

CHAPTER 17

Ejection

17.1 EJECTION

The ejection seat must be used to escape from the aircraft in flight. If the canopy fails to jettison, the seat will eject through the canopy. Analysis of ejections shows:

1. Optimum speed for ejection is 250 knots and below.
2. Between 250 and 600 knots, appreciable forces are exerted on the body, making ejection more hazardous.
3. Above 600 knots, excessive forces are exerted on the body making ejection extremely hazardous.

When possible, slow the aircraft before ejection to reduce the forces on the body.

Never actuate the manual override handle before ejection. When the handle is actuated, the arm/safe handle is rotated to the safe position, the pilot is released from the seat, and the harness cannot be reconnected. Ejection is impossible and there is no restraint during a forced landing.

Whenever possible, ejection airspeed should be limited to a maximum of 400 KCAS when flying with the JHMCS helmet system.

WARNING

The JHMCS configuration can contribute to increased neck loads during ejection, particularly at moderate to high speeds. Generally, neck loads increase as ejection airspeeds increase and may cause severe or fatal injury. Aircrews should eject at the lowest possible airspeed to minimize neck and injury loads.

NOTE

Aircrew will brief system peculiarities and potential injury from out of position and high speed ejections prior to each flight when using A/A24A-56 JHMCS lightweight HGU-55 A/P helmet.

WARNING

If the seat becomes unlocked from the catapult and slides partially up the rails or completely out of the cockpit, ejection and/or chute deployment is still possible but the ejection handle must be pulled, followed by activation of the manual override handle. Under these circumstances low altitude ejection capabilities are compromised.

During ejection seat development and testing, the following seats were qualified for the respective minimum and maximum nude weight ranges for aviators listed here: SJU-5/A, 6/A, and SJU-17(V) 1/A, 2/A, and 9/A seats - 136 lb to 213 lb. SJU-17A(V) 1/A, 2/A, and 9/A seats - 136 lb to 245 lb.

WARNING

- Operation of the ejection seat by personnel weighing less than the qualified minimum nude weight or more than the maximum qualified weight (noted above) subjects the occupant to increased risk of injury.
- Aircrew should be trained in additional ejection risks associated with JHMCS. Ejection with JHMCS may cause severe or fatal injury.

17.1.1 General Injury Risks.

1. Ejection seat stability is directly related to occupant restraint. All occupants should be properly restrained in the seat by their torso harness for optimum performance and minimum injury risk.
2. Inertia reel performance may be degraded for occupants outside of the qualified weight range. Lighter occupants may be injured during retraction, and both light and heavy occupants may experience poor ejection positions, resulting in an increased risk of injury during ejection.

WARNING

An increased risk of severe injury or death during Parachute Landing Fall (PLF) exists with surface winds exceeding 25 knots. High surface winds contribute directly to total landing velocity. When time permits, select parachute steering and turn into the wind to reduce landing velocity.

17.1.2 Injury Risks For Lighter Weight Crewmembers.

1. The ejection seat catapult was designed for the ejection seat qualified weight range.
2. For SJU-5/A and 6/A seats only:
 - a. Occupants weighing less than 136 pounds are subject to a higher risk of injury on the ejection seat catapult due to greater accelerations.
 - b. Occupants weighing less than 136 pounds are at risk of parachute entanglement at low speeds.
 - c. Occupants weighing less than 136 pounds are at greater risk of injury due to seat instability before main parachute deployment.

3. For SJU-17(V)1/A, 2/A, and 9/A seats only:
 - a. Occupants weighing less than 136 pounds are subject to a higher risk of injury on the ejection seat catapult due to greater accelerations.
 - b. Occupants weighing less than 136 pounds are at risk of injury during ejections near the upper end of mode 1 (approaching 300 knots) due to high parachute opening shock.
 - c. Occupants weighing less than 136 pounds are at greater risk of injury during ejections above 300 knots due to instability during drogue deployment.
4. For SJU-17A(V)1/A, 2/A, and 9/A seats only:
 - a. Occupants weighing less than 100 pounds are subject to a higher risk of injury on the ejection seat catapult due to greater accelerations.
 - b. Occupants weighing less than 136 pounds are at risk of injury during ejections near the upper end of mode 1 (approaching 300 knots) due to high parachute opening shock.
 - c. Occupants weighing less than 136 pounds are at greater risk of injury during ejections above 300 knots due to seat instability during drogue deployment.

WARNING

Lighter weight aircrew have greater risk of neck injury during ejection while using the JHMCS configuration. Minimum nude aircrew weights authorized to fly with the JHMCS helmet system is 136 pounds. Aircrew weighing less than the authorized minimum nude weight are restricted from flying with the JHMCS helmet system.

17.1.3 Injury Risks For Heavier Weight Crewmembers.

1. For SJU-5/A and 6/A and SJU-17(V)1/A, 2/A, and 9/A seats only:
 - a. Occupants weighing more than 213 pounds may not attain sufficient altitude for parachute full inflation in Zero-Zero cases or at extremely low altitudes and velocities.
 - b. Occupants weighing more than 213 pounds are at a greater risk of injury during parachute landing due to high descent rates.
 - c. Occupants weighing more than 213 pounds may not attain sufficient altitude to clear the aircraft tail structure.
2. For SJU-17A(V)1/A, 2/A, and 9/A seats only:
 - a. Occupants weighing more than 245 pounds may not attain sufficient altitude for parachute full inflation in Zero-Zero cases or at extremely low altitudes and velocities.
 - b. Occupants weighing more than 245 pounds are at a greater risk of injury during parachute landing due to high descent rates.
 - c. Occupants weighing more than 245 pounds may not attain sufficient altitude to clear the aircraft tail structure.

17.1.4 Low Altitude Ejection. Low altitude ejection decisions must be based on the minimum speed, minimum altitude and sink rate limitations of the ejection system. Figure 17-1 shows minimum ejection altitude for a given sink rate. Figure 17-2 shows minimum ejection altitude for a given airspeed, dive angle and bank angle. Ejection seat trajectory is improved if the aircraft is zoomed. The additional altitude increases time available for seat separation and parachute deployment. Do not delay ejection if the aircraft is nose down and cannot be leveled.

With wings level and no sink rate, ejection is feasible within the following parameters:

1. Ground level - zero airspeed

WARNING

Safe ejection with SJU-5/A and 6/A seats may not be possible in a zero-zero condition if there is a tailwind component on the aircraft.

2. Ground to 50,000 feet - 600 knots maximum.

Ejection at low altitude allows only a matter of seconds to prepare for landing. Over water, inflation of the LPU is the most important step to be accomplished. Release of the parachute quick-release fittings as the feet contact the water is the second most important step to prevent entanglement in the parachute shroud lines.

When ejection is in the immediate vicinity of the carrier, parachute entanglement combined with wake and associated turbulence can rapidly pull a survivor under. The deployed seat survival kit may contribute to shroud line entanglement. The survivor must be prepared to cut shroud lines that are dragging him down.

The crashed aircraft may release large quantities of jet fuel and fumes which could hamper breathing and create a fire hazard if smoke or flare marker is present. The emergency oxygen system may be invaluable in this case and discarding the survival kit would terminate its use. However, totally discarding the survival kit may be appropriate after considering weather, sea conditions, and rescue potential.

The variety and complexity of conditions encountered during the time critical actions following a low altitude overwater ejection make it impossible to formulate procedures to cover every contingency.

WARNING

Safe ejection with SJU-5/A and 6/A seats may not be possible in a zero-zero condition if there is a tailwind component on the aircraft.

17.1.5 High Altitude Ejection. The basic low altitude procedure is applicable to high altitude ejection. The zoom is useful to slow the aircraft to a safer ejection speed or to provide more time and glide distance if immediate ejection is not necessary. If the aircraft is descending out of control, eject by 6,000 feet AGL. Even if under control, do not delay ejection below 2,000 feet AGL. Head the aircraft toward an unpopulated area, if possible.

WARNING

Low altitude ejection may result in parachute canopy disintegration due to the aircraft impact fireball.

17.1.6 Ejection Procedures. See figure 17-3.

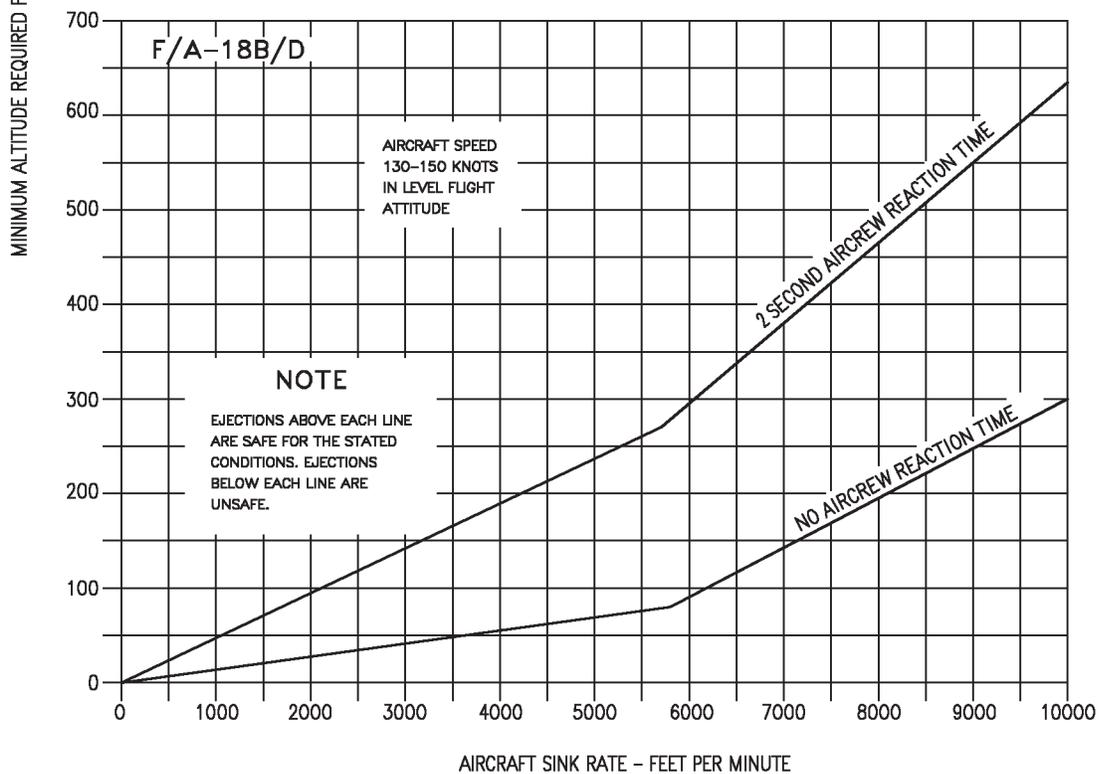
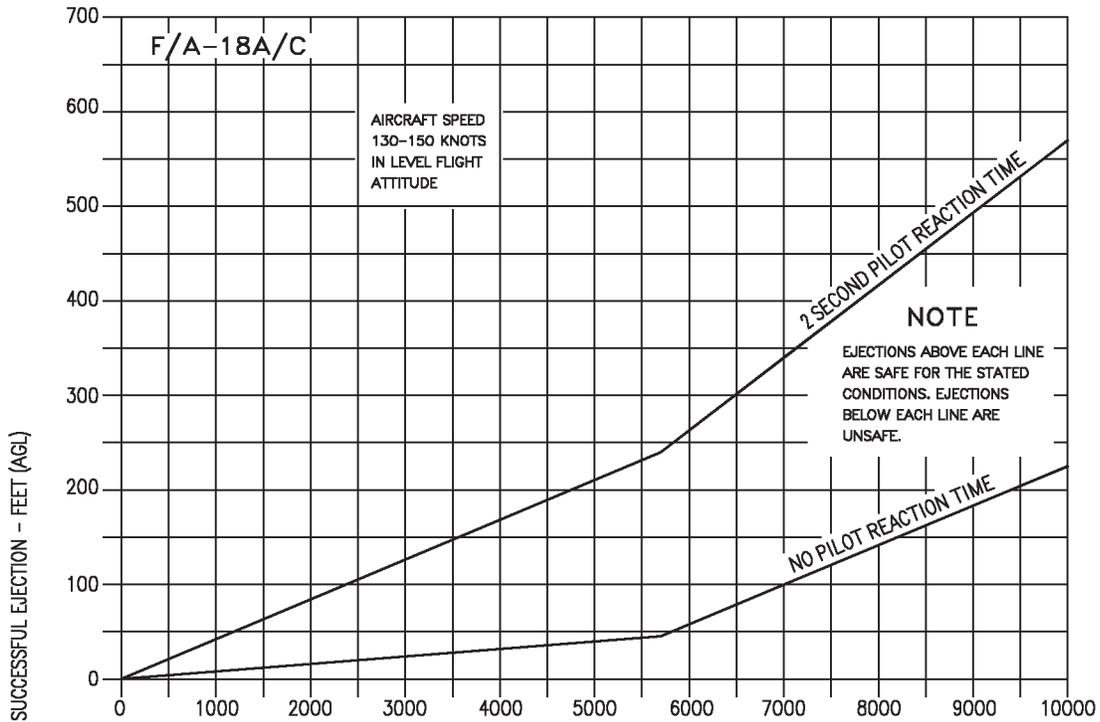
17.2 DITCHING

In the event ejection has failed and the aircraft must be ditched, see figure 17-4.

17.3 SEAWATER ENTRY

If downed in seawater, SEAWARS will release the parachute canopy within 2 seconds. However, if able, manually release both upper koch fittings immediately upon seawater entry. The SEAWARS does not operate in freshwater.

