRUISE

1. Verify RPM in green arc.
2. Set manifold pressure as desired with collective. Observe MAP and airspeed limits. Maximum recommended cruise speed is 204 km/h (110 KIAS).
3. Verify gages in green, warning lights out.

CAUTION

Do not exceed 204 km/h (110 KIAS) except in smooth air, and then only with caution. In turbulence, use lower airspeed. If turbulence is significant or becomes uncomfortable for the pilot, use 111 to 130 km/h (60 to 70 KIAS).

SECTION 4: NORMAL PROCEDURES (cont'd)

COLD WEATHER OPERATION

Special precautions should be taken if the helicopter is to be started after a cold soak in ambient temperatures below -5°C. Ensure correct oil grade is used (Refer to Section 8 in the main body of this manual). Preheat the engine oil, engine compartment and main rotor gearbox compartment to a minimum temperature of approximately -5°C. Preheating may be achieved by using a combination of an approved electric engine preheat system, portable heaters, and insulating covers. Use caution not to damage any equipment/wiring with excessive direct heat.

CAUTION

Failure to preheat engine before starting may result in internal engine damage.

When landing at ambient temperatures below -5°C in areas without preheating equipment, start the helicopter hourly and run-up to normal operating temperatures. More frequent starts may be required at colder temperatures. Be sure to run the helicopter long enough to recharge the battery after each start.

Avionics equipment may not function, or function improperly, after a rotorcraft cold soak. Warm up the cabin to pass avionics self-test successfully.

NOTE

The following procedures are unchanged from those of the basic manual. Altitudes are converted to meters and airspeeds are converted to km/h only.

DOORS-OFF OPERATION

Maximum airspeed with any door(s) off is 185 km/h (100 KIAS). Warn passengers to secure loose objects and to keep head and arms inside cabin to avoid high velocity airstream.

SECTION 4: NORMAL PROCEDURES (cont'd)

PRACTICE AUTOROTATION – POWER RECOVERY

1. Lower collective to down stop and reduce throttle as required for small tachometer needle separation.

CAUTION

To avoid inadvertent engine stoppage, do not roll throttle to full idle. Roll throttle off smoothly only enough for a small visible needle split.

NOTE

Governor is inactive below 80% engine RPM regardless of governor switch position.

NOTE

When entering autorotation from above 1800 meters (6000 feet), reduce throttle slightly before lowering collective to prevent engine overspeed.

2. Adjust collective to keep rotor RPM in green arc and adjust throttle for small needle separation.
3. Keep airspeed 111 to 130 km/h (60 to 70 KIAS).
4. At about 12 meters (40 feet) AGL, begin cyclic flare to reduce rate of descent and forward speed.
5. At about 2.4 meters (8 feet) AGL, apply forward cyclic to level aircraft and raise collective to control descent. Add throttle if required to keep RPM in green arc.

CAUTION

Simulated engine failures require prompt lowering of collective to avoid dangerously low rotor RPM. Catastrophic rotor stall could occur if the rotor RPM ever drops below 80% plus 1% per 300 meters (1000 feet) of altitude.

SECTION 4: NORMAL PROCEDURES (cont'd)

DESCENT, APPROACH, AND LANDING

1. Reduce power with collective as desired. Observe airspeed limits. Maximum recommended airspeed is 204 km/h (110 KIAS) except in smooth air.
2. Make final approach into wind at lowest practical rate of descent with initial airspeed of 111 km/h (60 KIAS).
3. Reduce airspeed and altitude smoothly to hover. (Be sure rate of descent is less than 1.5 m/s (300 FPM) before airspeed is reduced below 56 km/h (30 KIAS).
4. From hover, lower collective gradually until ground contact.
5. After initial ground contact, lower collective to full down position.

SECTION 4: NORMAL PROCEDURES (cont'd)

NOISE ABATEMENT

To improve the quality of our environment and to dissuade overly restrictive ordinances against helicopters, it is imperative that every pilot minimize noise irritation to the public. Following are several techniques which should be employed when possible.

1. Avoid flying over outdoor assemblies of people. When this cannot be avoided, fly as high as practical, preferably over 600 meters (2000 feet) AGL.
2. Avoid blade slap. Blade slap generally occurs at airspeeds below 185 km/h (100 KIAS). It can usually be avoided by maintaining 185 km/h (100 KIAS) until rate of descent is over 5 m/s (1000 FPM), then using a fairly steep approach until airspeed is below 120 km/h (65 KIAS). With the right door vent open, the pilot can easily determine those flight conditions which produce blade slap and develop piloting techniques to eliminate or reduce it.
3. When departing from or approaching a landing site, avoid prolonged flight over noise-sensitive areas. Always fly above 150 meters (500 feet) AGL and preferably above 300 meters (1000 feet) AGL.
4. Repetitive noise is far more irritating than a single occurrence. If you must fly over the same area more than once, vary your flight path to not overfly the same buildings each time.
5. When overflying populated areas, look ahead and select the least noise sensitive route.