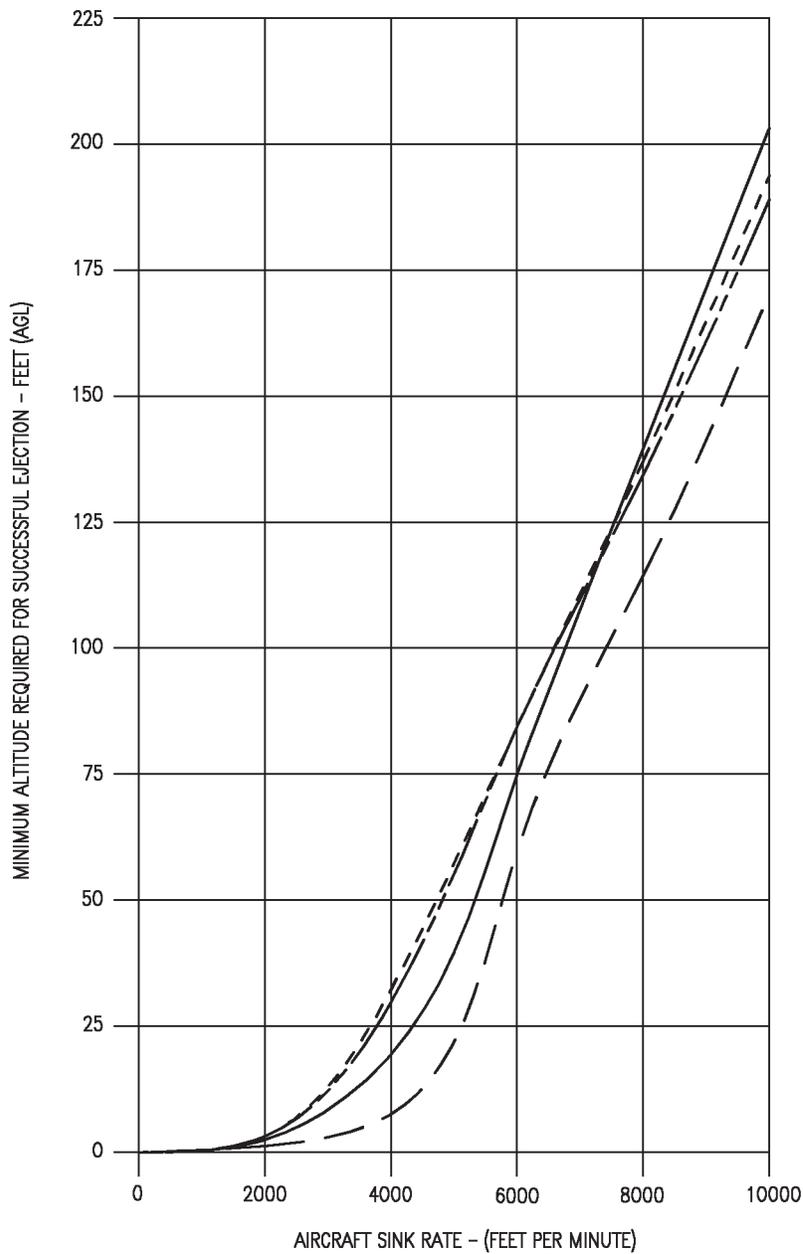
SJU-5/6



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Figure 17-1. Ejection Sink Rate Effect (Sheet 1 of 3)

SJU-17 (F/A-18C)



NOTES

- Minimum ejection heights are based on initiation of the escape system.
- Pilot reaction time is not included.
- Ejection altitude is below 5000 feet MSL.

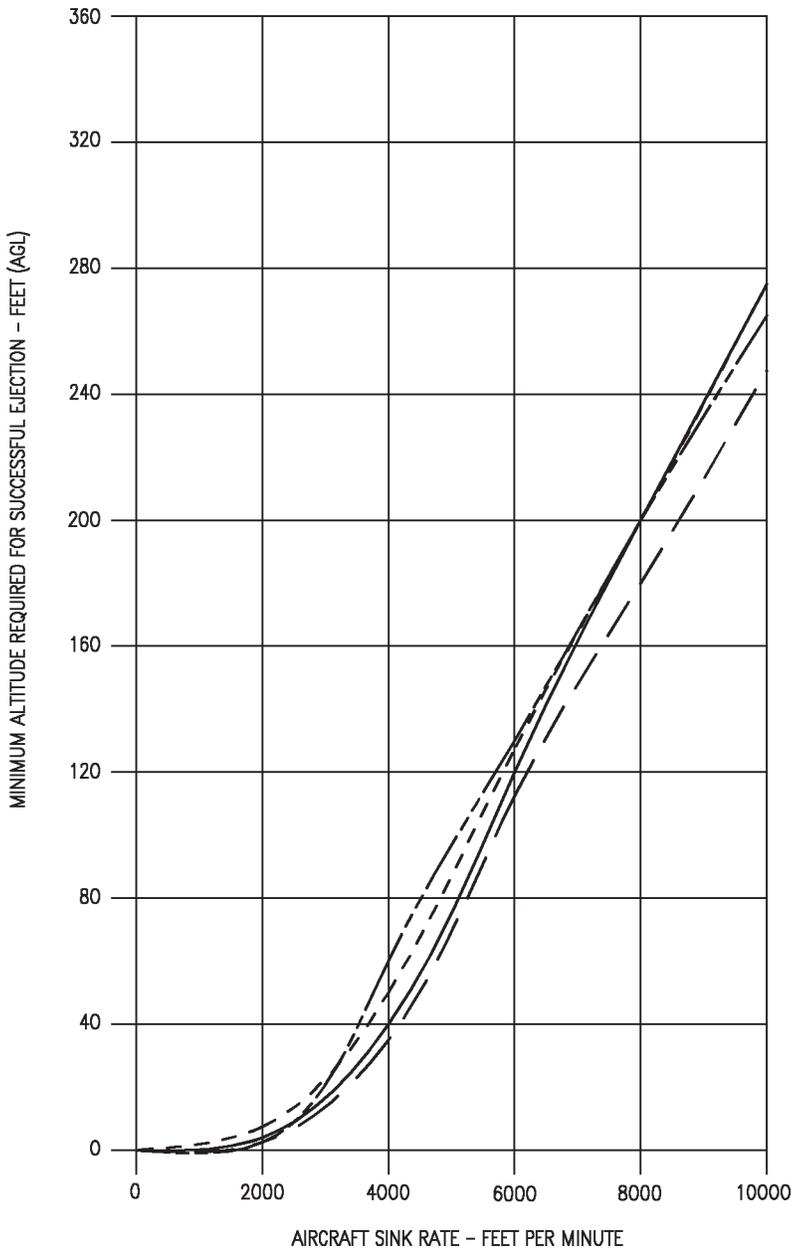
LEGEND

- 130 KNOTS
- - - 250 KNOTS
- - - - 400 KNOTS
- - - - - 600 KNOTS

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Figure 17-1. Ejection Sink Rate Effect (Sheet 2 of 3)

SJU-17 (F/A-18D)



NOTES

- Minimum ejection heights are based on initiation of the escape system, and the time required for a complete dual sequenced ejection is included.
- Pilot reaction time is not included.
- Ejection altitude is below 5000 feet MSL.

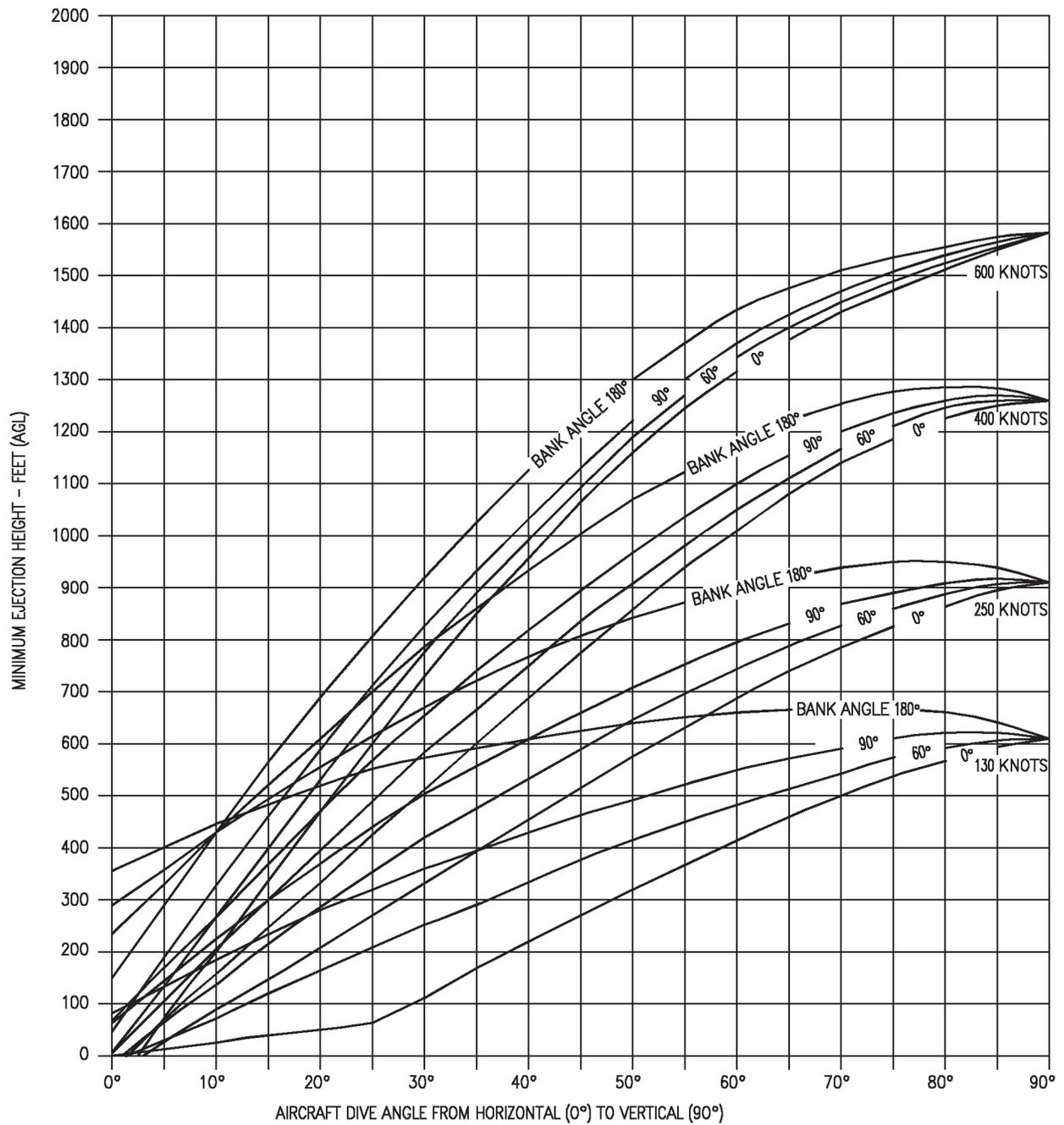
LEGEND

- 130 KNOTS
- - - - - 250 KNOTS
- · - · - 400 KNOTS
- · - - - 600 KNOTS

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Figure 17-1. Ejection Sink Rate Effect (Sheet 3 of 3)

SJU-5/6 AIRSPEED, DIVE ANGLE AND BANK EFFECTS (F/A -18A/C)



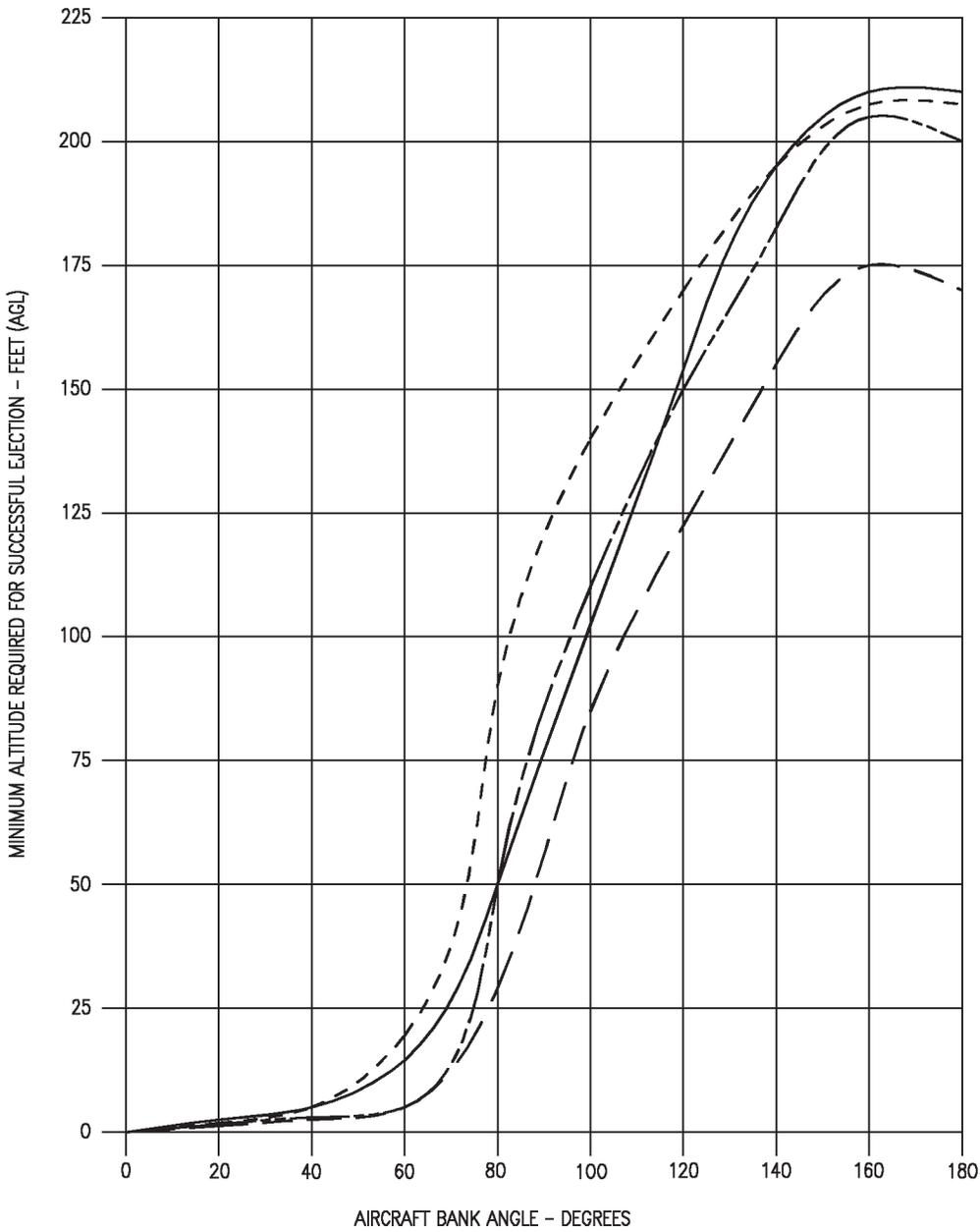
NOTES

- Minimum ejection heights are based on initiation of the escape system.
- Bank angle data is for coordinated flight. Yaw or slip will increase the height required for recovery.
- Pilot reaction time is not included.
- Ejection altitude is below 5000 feet MSL.

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Figure 17-2. Minimum Ejection Altitude (Sheet 1 of 6)

SJU-17 AIRSPEED AND BANK ANGLE EFFECTS (F/A-18C)



NOTES

- Minimum ejection heights are based on initiation of the escape system.
- Bank angle data is for coordinated flight. Yaw or slip will increase the height required for recovery.
- Pilot reaction time is not included.
- Ejection altitude is below 5000 feet MSL.

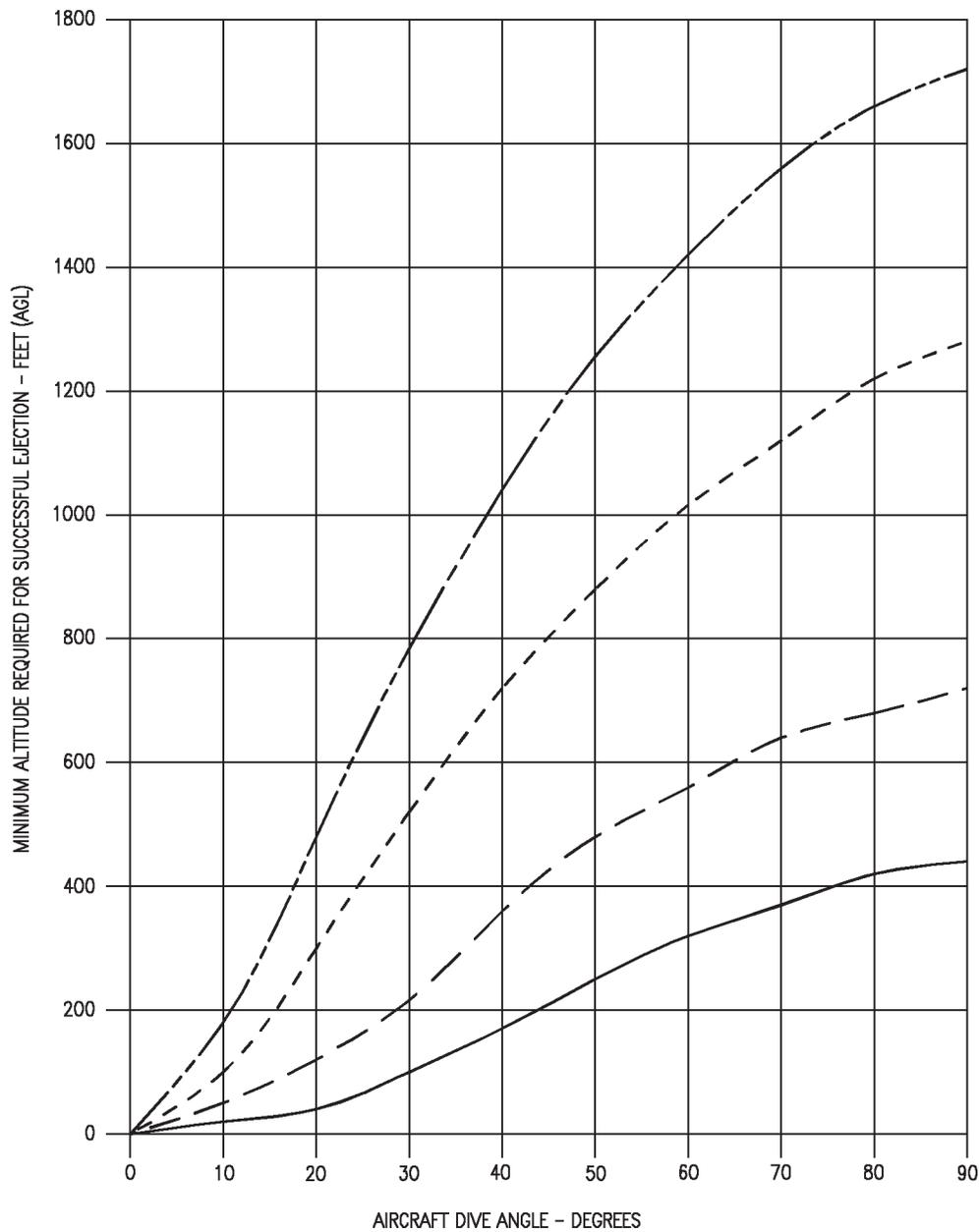
LEGEND

- 130 KNOTS
- - - - 250 KNOTS
- 400 KNOTS
- 600 KNOTS

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Figure 17-2. Minimum Ejection Altitude (Sheet 2 of 6)

SJU-17 AIRSPEED AND DIVE ANGLE EFFECTS (F/A-18C)



NOTES

- Minimum ejection heights are based on initiation of the escape system.
- Pilot reaction time is not included.
- Ejection altitude is below 5000 feet MSL.

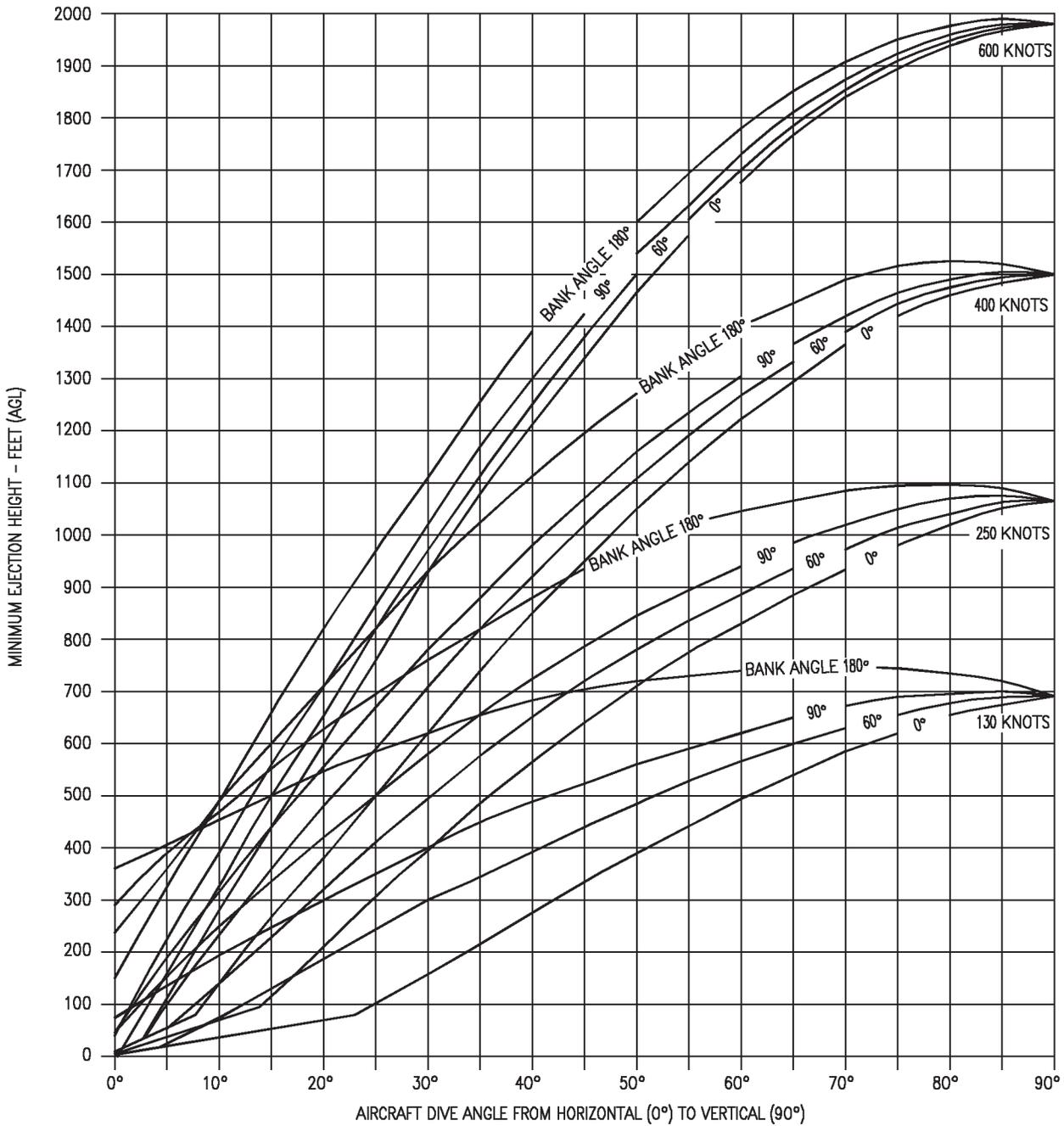
LEGEND

- 130 KNOTS
- 250 KNOTS
- - - - - 400 KNOTS
- 600 KNOTS

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Figure 17-2. Minimum Ejection Altitude (Sheet 3 of 6)

SJU-5/6 AIRSPEED, DIVE ANGLE AND BANK ANGLE EFFECTS (F/A-18B/D)



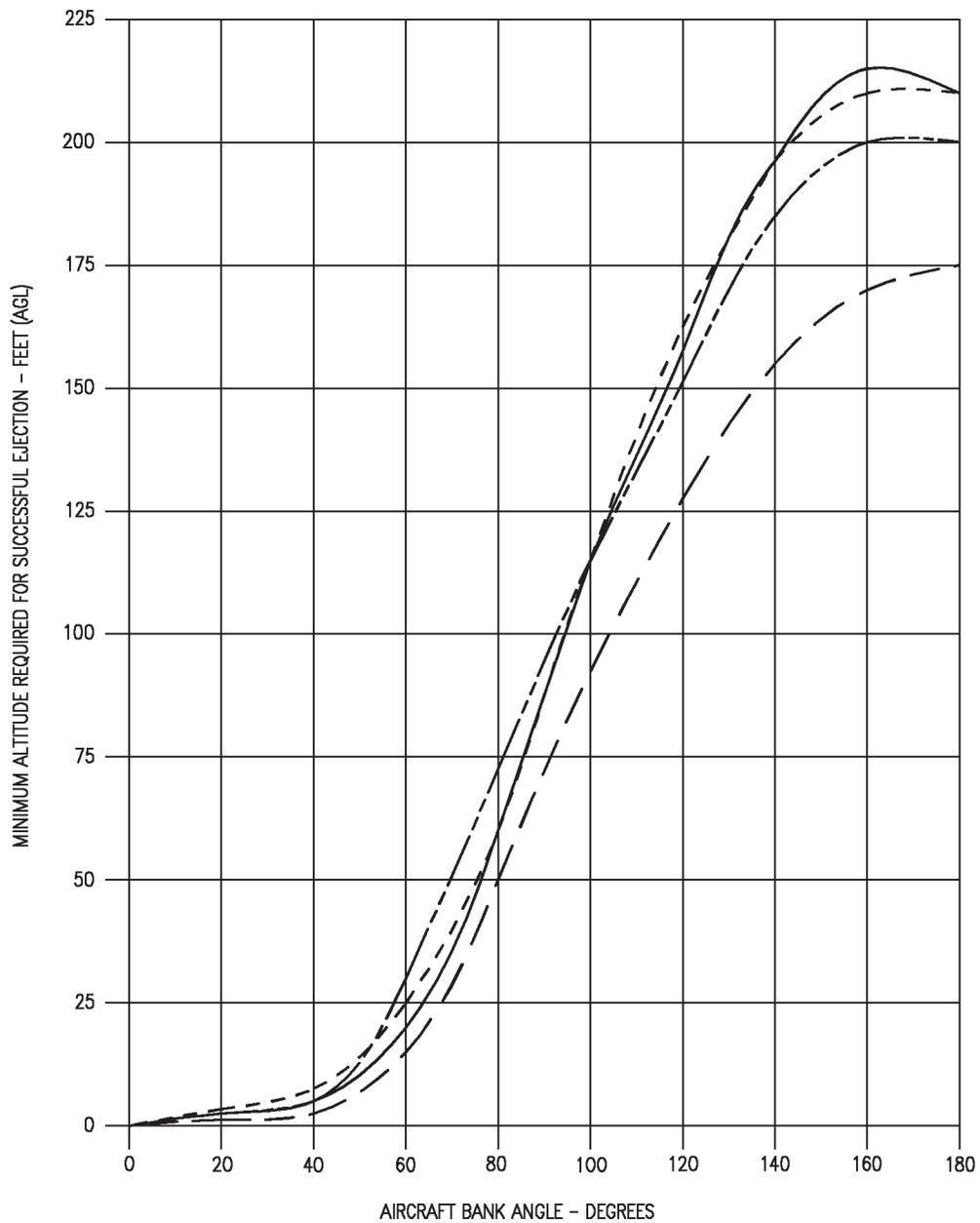
NOTES

- Minimum ejection heights are based on initiation of the escape system, and the time required for a complete dual sequenced ejection is included.
- Bank angle data is for coordinated flight. Yaw or slip will increase the height required for recovery.
- Aircrew reaction time is not included.
- Ejection altitude is below 5000 feet MSL.

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Figure 17-2. Minimum Ejection Altitude (Sheet 4 of 6)

SJU-17 AIRSPEED AND BANK ANGLE EFFECTS (F/A-18D)



NOTES

- Minimum ejection heights are based on initiation of the escape system, and the time required for a complete dual sequenced ejection is included.
- Bank angle data is for coordinated flight. Yaw or slip will increase the height required for recovery.
- Aircrew reaction time is not included.
- Ejection altitude is below 5000 feet MSL.