NOTE

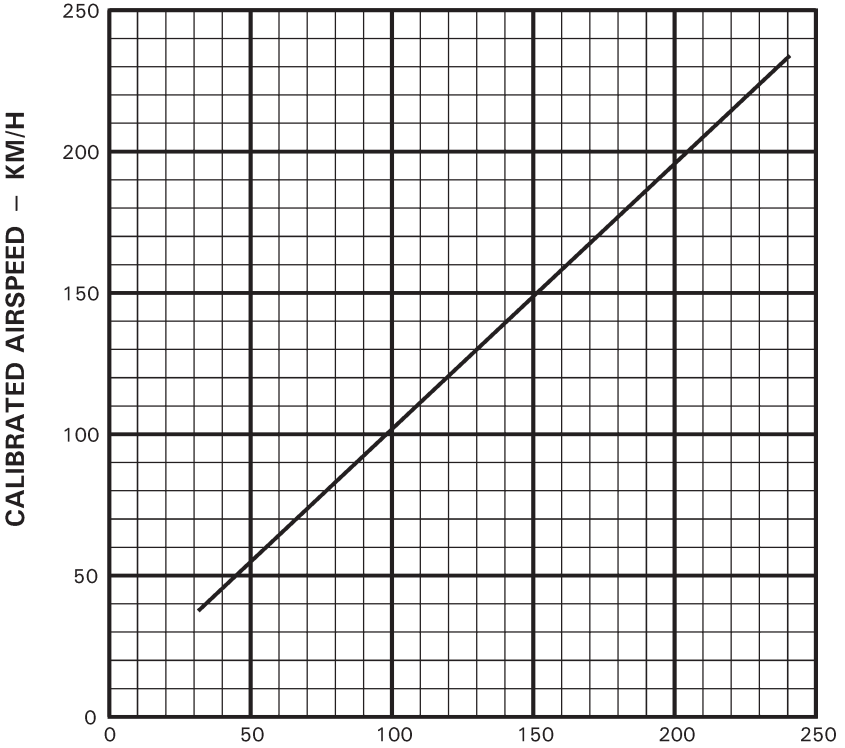
Above procedures do not apply where they would conflict with Air Traffic Control clearances or when, in the pilot's judgment, they would result in an unsafe flight path.

SECTION 5: PERFORMANCE

GENERAL

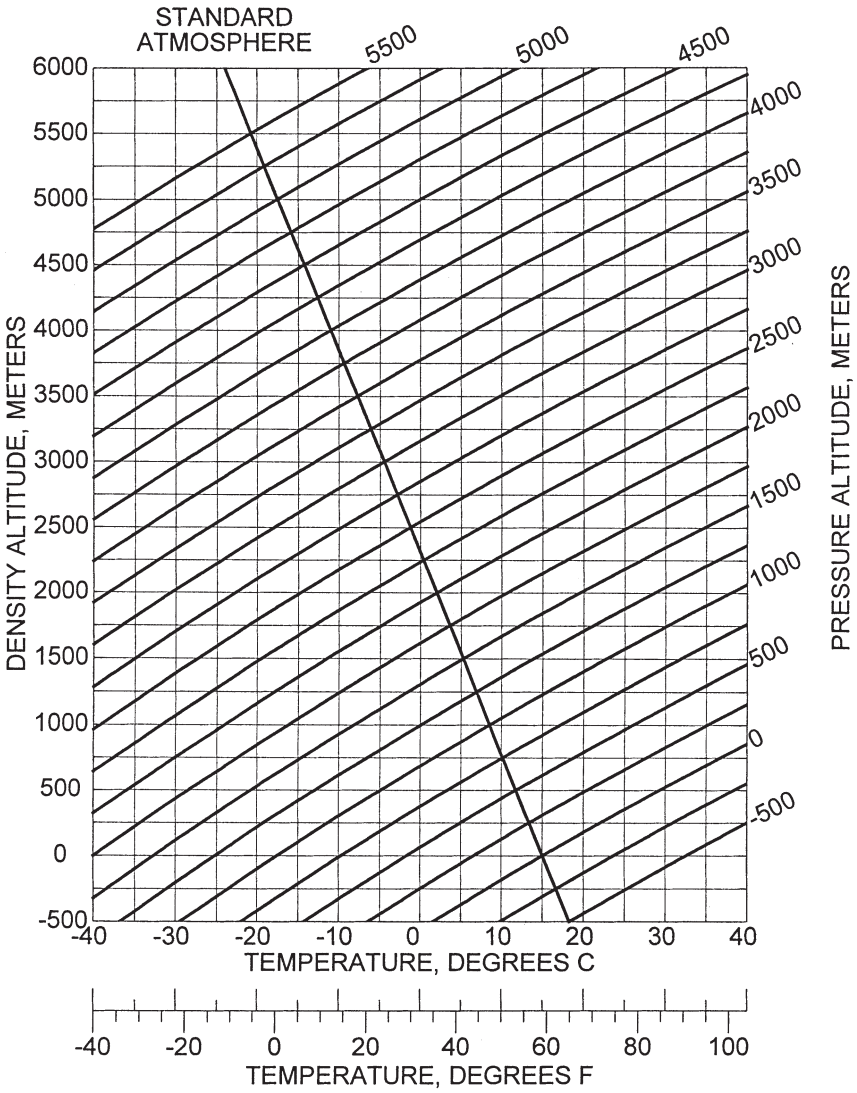
Hover controllability has been substantiated in 31 km/h (17 knot) wind from any direction up to 2990 meters (9800 ft) density altitude. Refer to IGE hover performance data for allowable gross weight.