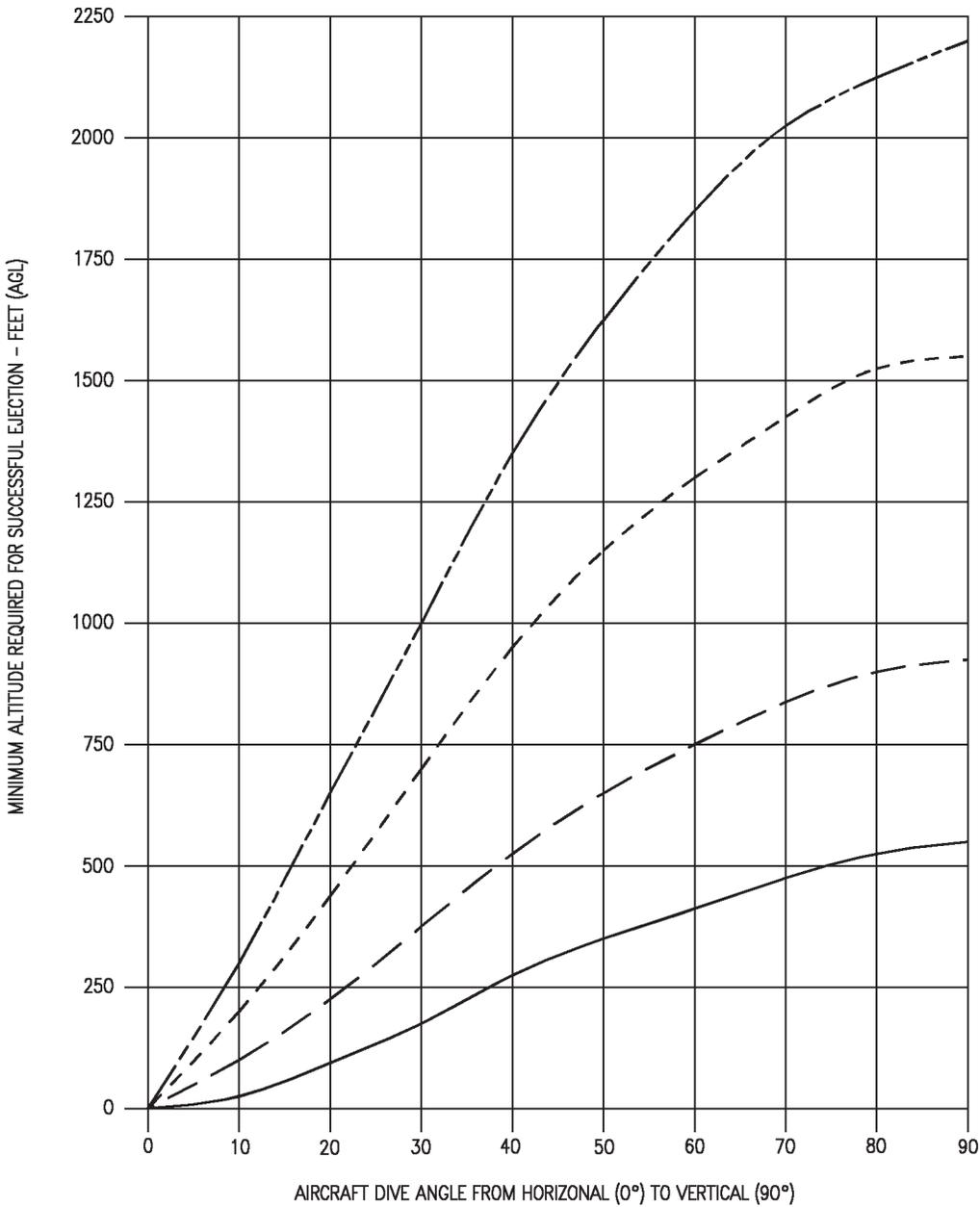
LEGEND

- 130 KNOTS
- - - 250 KNOTS
- - - - 400 KNOTS
- - - - - 600 KNOTS

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Figure 17-2. Minimum Ejection Altitude (Sheet 5 of 6)

SJU-17 AIRSPEED AND DIVE ANGLE EFFECTS (F/A-18D)



NOTES

- Minimum ejection heights are based on initiation of the escape system, and the time required for a complete dual sequenced ejection is included.
- Aircrew reaction time is not included.
- Ejection altitude is below 5000 feet MSL.

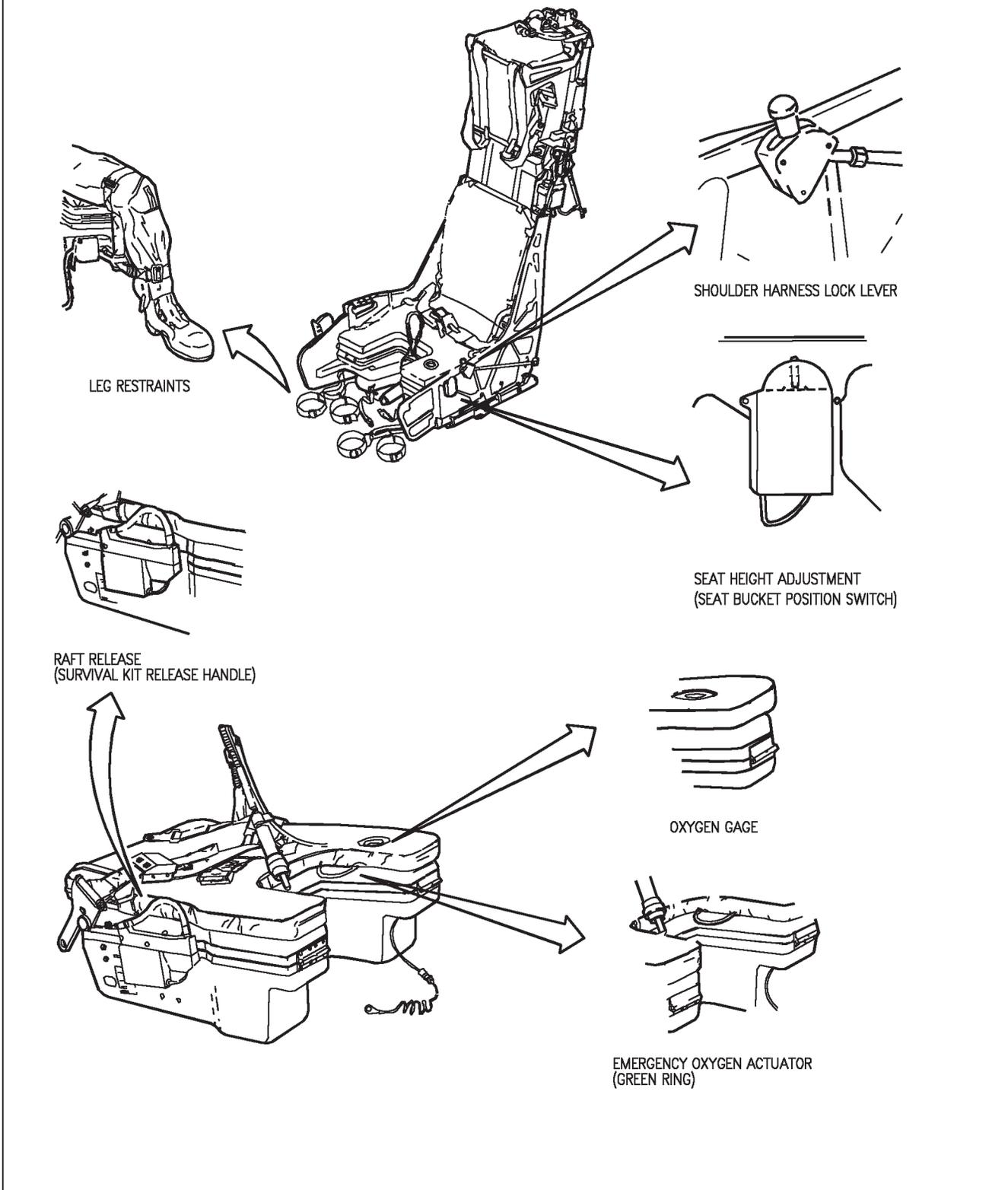
LEGEND

- 130 KNOTS
- - - - 250 KNOTS
- 400 KNOTS
- 600 KNOTS

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Figure 17-2. Minimum Ejection Altitude (Sheet 6 of 6)

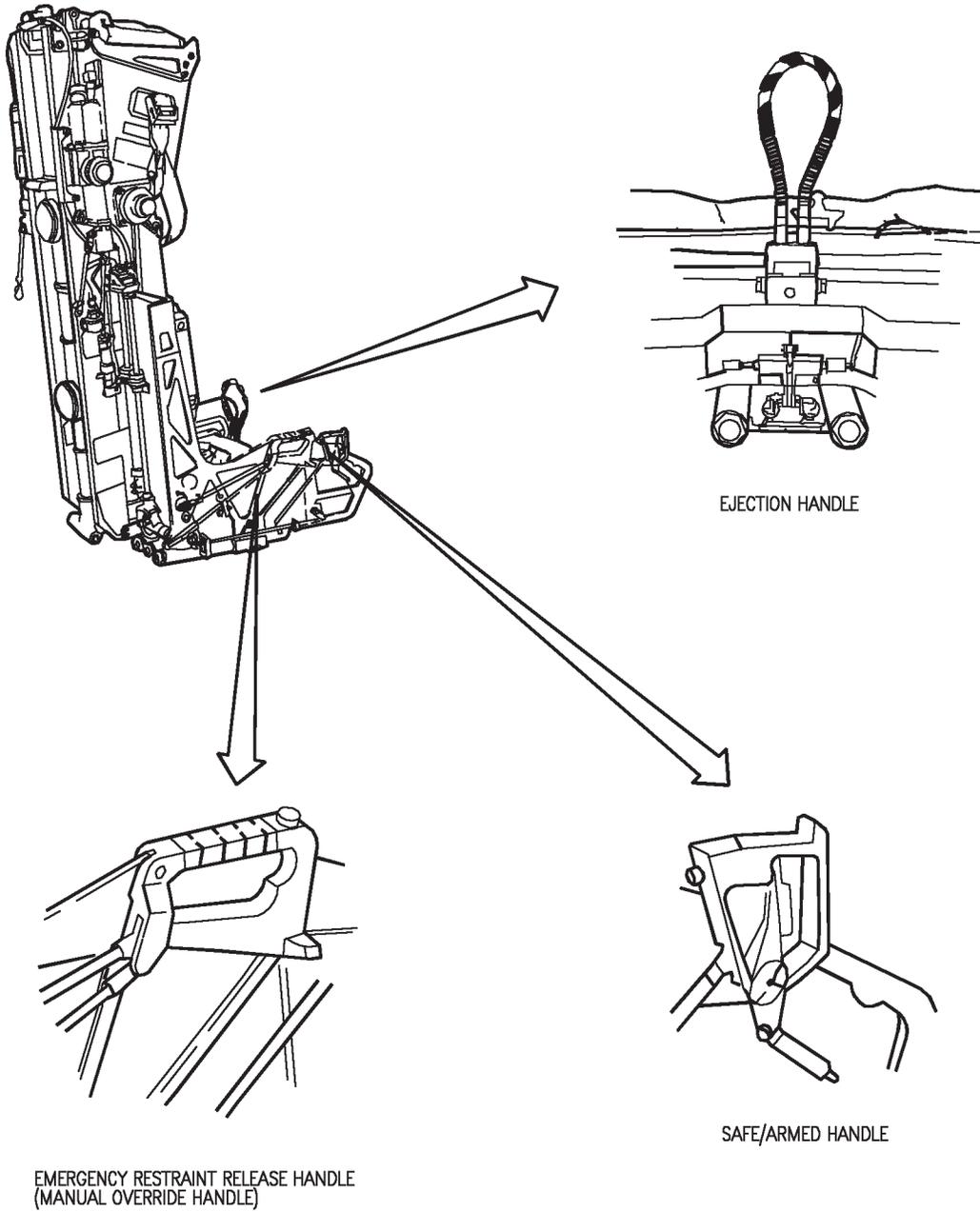
SJU-5/6 SEAT SYSTEMS



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Figure 17-3. Ejection Procedures (Sheet 1 of 24)

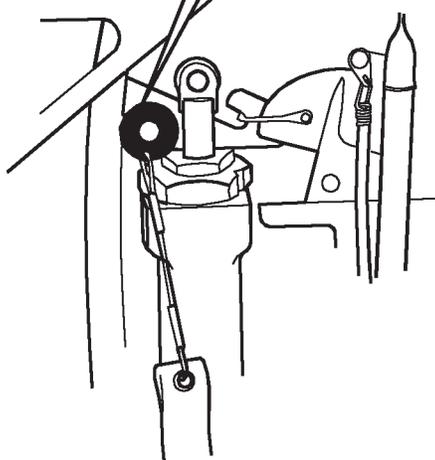
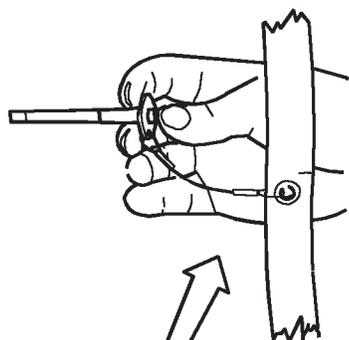
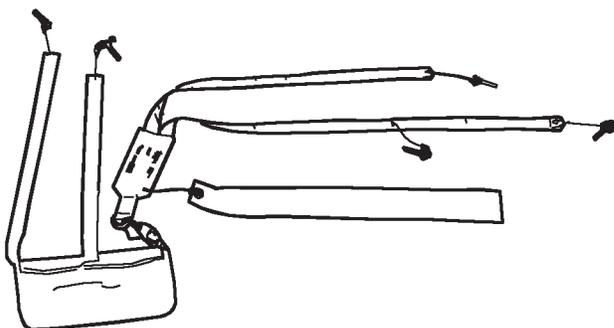
SJU-5/6 SEAT SYSTEMS (CONTINUED)



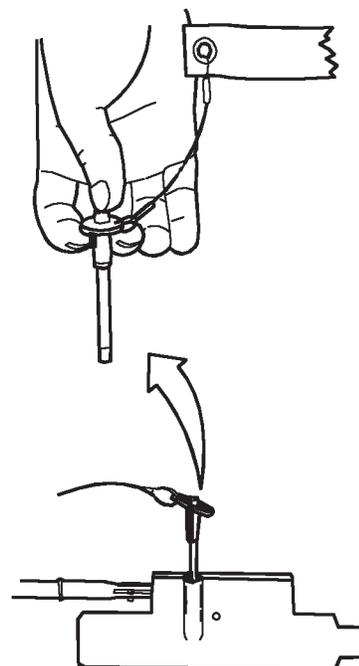
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Figure 17-3. Ejection Procedures (Sheet 2 of 24)

SJU-5/6 SEAT SYSTEMS (CONTINUED)
PINS REQUIRING REMOVAL
PRIOR TO FLIGHT:



ROCKET MOTOR INITIATOR SAFETY PIN



DROGUE GUN SAFETY PIN

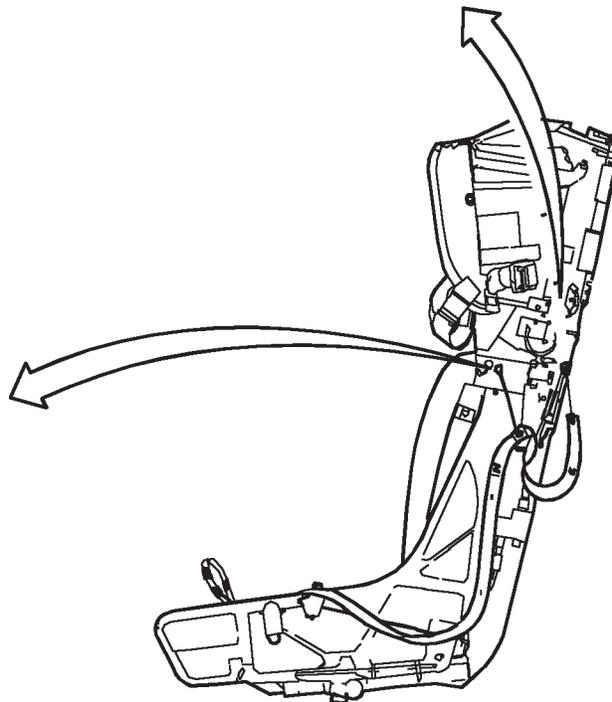
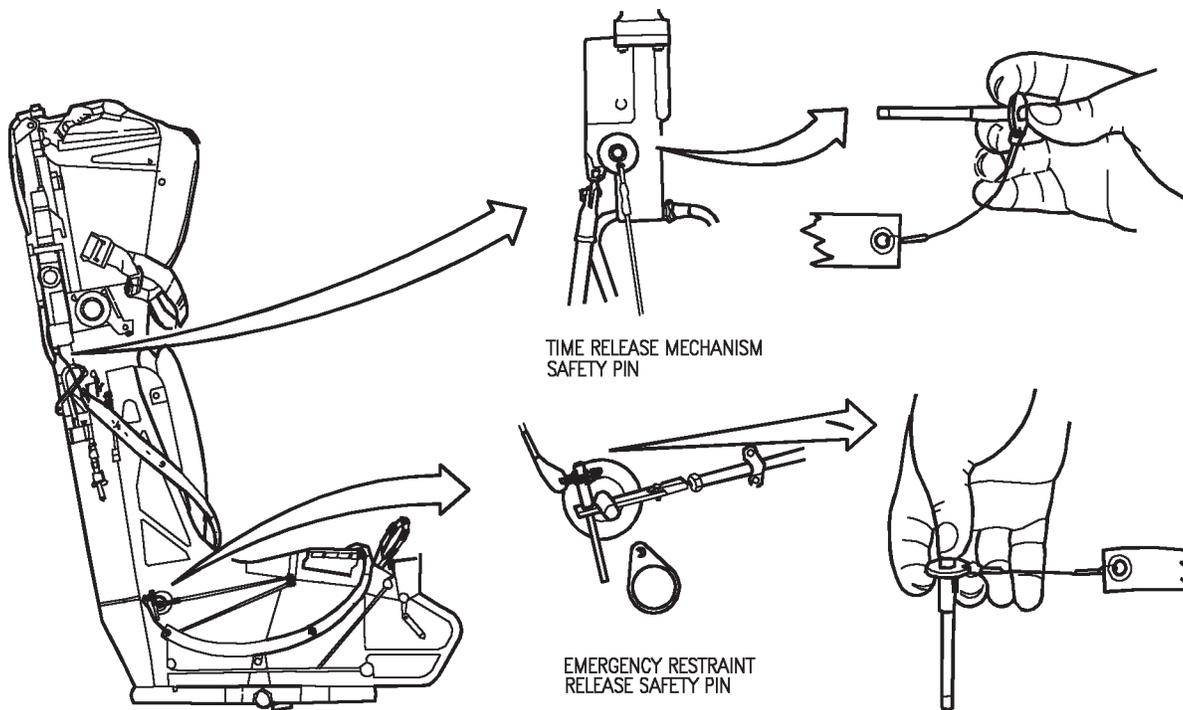
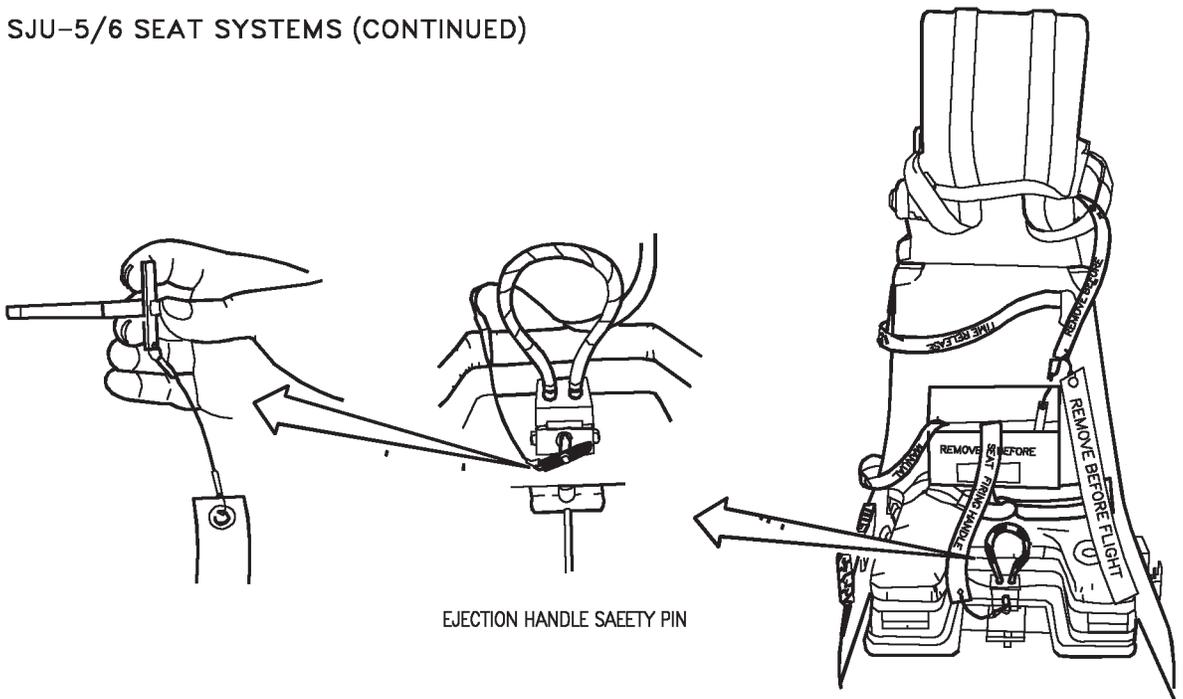


Figure 17-3. Ejection Procedures (Sheet 3 of 24)

SJU-5/6 SEAT SYSTEMS (CONTINUED)



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Figure 17-3. Ejection Procedures (Sheet 4 of 24)

SJU-5/6 SEAT SYSTEMS (CONTINUED)
EJECTION PREPARATION

IMMEDIATE EJECTION

For extreme emergency situations; pilot shall immediately initiate ejection.

CONTROLLED EJECTION

- If time and conditions permit -
1. Alert crewmember (F/A-18B/D only).
 2. Command selector valve - Rear crewmember check for appropriate position (F/A-18B/D only).

WARNING

- SOLO mode shall NOT be selected when both seats are occupied. If SOLO mode is selected when both seats are occupied, simultaneous ejection initiation may result in a collision between seats.
 - In the F/A-18B/D aircraft flying with two aircrew, it is important for both aircrew to initiate ejection with the ejection control handles. This will assure ejection of both aircrew in the event of an aircraft sequencing system failure, and will not alter the seat timing sequence if there is no sequencing system failure.
3. Trade airspeed for altitude (zoom).
 4. Level wings and minimize rate of descent.
 5. IFF - Squawk EMERGENCY.
 6. Follow radio distress procedures.
 7. Stow loose equipment.
 8. Cabin pressure switch - RAM/DUMP.
 9. Shoulder harness lock lever - LOCKED.
 10. Lap belt and shoulder harness tight, visor down, helmet secured, oxygen mask tight.
 11. Altimeter - CHECK.

WARNING

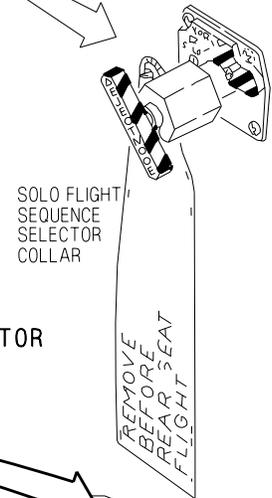
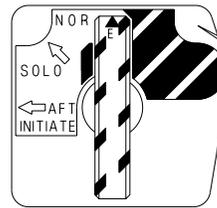
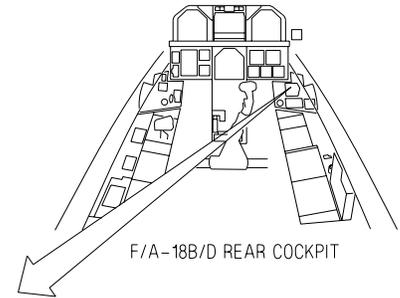
Minimum altitudes are dependent upon dive angle, airspeed, and angle of bank. Recommended minimums are 6,000 feet AGL if out-of-control or 2000 feet AGL if in controlled flight.

12. Slow aircraft as much as possible.

WARNING

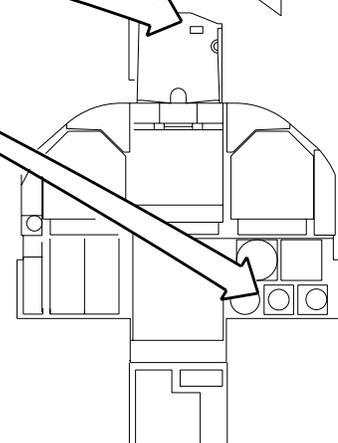
Do not secure engines. Unsuccessful seat activation may require continued flight to allow alternate ejection method or ditching.

13. Throttles - Idle (airspeed 250 knots or less).



EJECTION MODE SELECTOR

OR



NOTE

Over 14,500 -11,500 feet, calculate free-fall time to automatic parachute opening altitude.

Figure 17-3. Ejection Procedures (Sheet 5 of 24)

SJU-5/6 (Continued)**Ejection Preparations****WARNING**

With the Armpit Camera System (ACS) installed, maintain the right elbow and arm close to the body .

EJECTION INJURIES AND BODY POSITIONING

**THESE PROPER BODY POSITIONS
MUST BE TAKEN TO PREVENT INJURIES**

- | | |
|--|---|
| 1. Press head firmly against headrest. | 5. Press buttocks firmly against the seat back. |
| 2. Elevate chin slightly (10°). | 6. Place thighs flat against seat. |
| 3. Press shoulders and back firmly against seat. | 7. Press outside of thighs against side of seat. |
| 4. Hold elbows and arms firmly towards sides. | 8. Place heels firmly on deck, toes on rudder pedals. |

EJECTION INITIATION

There are two acceptable methods for ejection initiation; the two-hand grip and the single-hand grip.

Two-hand method -

1. Grip the ejection handle with the thumb and at least two fingers of each hand, palms toward body.
Keep elbows close to body.

Single-hand method -

1. Grip handle with the strong hand, palm toward body. Grip wrist of strong hand with other hand, palm toward body. Keep elbows close to body.

Both methods -

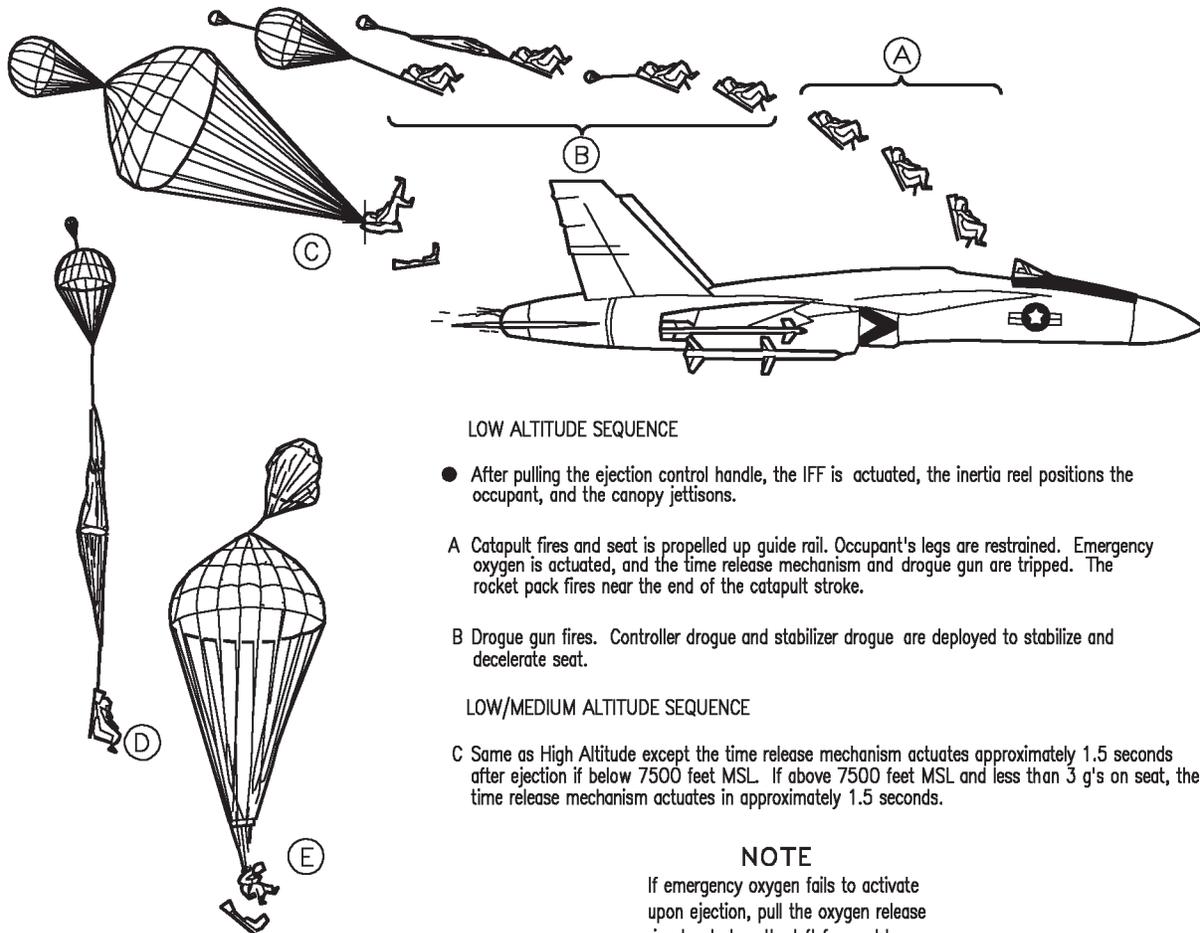
2. Pull handle sharply up and toward abdomen, keeping elbows in. Ensure handle pulled to end of travel.
Continue holding handle until seat/man separation.