NOTE: INDICATED AIRSPEED ASSUMES ZERO INSTRUMENT ERROR AND PITOT HEAT INSTALLED



AIRSPEED CALIBRATION CURVE

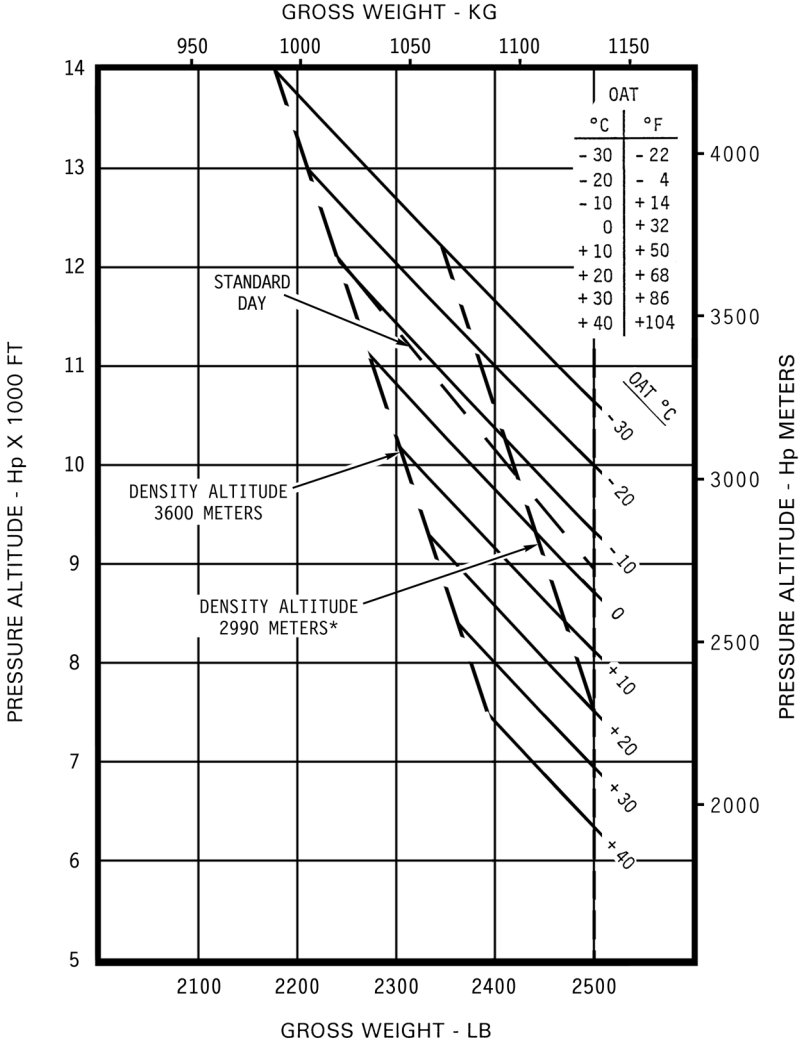
SECTION 5: PERFORMANCE (cont'd)



DENSITY ALTITUDE CHART

SECTION 5: PERFORMANCE (cont'd)