NOTE

In low altitude situations, a one-handed method, using one hand to initiate ejection and the other to maintain the aircraft in the safe operating envelope of the ejection seat, may be required. If firing the seat by this method, particular attention must be paid to maintaining proper body position.

Figure 17-3. Ejection Procedures (Sheet 6 of 24)

SJU-5/6 SEAT SYSTEMS (CONTINUED)
AUTOMATIC SEAT/MAN SEPARATION



LOW ALTITUDE SEQUENCE

- After pulling the ejection control handle, the IFF is actuated, the inertia reel positions the occupant, and the canopy jettisons.
- A Catapult fires and seat is propelled up guide rail. Occupant's legs are restrained. Emergency oxygen is actuated, and the time release mechanism and drogue gun are tripped. The rocket pack fires near the end of the catapult stroke.
- B Drogue gun fires. Controller drogue and stabilizer drogue are deployed to stabilize and decelerate seat.

LOW/MEDIUM ALTITUDE SEQUENCE

- C Same as High Altitude except the time release mechanism actuates approximately 1.5 seconds after ejection if below 7500 feet MSL. If above 7500 feet MSL and less than 3 g's on seat, the time release mechanism actuates in approximately 1.5 seconds.

NOTE

If emergency oxygen fails to activate upon ejection, pull the oxygen release ring located on the left forward top of the seat kit.

HIGH ALTITUDE SEQUENCE

- D When between 14,500 MSL and 11,500 feet MSL is reached, the time release mechanism actuates to release the occupants harness and leg restraint lines. The scissor shackle is released and the drogue chute pull the link line to deploy the main parachute.
- E The opening shock of the parachute separates occupant from the seat allowing normal descent.

WARNING

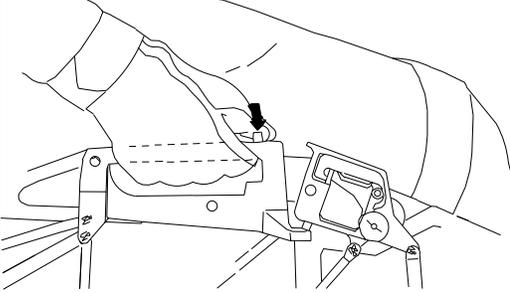
If high terrain is not a factor, do not use manual seat/man separation until below 11,500 feet MSL.

Figure 17-3. Ejection Procedures (Sheet 7 of 24)

SJU-5/6 SEAT SYSTEMS (CONTINUED)

MANUAL SEAT/MAN SEPARATION

If below 11,500 feet MSL and automatic seat/man separation fails to occur:



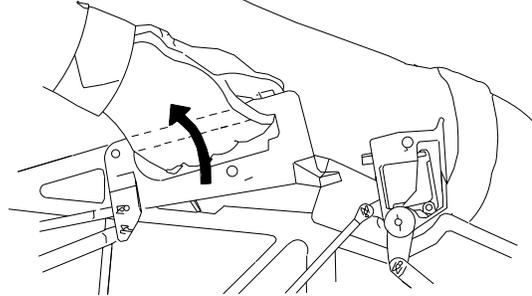
1. Locate manual override handle on right side of ejection seat. Depress handle release button and . . .

The following occurs when the handle is actuated:

- Manual override initiator cartridge fires to activate both the time release mechanism and drogue gun secondary cartridge.
- All occupant-to-seat restraints are released.

WARNING

The time release mechanism operates as a function of above mean sea level. If ejecting over high altitude terrain, manual seat/man separation may be required to provide adequate altitude for the main parachute to open.



2. Rotate handle up and aft.

- Scissors shackle opens to release drogue parachutes and deploy main parachute.
- The opening shock of the parachute separates occupant from the seat allowing normal descent.

BAILOUT

There are no provisions for manual bailout.

POST EJECTION PROCEDURES

LPU INFLATION

WARNING

Although an automatic inflation device is designed to inflate the LPU automatically upon water contact, manual inflation of the LPU remains primary mode of actuation. Automatic actuation is intended for disabled or unconscious survivors or if there is insufficient time to manually activate the LPU.

NOTE

The procedures outlined apply to overland or overwater ejections.

1. Immediately following parachute opening shock, check the condition of the parachute canopy. If no damage/malfunction has occurred..
2. Locate beaded handles on LPU.
3. Pull beaded handles down and straight out to inflate.
4. Squeeze LPU waist lobes together to help release velcro on collar lobe or manually release velcro on collar, if necessary, to achieve complete collar lobe inflation.
5. Snap waist lobes together, (optional procedure).

WARNING

Failure to snap waist lobes before water entry may result in face down flotation.

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Figure 17-3. Ejection Procedures (Sheet 8 of 24)

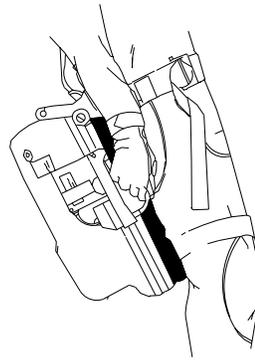
SJU-5/6 SEAT SYSTEMS (CONTINUED)
SEAT KIT DEPLOYMENT

CAUTION

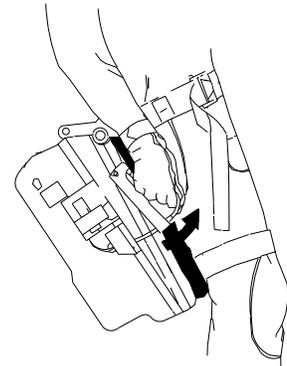
- Deployment of the seat kit/releasing the raft may create a snag hazard when over trees, power lines, building or "other such objects, and thus may be undesirable in these situations".
- Conducting parachute landings with the seat kit attached may cause injury during landing falls".



1. After inflating the LPU, prepare to deploy the seat kit.



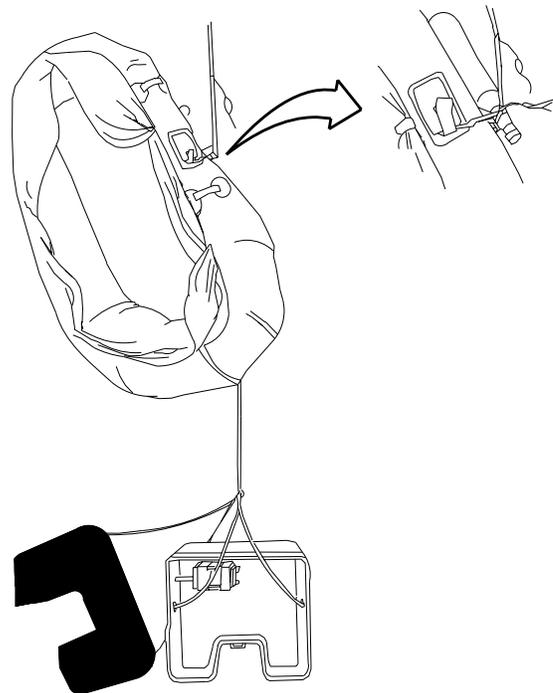
2. With the right hand locate the survival kit release handle on the right side of the seat kit.



3. Firmly pull up on the survival kit release handle until handle is free of kit and the lower half of seat kit falls away.

NOTE

- Pulling the survival kit release handle unlocks the container: the lower half falls away but remains attached by a dropline. At full extension of the dropline, the liferaft is automatically inflated with CO₂.
- If the survival kit must be deployed after water entry, a snatch pull on the dropline near the CO₂ bottle is required to inflate the liferaft.



Seat kit deployed with the liferaft fully inflated approximately 17 feet below the upper half of the seat kit container.

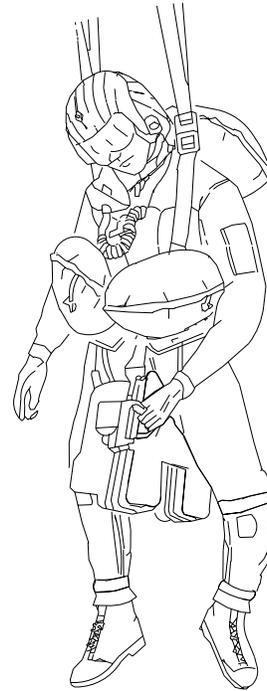
ADA520-70-9-053

Figure 17-3. Ejection Procedures (Sheet 9 of 24)

SJU-5/6 SEAT SYSTEMS (CONTINUED)

INJURED ARM SEAT KIT DEPLOYMENT

1. Release oxygen mask from one side of the helmet.
2. Release lower oxygen hose from seat kit.
3. Release right seat kit quick-release fitting.
4. Using the left hand, rotate the seat kit until the survival kit release handle can be reached.
5. Use the legs to position and hold the seat kit.
6. Pull the survival kit release handle with the left hand. Allow the lower portion of seat kit to fall free.



OPTIONS OVER WATER

If time and altitude permit, or rescue is not imminent, removing oxygen mask, visor and gloves may be considered.

NOTE

- Removal of gloves may facilitate subsequent release of parachute release fittings.
- Stow gloves in a secure place to prevent loss.
- The MBU series oxygen mask and miniature regulator provide underwater breathing capability and should be retained in low level over water ejections.

ADA520-70-10-043

Figure 17-3. Ejection Procedures (Sheet 10 of 24)

SJU-5/6 SEAT SYSTEMS (CONTINUED)

PARACHUTE LANDING FALL (PLF) PROCEDURES

Upon toes touching ground surface:

1. Arch side of body in direction of fall.
2. Contact ground at five points of body contact:
 - a. Balls of feet.
 - b. Calf.
 - c. Thigh.
 - d. Buttocks.
 - e. Upper back.
3. Release parachute fittings.

RAFT BOARDING

When clear of the parachute canopy, retrieve the LR-1 life raft by locating the dropline and pulling the raft to you.

1. Locate and remove the raft retaining lanyard from its pocket just above the CO₂ cylinder.



NOTE

Ensure that raft retaining lanyard is securely attached and oxygen hose has been disconnected from seat kit (if not previously accomplished) before releasing upper half of seat kit.

2. Attach the snaphook to gated helo-hoist lift ring.
3. Locate the quick-release fitting and release upper half of seat kit.
4. Bring raft around for entry into smaller end (stern).
5. Grasp stern and forcibly push under LPU waist lobes.
6. Using boarding handles, pull into raft and turn toward a seated position.
7. Locate the sea anchor and deploy it.
8. Retrieve lower half of seat kit.

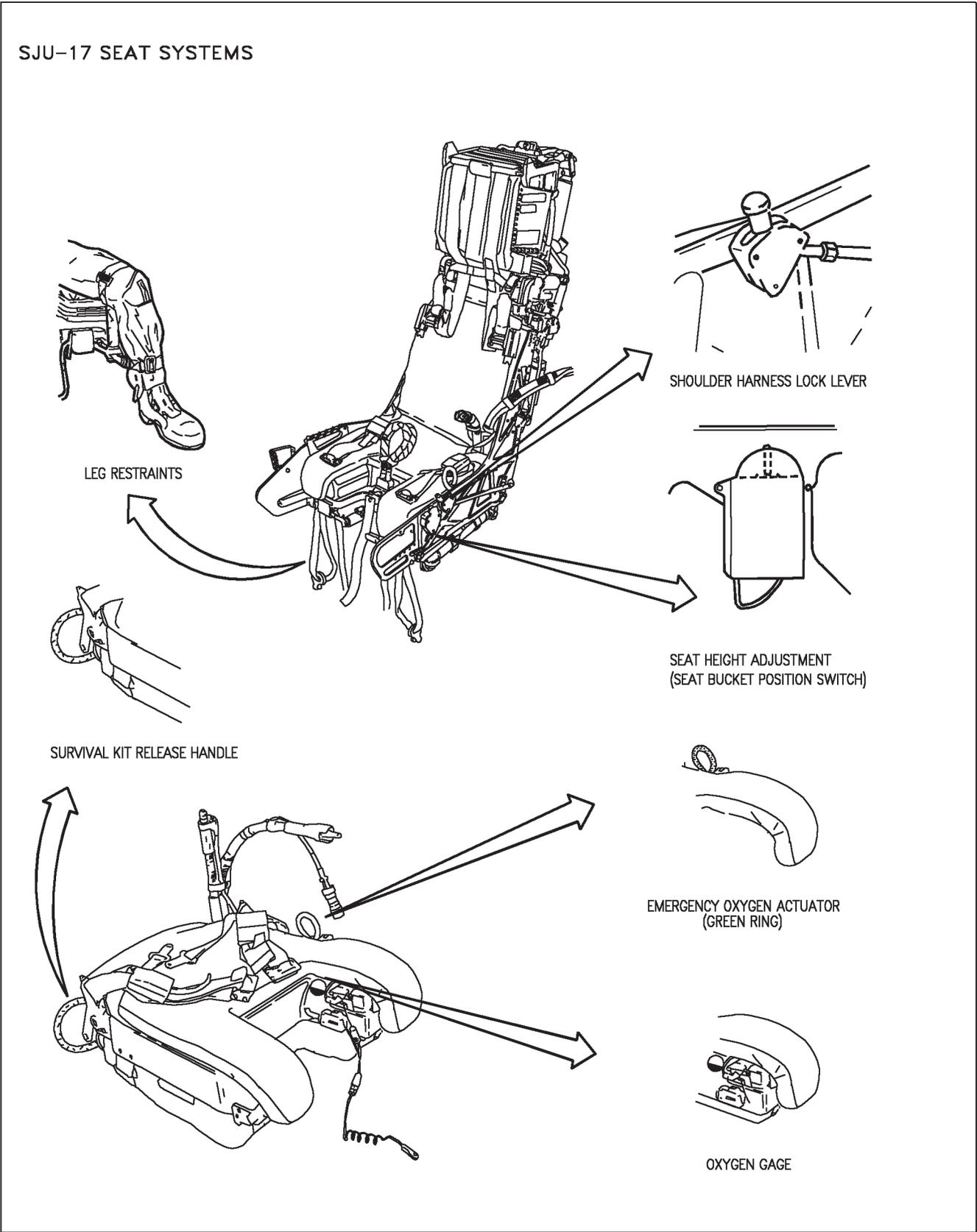


NOTE

- The AN/URT-33A is not secured and once removed from the seat kit, care must be taken to prevent its loss.
- The AN/URT-33A has a retrieval lanyard secured to it with rubber bands. Attach the lanyard to a suitable place on survival equipment. Then remove the AN/URT-33A from its bracket.

9. Locate and retrieve the AN/URT-33A from the lower half of the seat kit.
10. Immediately, secure survival package to gated helo-hoist lift ring.