IN GROUND EFFECT AT 0.6 METER SKID HEIGHT
FULL THROTTLE
101 – 102% RPM
ZERO WIND

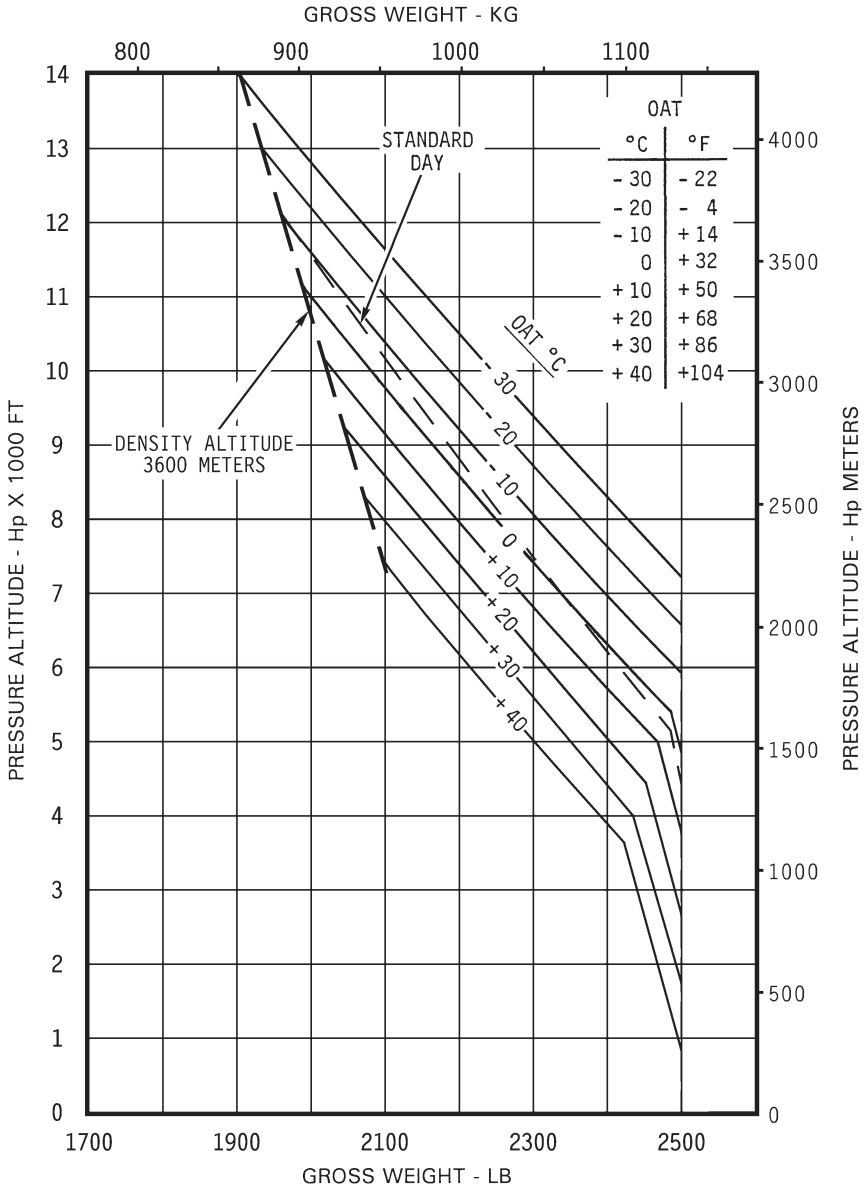


IGE HOVER CEILING VS. GROSS WEIGHT

*Hover controllability with 31 km/h (17 knot) wind substantiated up to 2990 meters (9800 feet) density altitude.

SECTION 5: PERFORMANCE (cont'd)

OUT OF GROUND EFFECT, ZERO WIND
TAKEOFF POWER OR FULL THROTTLE
101 – 102% RPM

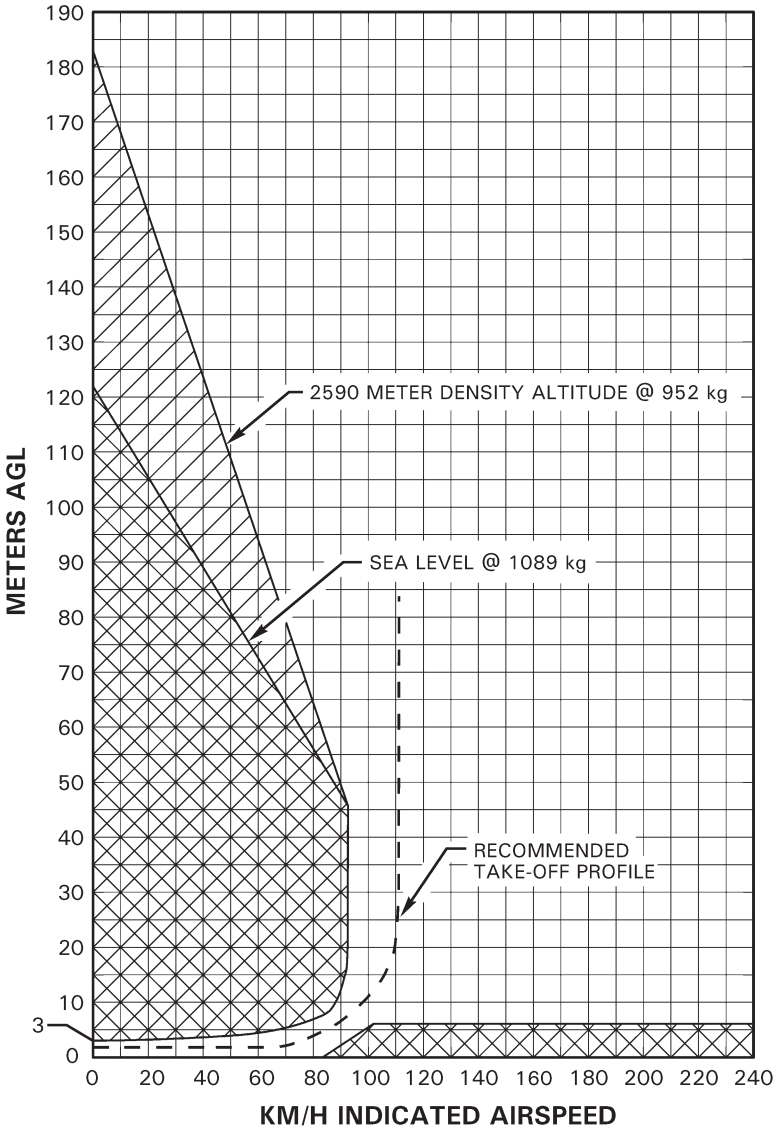


OGE HOVER CEILING VS. GROSS WEIGHT

SECTION 5: PERFORMANCE (cont'd)