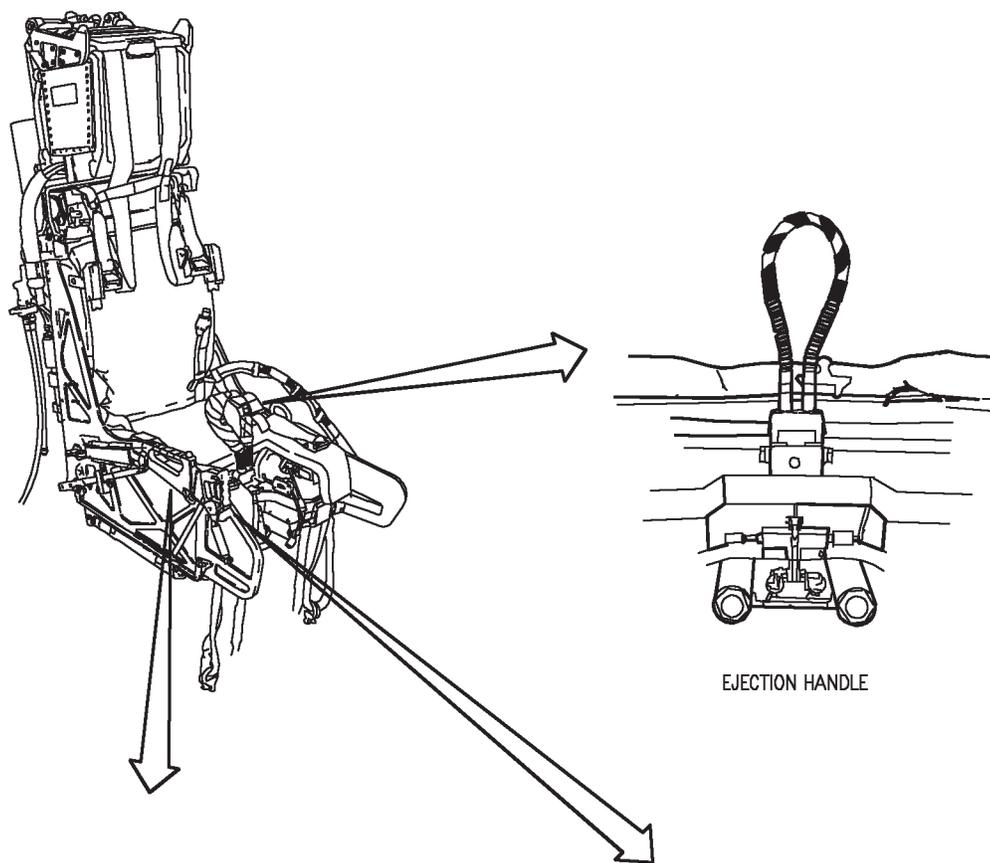
SJU-17 SEAT SYSTEMS



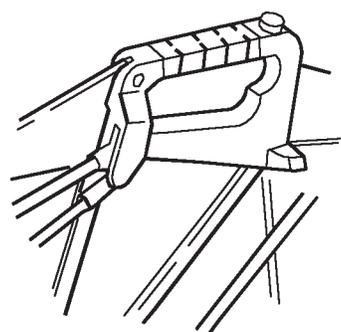
18AC-NFM-00-(147-1)31-CATI

Figure 17-3 . Ejection Procedures (Sheet 12 of 24)

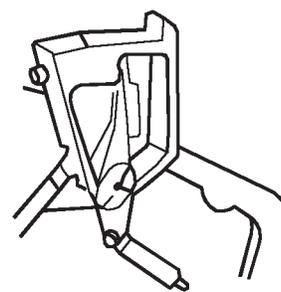
SJU-17 SEAT SYSTEMS (CONTINUED)



EJECTION HANDLE



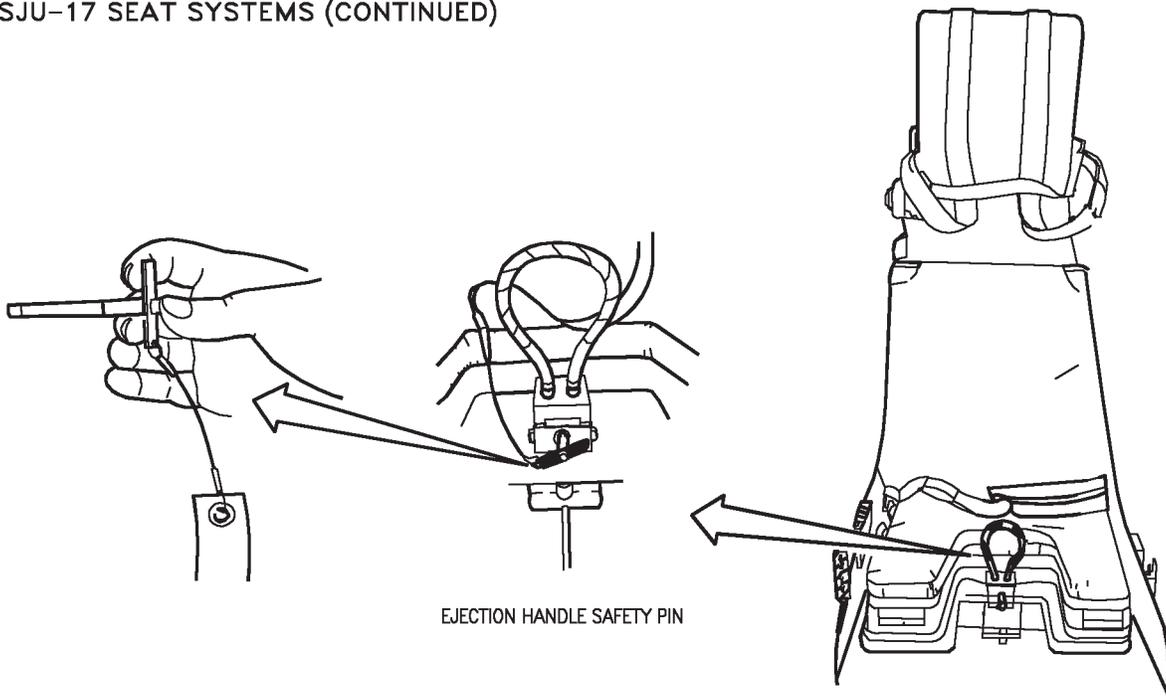
EMERGENCY RESTRAINT RELEASE HANDLE
(MANUAL OVERRIDE HANDLE)



SAFE/ARMED HANDLE

Figure 17-3. Ejection Procedures (Sheet 13 of 24)

SJU-17 SEAT SYSTEMS (CONTINUED)



18AC-NFM-00-(147-3)31-CATI

Figure 17-3. Ejection Procedures (Sheet 14 of 24)

SJU-17 SEAT SYSTEMS (CONTINUED)
EJECTION PREPARATION

IMMEDIATE EJECTION

For extreme emergency situations, pilot shall immediately initiate ejection.

CONTROLLED EJECTION

If time and conditions permit –

1. Alert crewmember (F/A-18D only).
2. Command selector valve–Rear crewmember check for appropriate position (F/A-18D only).

WARNING

- SOLO mode shall NOT be selected when both seats are occupied. If SOLO mode is selected when both seats are occupied, simultaneous ejection initiation may result in a collision between seats.
- In the F/A-18B/D aircraft flying with two aircrew, it is important for both aircrew to initiate ejection with the ejection control handles. This will assure ejection of both aircrew in the event of an aircraft sequencing system failure, and will not alter the seat timing sequence if there is no sequencing system failure.
 3. Trade airspeed for altitude (zoom).
 4. Level wings and minimize rate of descent.
 5. IFF – Squawk EMERGENCY.
 6. Follow radio distress procedures.
 7. Stow loose equipment.
 8. Cabin pressure switch – RAM/DUMP.
 9. Shoulder harness lock lever – LOCKED.
 10. Lap belt and shoulder harness tight, visor down, helmet secured, oxygen mask tight.
 11. Altimeter – CHECK.

WARNING

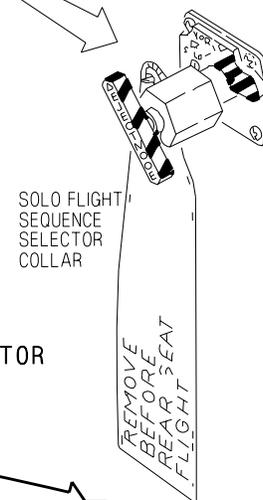
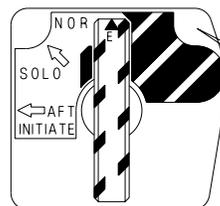
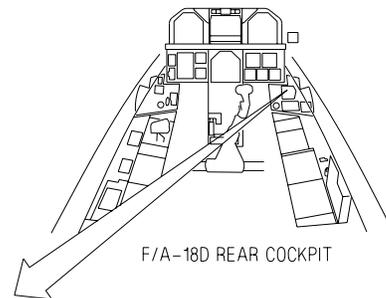
Minimum altitudes are dependent upon dive angle, airspeed, and angle of bank. Recommended minimums are 6,000 feet AGL if out-of-control or 2000 feet AGL if in controlled flight.

12. Slow aircraft as much as possible.

WARNING

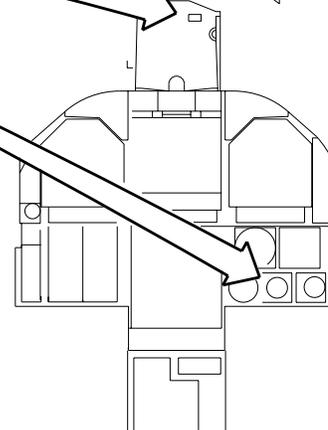
Do not secure engines. Unsuccessful seat activation may require continued flight to allow alternate ejection method or ditching.

13. Throttles–Idle (airspeed 250 knots or less).



EJECTION MODE SELECTOR

OR



NOTE

Over 14,000 feet, calculate free-fall time to automatic parachute opening altitude.

Figure 17-3. Ejection Procedures (Sheet 15 of 24)

SJU-17 (Continued)**Ejection Preparations****WARNING**

With the Armpit Camera System (ACS) installed, maintain the right elbow and arm close to the body .

EJECTION INJURIES AND BODY POSITIONING

**THESE PROPER BODY POSITIONS
MUST BE TAKEN TO PREVENT INJURIES**

- | | |
|--|---|
| 1. Press head firmly against headrest. | 5. Press buttocks firmly against the seat back. |
| 2. Elevate chin slightly (10°). | 6. Place thighs flat against seat. |
| 3. Press shoulders and back firmly against seat. | 7. Press outside of thighs against side of seat. |
| 4. Hold elbows and arms firmly towards sides. | 8. Place heels firmly on deck, toes on rudder pedals. |

WARNING

If ejection occurs without QDC properly stowed in QMB, death will probably result from neck injury.

EJECTION INITIATION

There are two acceptable methods for ejection initiation; the two-hand grip and the single-hand grip.

Two-hand method -

1. Grip the ejection handle with the thumb and at least two fingers of each hand, palms toward body.
Keep elbows close to body.

Single-hand method -

1. Grip handle with the strong hand, palms toward body. Grip wrist at strong hand with other hand, palm toward body. Keep elbows close to body.

Both methods -

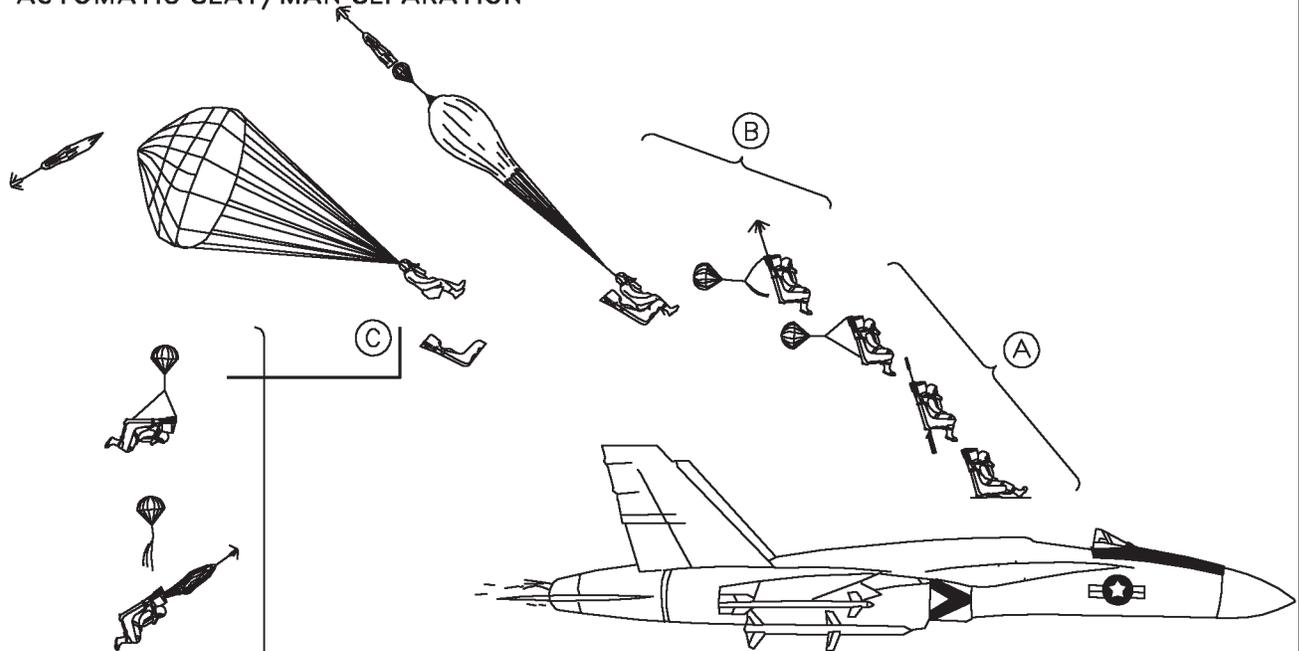
2. Pull handle sharply up and toward abdomen, keeping elbows in. Ensure handle pulled to end of travel.
Continue holding handle until seat/man separation.

NOTE

In low altitude situations, a one-handed method, using one hand to initiate ejection and the other to maintain the aircraft in the safe operating envelope of the ejection seat, may be required. If firing the seat by this method, particular attention must be paid to maintaining proper body position.