DEMONSTRATED CONDITIONS:
SMOOTH HARD SURFACE
WIND CALM
GOVERNOR ON

AVOID OPERATION IN SHADED AREAS

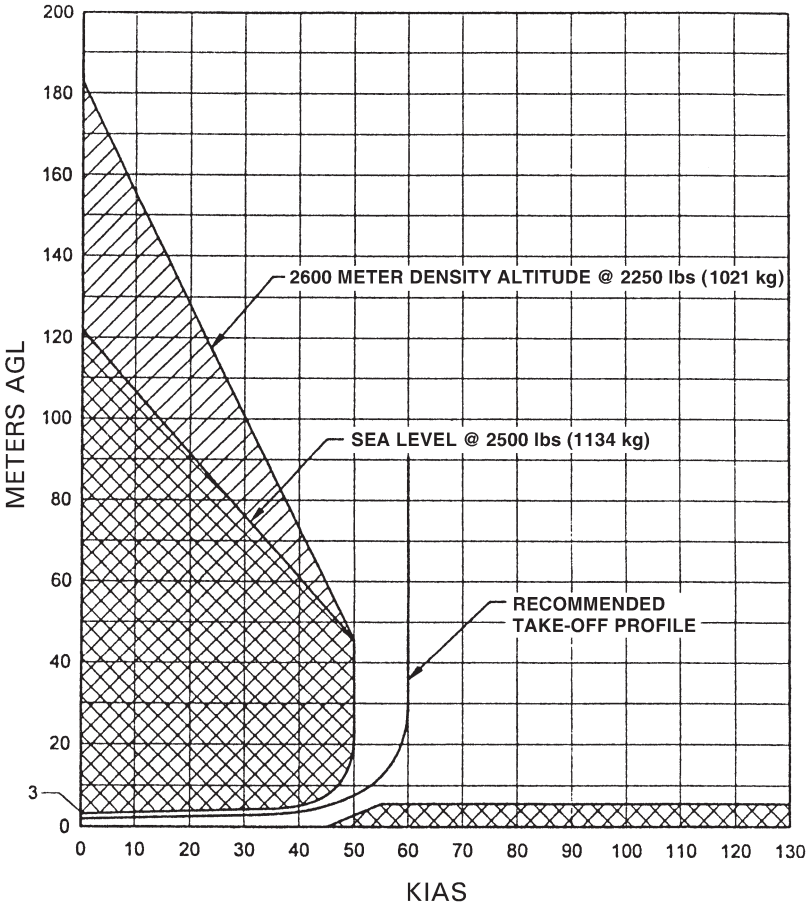


HEIGHT – VELOCITY DIAGRAM (METRIC)

SECTION 5: PERFORMANCE (cont'd)

DEMONSTRATED CONDITIONS:
SMOOTH HARD SURFACE
WIND CALM
GOVERNOR ON

AVOID OPERATION IN SHADED AREAS



HEIGHT – VELOCITY DIAGRAM (OBSOLETE)

SECTION 5: PERFORMANCE (cont'd)

NOISE CHARACTERISTICS

For operating conditions specified in ICAO Annex 16, Chapter 11 and Aviation Rules IAC AR, Part 36 (AP-36) Subpart J the sound exposure level for the R44 II is 80,9 dB(A).

NOTE

No determination has been made by the Certifying Authority that the noise levels of this aircraft are or should be acceptable or unacceptable for operation at, into, or out of any airport.

SECTION 6: WEIGHT AND BALANCE No change.

SECTION 7: SYSTEMS DESCRIPTION

EMERGENCY LOCATOR TRANSMITTER

Aircraft operated in difficult to reach and sparsely populated areas or on long flights over water must be equipped with a VHF-band emergency radio or a portable COSPAS-SARSAT VHF/UHF-band emergency locator transmitter stowed under the pilot's seat. The operator is responsible for providing this equipment.

FIRST-AID KIT

A first-aid kit provided by the operator is required equipment for IAC AR-certified aircraft. For all but Police versions, the first-aid kit is stowed in a compartment mounted at the base of the forward-left seat. For Police versions, the first-aid kit is stowed in the aft-right baggage compartment.

FLIGHT CONTROLS

Collective operation is conventional. The engine throttle is correlated to collective inputs through a mechanical linkage. When the collective is raised, the throttle is opened and when the collective is lowered, the throttle is closed. The collective stick also incorporates a twist grip throttle control which is described in the Engine Controls section.

CAUTION

Above 1800 meters (6000 feet), throttle-collective correlation and governor are less effective. Therefore, power changes should be slow and smooth.

CAUTION

At high power settings above 1800 meters (6000 feet), the throttle is frequently wide open and RPM must be controlled with the collective.

SECTION 8: HANDLING AND MAINTENANCE No change.

SECTION 9: SUPPLEMENTS

FIXED FLOATS SUPPLEMENT

SECTION 1: GENERAL

This section contains information relevant to IAC AR-certified helicopters when equipped with optional fixed float landing gear.

Information provided here is for the purpose of providing altitude data in meters, airspeeds in km/h, and IAC AR-specific limitations. The information is otherwise unchanged from that of the basic supplement. See Fixed Floats Supplement of the R44 II Pilot's Operating Handbook for complete information on this installation.

SECTION 2: LIMITATIONS

AIRSPEED LIMITATIONS

NEVER-EXCEED AIRSPEED (V_{ne}) WITH FLOATS

Up to 900 meters (3000 feet) density altitude:

998 kg TOGW & below	222 km/h (120 KIAS)
Over 998 kg TOGW	204 km/h (110 KIAS)
Autorotation	185 km/h (100 KIAS)

Above 900 meters (3000 feet) density altitude, see placards on pages 9-F3.31 and 9-F3.32.

FLIGHT AND MANEUVER LIMITATIONS

Operation on water with wave heights greater than 0.3 meters (one foot) is prohibited.

SECTION 9: SUPPLEMENTS (cont'd)

FIXED FLOATS SUPPLEMENT (cont'd)

SECTION 2: LIMITATIONS (cont'd)

PLACARDS

In clear view and readable by pilot in flight on helicopters equipped with a metric altimeter and airspeed indicator (metric configuration):

NEVER EXCEED SPEED - KM/H
WITH FLOATS

998 KG TOGW & BELOW								
PRESS ALT-M	OAT-°C							
	-30	-20	-10	0	10	20	30	40
SL	222							
500							218	211
1000					219	212	205	198
1500				214	206	199	192	184
2000		217	209	201	193	185	176	167
2500	212	204	195	187	177	168	159	151
3000	199	190	180	170	161	152	143	
3500	184	173	163	153	144	NO FLIGHT		
4000	167	156	146	NO FLIGHT				
OVER 998 KG TOGW, SUBTRACT 18 KM/H FOR AUTOROTATION, SUBTRACT 37 KM/H								

NEVER EXCEED SPEED - KM/H
WITHOUT FLOATS

998 KG TOGW & BELOW								
PRESS ALT-M	OAT-°C							
	-30	-20	-10	0	10	20	30	40
SL	241							
500							236	229
1000					238	230	223	216
1500			240	232	225	217	210	202
2000		235	227	219	212	203	194	186
2500	231	222	214	205	196	187	178	169
3000	217	209	199	189	179	170	161	
3500	203	192	182	172	162	NO FLIGHT		
4000	185	175	165	NO FLIGHT				
OVER 998 KG TOGW, SUBTRACT 18 KM/H FOR AUTOROTATION, SUBTRACT 56 KM/H								

SECTION 9: SUPPLEMENTS (cont'd)

FIXED FLOATS SUPPLEMENT (cont'd)

SECTION 2: LIMITATIONS (cont'd)

PLACARDS (cont'd)

In clear view and readable by pilot in flight on helicopters equipped with a metric altimeter only (obsolete configuration):

NEVER EXCEED SPEED - KIAS
WITH FLOATS

2200 LB TOGW & BELOW								
PRESS	OAT - °C							
ALT-M	-30	-20	-10	0	10	20	30	40
SL	120						118	114
500								
1000					119	115	111	107
1500				116	111	107	104	99
2000		117	113	109	105	100	95	90
2500	115	110	106	101	96	91	86	81
3000	107	103	97	92	86	81	76	
3500	99	93	88	83	78	NO FLIGHT		
4000	90	84	79	NO FLIGHT				
OVER 2200 LB TOGW, SUBTRACT 10 KIAS FOR AUTOROTATION, SUBTRACT 20 KIAS								

NEVER EXCEED SPEED - KIAS
WITHOUT FLOATS

2200 LB TOGW & BELOW								
PRESS	OAT - °C							
ALT-M	-30	-20	-10	0	10	20	30	40
SL	130						128	124
500								
1000					129	125	121	117
1500				126	121	117	114	109
2000		127	123	119	115	110	105	100
2500	125	120	116	111	106	101	96	91
3000	117	113	107	102	96	91	86	
3500	109	103	98	93	88	NO FLIGHT		
4000	100	94	89	NO FLIGHT				
OVER 2200 LB TOGW, SUBTRACT 10 KIAS FOR AUTOROTATION, SUBTRACT 30 KIAS								

SECTION 9: SUPPLEMENTS (cont'd)

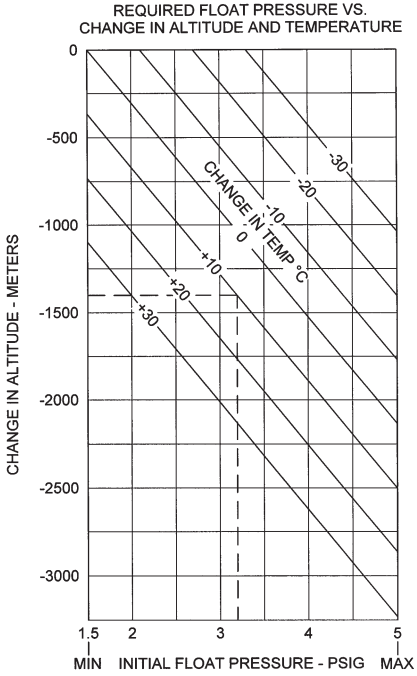
FIXED FLOATS SUPPLEMENT (cont'd)

SECTION 2: LIMITATIONS (cont'd)

FLOAT PRESSURE LIMITS

Minimum Float Pressure: 1.5 psig (psi gage)
Maximum Float Pressure: 5 psig

A decrease in altitude or temperature reduces float pressure. If decrease in altitude or temperature is anticipated, inflate floats per chart below to ensure 1.5 psig minimum at landing. Pressure relief valves will limit pressure for an increase in altitude or temperature.



CAUTION

Failure to maintain required pressure can result in inadequate buoyancy or in-flight instability.

SAMPLE CALCULATION:

	Pressure Altitude	Temp
Conditions at destination:	300 m	15°C
Initial conditions:	1700 m	5°C
Subtract to obtain expected change in altitude and temp:	-1400 m	+ 10°C

Using graph, locate -1400 m line, read across to +10°C line, then down for minimum initial float pressure required, approximately 3.2 psig.

SECTION 9: SUPPLEMENTS (cont'd)

FIXED FLOATS SUPPLEMENT (cont'd)

SECTION 3: EMERGENCY PROCEDURES

POWER FAILURE ABOVE 150 METERS (500 FEET) AGL

Autorotation to Land: Same as in basic manual.

Autorotation to Water:

1. Lower collective immediately to maintain RPM.
2. Establish steady glide at approximately 130 km/h (70 KIAS).
3. If altitude permits, maneuver into wind.
4. At about 12 meters (40 feet) AGL, begin cyclic flare.
5. At about 2.4 meters (8 feet) AGL, apply forward cyclic and raise collective just before touchdown. Touch down in slight nose high attitude with nose straight ahead.
6. Maintain cyclic in touchdown position and do not lower collective full down until forward motion has stopped.

CAUTION

Lowering collective or applying forward cyclic while helicopter is moving forward on water can cause floats to submerge and helicopter to nose over.

SECTION 9: SUPPLEMENTS (cont'd)

FIXED FLOATS SUPPLEMENT (cont'd)

SECTION 3: EMERGENCY PROCEDURES (cont'd)

POWER FAILURE BETWEEN 2.4 METERS (8 FEET) AND 150 METERS (500 FEET) AGL

Autorotation to Land: Same as in basic manual.

Autorotation to Water:

1. Lower collective immediately to maintain RPM.
2. If altitude permits, maneuver into wind.
3. Maintain airspeed until water is approached, then begin cyclic flare.
4. At about 2.4 meters (8 feet) AGL, apply forward cyclic and raise collective just before touchdown to cushion landing. Touch down in slight nose high attitude with nose straight ahead.
5. Maintain cyclic in touchdown position and do not lower collective full down until forward motion has stopped.

CAUTION

Lowering collective or applying forward cyclic while helicopter is moving forward on water can cause floats to submerge and helicopter to nose over.

MAXIMUM GLIDE DISTANCE CONFIGURATION

Same as without floats, except airspeed is approximately 148 km/h (80 KIAS).

SECTION 9: SUPPLEMENTS (cont'd)

POP-OUT FLOATS SUPPLEMENT

SECTION 1: GENERAL

This section contains information relevant to IAC AR-certified helicopters when equipped with optional pop-out float landing gear.

Information provided here is for the purpose of providing altitude data in meters, airspeeds in km/h, and IAC AR-specific limitations. The information is otherwise unchanged from that of the basic supplement. See Pop-Out Floats Supplement of the R44 II Pilot's Operating Handbook for complete information on this installation.

SECTION 2: LIMITATIONS

AIRSPEED LIMITATIONS

185 km/h (100 KIAS) maximum at power above MCP.
With floats stowed, 185 km/h (100 KIAS) maximum with any combination of cabin doors removed.
148 km/h (80 KIAS) maximum for float inflation.
148 km/h (80 KIAS) with floats inflated.
213 km/h (115 KIAS) maximum with float system armed (safety catch in READY position).

FLIGHT AND MANEUVER LIMITATIONS

Maximum altitude decrease with floats inflated is 1200 meters (4000 feet).

Inflation above 1200 meters (4000 ft) AGL is prohibited.

CAUTION

Altitude loss greater than 1200 meters (4000 ft) may cause floats to lose shape and rigidity due to atmospheric pressure increase.

Operation on water with wave height greater than 0.3 meters (one foot) is prohibited.

SECTION 9: SUPPLEMENTS (cont'd)

POP-OUT FLOATS SUPPLEMENT (cont'd)

SECTION 2: LIMITATIONS (cont'd)

PLACARDS

Located in clear view of the pilot on helicopters with airspeed in km/h:

V_{NE} WITH FLOATS INFLATED: 148 km/h

SECTION 3: EMERGENCY PROCEDURES

POWER FAILURE ABOVE 150 METERS (500 FEET) AGL

Autorotation to Water:

1. Lower collective immediately to maintain rotor RPM.
2. Reduce airspeed to below 148 km/h (80 KIAS).
3. Adjust collective to keep RPM between 97 and 108% or apply full down collective if light weight prevents attaining above 97%
4. If altitude permits, maneuver into wind.
5. Inflate floats.

CAUTION

Do not inflate floats above 148 km/h (80 KIAS). Do not exceed 148 km/h (80 KIAS) with floats inflated.

6. At about 12 meters (40 feet) AGL, begin cyclic flare.
7. At about 2.4 meters (8 feet) AGL, apply forward cyclic and raise collective just before touchdown. Touch down in slight nose high attitude with nose straight ahead.
8. Maintain cyclic in touchdown position and do not lower collective full down until forward motion has stopped.

SECTION 9: SUPPLEMENTS (cont'd)

POP-OUT FLOATS SUPPLEMENT (cont'd)

SECTION 3: EMERGENCY PROCEDURES (cont'd)

POWER FAILURE BETWEEN 2.4 METERS (8 FEET) AND 150 METERS (500 FEET) AGL

Autorotation to Water:

1. Lower collective immediately to maintain rotor RPM.
2. Reduce airspeed to below 148 km/h (80 KIAS).
3. Adjust collective to keep RPM between 97 and 108% or apply full down collective if light weight prevents attaining above 97%.
4. If altitude permits, maneuver into wind.
5. Inflate floats.

CAUTION

Do not inflate floats above 148 km/h (80 KIAS). Do not exceed 148 km/h (80 KIAS) with floats inflated.

CAUTION

Float inflation may take up to three seconds. Squeeze lever early enough to allow full inflation before water contact.

6. Maintain airspeed until water is approached, then begin cyclic flare.
7. At about 2.4 meters (8 feet) AGL, apply forward cyclic, and raise collective just before touchdown. Touch down in slight nose high attitude with nose straight ahead.
8. Maintain cyclic in touchdown position and do not lower collective full down until forward motion has stopped.

SECTION 9: SUPPLEMENTS (cont'd)

POP-OUT FLOATS SUPPLEMENT (cont'd)

SECTION 3: EMERGENCY PROCEDURES (cont'd)

POWER FAILURE BELOW 2.4 METERS (8 FEET)

Over land: Same as in basic manual.
Over Water:

1. Apply right pedal as required to prevent yawing.
2. Inflate Floats.
3. Allow rotorcraft to settle.
4. Raise collective just before touchdown.

MAXIMUM GLIDE DISTANCE CONFIGURATION

Same as in basic manual, except airspeed 148 km/h (80 KIAS) with floats inflated.

EMERGENCY WATER LANDING – POWER ON

1. Reduce airspeed to below 148 km/h (80 KIAS).
2. Inflate floats.

CAUTION

Do not inflate floats above 148 km/h (80 KIAS). Do not exceed 148 km/h (80 KIAS) with floats inflated.

3. Make normal approach and landing to water.

SECTION 4: NORMAL PROCEDURES

FLOAT INFLATION

CAUTION

Observe 213 km/h (115 KIAS) speed limitation when safety catch is in READY position.

SECTION 9: SUPPLEMENTS (cont'd)

POP-OUT FLOATS SUPPLEMENT (cont'd)

SECTION 4: NORMAL PROCEDURES (cont'd)

OPERATION ON WATER

Safe operation on water has been demonstrated in waves up to 0.3 m (1 foot) (trough to crest). Maximum recommended water taxi speed is 9 km/h (5 knots). Some application of collective is required.

Since the helicopter sits very low on water, it is likely that water will leak into the cabin. Intentional water landings should be limited to training. For training, seal the removable belly panels and landing gear cross tube cover using aluminum foil tape or duct tape. Avoid salt water if possible.

There may be limited tail rotor clearance to water, particularly at aft CG. Also, even small waves may cause enough rocking to dip the tail rotor in the water. If tail rotor contact with water is suspected, have tail rotor inspected prior to further flight. (If no noticeable change in vibration occurs after suspected water contact, helicopter may be repositioned to nearest convenient inspection site.)

CAUTION

Except for actual emergencies, maximum weight for water operation is 1091 kg (2400 lb).

CAUTION

If starting or stopping rotor on water, ensure area is clear as helicopter can rotate one or more complete turns while tail rotor RPM is low.

SECTION 9: SUPPLEMENTS (cont'd)

AUTOPILOT SUPPLEMENT

SECTION 2: LIMITATIONS

FLIGHT AND MANEUVER LIMITATIONS

Minimum altitude for use of autopilot ALT mode is 100 meters (300 feet) AGL for practice instrument approaches.

Minimum altitude for use of autopilot VRT mode is 60 meters (200 feet) AGL but no less than published minimum for the aerodrome.

Use of autopilot with NAV and/or VRT modes engaged is prohibited when:

- Component of crosswind exceeds 31 km/h (17 knots).
- Glideslope angle exceeds 5°.

NOTE

Use of backcourse mode is only permitted when performed in accordance with a published backcourse procedure.

NOTE

If crosswind or glideslope angle limits are exceeded during autopilot approach pilot must revert to basic SAS mode and continue approach manually.

SECTION 9: SUPPLEMENTS (cont'd)

AUTOPILOT SUPPLEMENT (cont'd)

SECTION 3: EMERGENCY PROCEDURES

AUTOPILOT DISENGAGEMENT OR FAILURE

NOTE

The system automatically switches off all modes except SAS mode at airspeeds below 81 km/h (44 KIAS) or above 241 km/h (130 KIAS), accompanied by a single beep. This is by design and not a system failure.