Figure 17-3. Ejection Procedures (Sheet 16 of 24)

SJU-17 SEAT SYSTEMS (CONTINUED)
 AUTOMATIC SEAT/MAN SEPARATION



ALL EJECTION SEQUENCES

- After pulling the ejection control handle, the IFF is actuated, the inertial reel positions the occupant, and the canopy jettisons.
- A Catapult fires and seat is propelled up guide rail. Occupant's legs are restrained. Emergency oxygen and radio beacon are actuated. The rocket pack fires near the end of the catapult stroke. Drogue catapult fires. Drogue is deployed to stabilize and decelerate seat.

LOW/MEDIUM ALTITUDE SEQUENCE (Below 18,000 feet MSL)

- B Drogue releases from seat. Parachute deployment rocket fires to extract and deploy main parachute. Harness and leg restraint lines released. Drogue release and parachute deployment occur between .45 and 2.9 seconds dependent on airspeed and altitude.
- C The opening shock of the parachute separates occupant from the seat allowing normal descent.

NOTE

If emergency oxygen fails to activate upon ejection, pull the oxygen release ring located on the left forward top of the seat kit.

HIGH ALTITUDE SEQUENCE (Above 18,000 feet MSL)

- D Drogue remains connected to seat until below 18,000 feet MSL, where drogue release, parachute deployment, harness and leg restraint release occur.
- E The opening shock of the parachute separates occupant from the seat allowing normal descent.

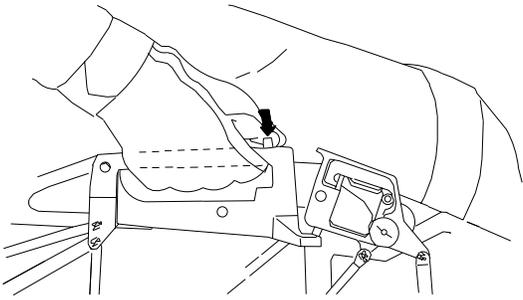
WARNING

If high terrain is not a factor, do not use manual seat/man separation until below 14,000 feet MSL.

Figure 17-3. Ejection Procedures (Sheet 17 of 24)

SJU-17 SEAT SYSTEM (CONTINUED) MANUAL SEAT/MAN SEPARATION

If below 14,000 feet MSL and automatic seat/man separation fails to occur:



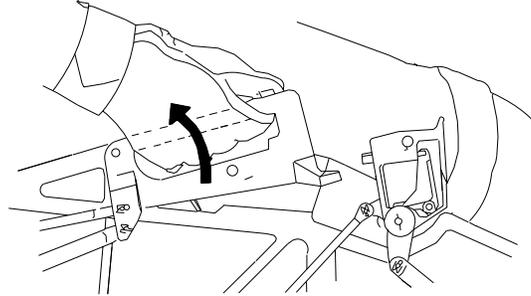
1. Locate manual override handle on right side of ejection seat. Depress handle release button and . . .

The following occurs when the handle is actuated:

- Manual override initiator cartridge fires to activate the parachute deployment rocket motor.
- All occupant-to-seat restraints are released.

WARNING

The barostat mechanism operates as a function of altitude above mean sea level. If ejecting over high altitude terrain, manual seat/man separation may be required to provide adequate altitude for the main parachute to open.



2. Rotate handle up and aft.

- The opening shock of the parachute separates occupant from the seat allowing normal descent.

BAILOUT

There are no provisions for manual bailout.

POST EJECTION PROCEDURES

LPU INFLATION

WARNING

Although an automatic inflation device is designed to inflate the LPU automatically upon water contact, manual inflation of the LPU remains the primary mode of actuation. Automatic actuation is intended for disabled or unconscious survivors or if there is insufficient time to manually activate the LPU.

NOTE

The procedures outlined apply to overland or overwater ejections.

1. Immediately following parachute opening shock, check the condition of the parachute canopy. If no damage/malfunction has occurred ...
2. Locate beaded handles on LPU.
3. Pull beaded handles down and straight out to infla
4. Squeeze LPU waist lobes together to help release veon collar lobe or manually release velcro on collar, if necessary, to achieve complete collar lobe inflation.
5. Snap waist lobes together. (optional procedure)

WARNING

Failure to snap waist lobes before water entry may result in face down flotation.

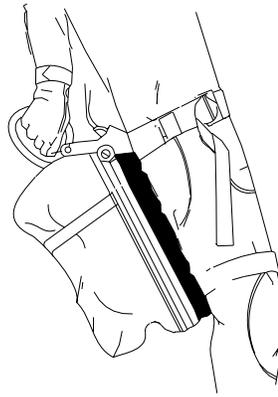
**SJU-17 SEAT SYSTEM (CONTINUED)
SEAT KIT DEPLOYMENT**

CAUTION

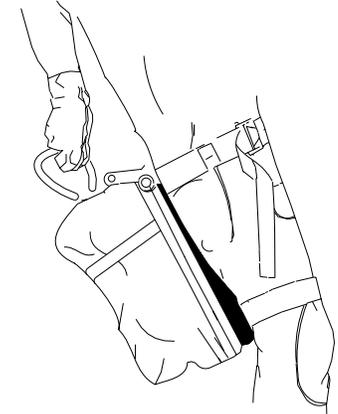
- Deployment of the seat kit/releasing the raft may create a snag hazard when over trees, power lines, building or "other such objects, and thus may be undesirable in these situations".
- Conducting parachute landings with the seat kit attached may cause injury during landing falls.



1. After inflating the LPU, prepare to deploy the seat kit.



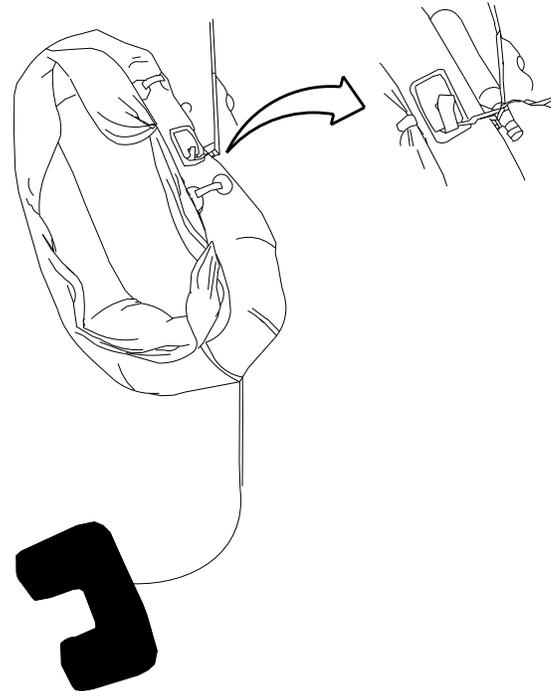
2. Locate either survival kit release handle on the underside of the seat kit.



3. Firmly pull up on the survival kit release handle until handle is free of kit and the lower half of seat fall away.

NOTE

- Pulling the survival kit release handle unlocks the container deploying the liferaft and survival kit contents bag which remains attached by a drop line. At full extension of the dropline, the liferaft is automatically inflated with CO₂.
- If the survival kit must be deployed after water entry, a snatch pull on the red manual activation handle, near the CO₂ bottle, is required to inflate the liferaft.



Seat kit deployed with the liferaft fully inflated approximately 17 feet below the upper half of the seat kit container.

Figure 17-3. Ejection Procedures (Sheet 19 of 24)

SJU-17 SEAT SYSTEMS (CONTINUED) PARACHUTE LANDING FALL (PLF) PROCEDURES

Upon toes touching ground surface:

1. Arch side of body in direction of fall.
2. Contact ground at five points of body contact:
 - a. Balls of feet.
 - b. Calf.
 - c. Thigh.
 - d. Buttocks.
 - e. Upper back.
3. Release parachute fittings.

RAFT BOARDING

When clear of the parachute canopy, retrieve the LRU-23/P life raft by locating the dropline and pulling the raft to you.

1. Locate and remove the raft retaining lanyard from its pocket just above the CO₂ cylinder.



NOTE

Ensure that raft retaining lanyard is securely attached and oxygen hose has been disconnected from seat kit (if not previously accomplished) before releasing seat lid.

2. Attach the snaphook to gated helo-hoist lift ring.
3. Locate the quick-release fitting and release seat lid.
4. Bring raft around for entry into smaller end (stern).
5. Grasp stern and forcibly push under LPU waist lobes.
6. Using boarding handles, pull into raft and turn toward a seated position.
7. Locate the sea anchor and deploy it.
8. Retrieve survival kit.



NOTE

- The AN/URT-33A is not secured and once removed from the seat lid, care must be taken to prevent its loss.
- The AN/URT-33A has a retrieval lanyard secured to it with rubber bands. Attach the lanyard to a suitable place on survival equipment. Then remove the AN/URT-33A from its bracket.

9. Retrieve seat lid.
10. Remove seat cushion front lid.
11. Locate and retrieve the AN/URT-33A from under the cushion on the left side of the kit lid.
12. Immediately secure survival package to gated helo-hoist lift ring.

18AC-NFM-00-(147-9)31-SCAN

Figure 17-3. Ejection Procedures (Sheet 20 of 24)

PARACHUTE STEERING



Pull down on left or right lanyard to steer in desired direction.

LANDING PREPARATION OVER WATER

Try to determine the wind direction at the surface using white caps, smoke from the wreckage, or known surface winds in the vicinity. Note that the winds at the surface may be quite different from those encountered at altitude.

When nearing the surface, maneuver the parachute so that you are facing into the wind. Then assume the proper body position for landing:

- Feet together.
- Knees slightly bent.
- Toes pointed slightly downward.
- Eyes on the Horizon.
- Firmly grasp canopy release fittings.
- Tuck elbows in prior to water entry.

LANDING PREPARATION OVER LAND

Perform the same procedures as for over water, but with the following exceptions:

1. Visor – down.
2. Gloves – on
3. Do NOT deploy seat kit.

WARNING

- If a parachute landing is made into the water or a high wind prevents normal spilling of the parachute canopy, disconnect both quick-release fittings that attach risers to the torso-harness suit, thus jettisoning the parachute canopy.
- Do not disconnect the quick-release fittings until after contact with ground or water.

RESCUE

If survivor pickup is to be effected by rescue helicopter, the following procedures should be followed: (Unassisted rescue – no swimmer deployed)

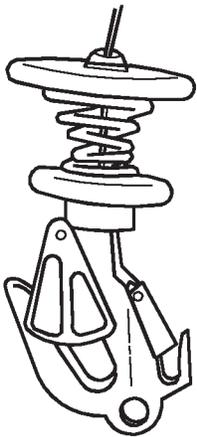
1. Stow or discard loose gear, roll out of raft on right side (side with CO₂ cylinder).
2. Swim away from raft. Ensure that helmet visor has been lowered.
3. Remove raft retention lanyard after rescue device has been lowered.

WARNING

- To allow discharge of static electricity and prevent electrical shock, avoid touching rescue device until it has made contact with water/ground.
- To avoid severe injury, keep hands clear of hook and ring assemblies during hoisting.
- Under no circumstances should survivors attempt to assist their entrance into helicopter or move from the rescue device until helicopter aircrewman assists them to a seat in the aircraft.

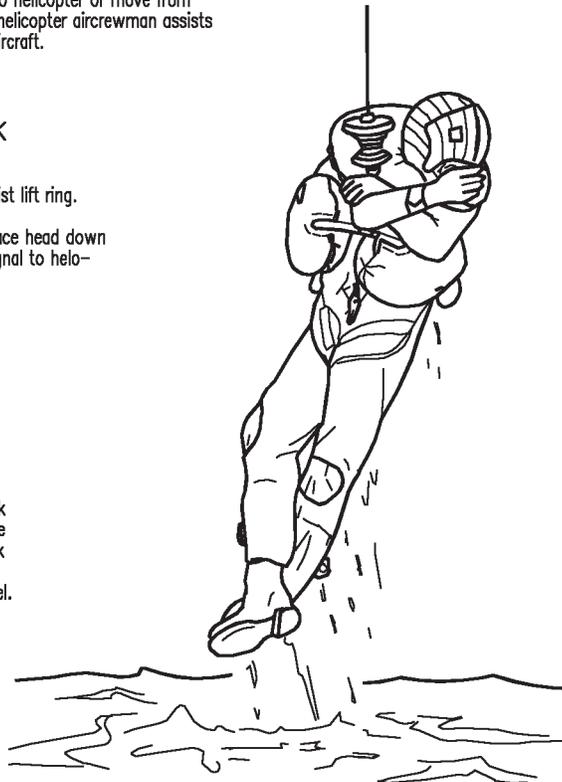
PROCEDURES FOR USE OF THE RESCUE HOOK

1. Attach large hook to gated helo-hoist lift ring.
2. Cross arms in front of chest and place head down and to the left. Give thumbs-up signal to helo-hoist operator.



NOTE

The helo rescue hook has a small and large hook. The large hook is the primary hook for hoisting personnel.

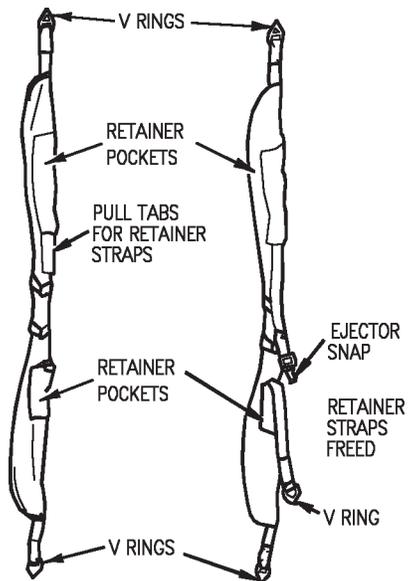


3. Position of aircrewman during helo-hoist. Upon clearing ground/water, cross feet.

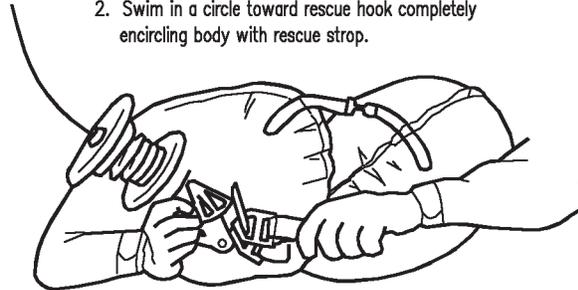
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Figure 17-3. Ejection Procedures (Sheet 22 of 24)

PROCEDURES FOR USE OF THE RESCUE STROP (HORSECOLLAR)



1. Grasp free end of rescue strop.
2. Swim in a circle toward rescue hook completely encircling body with rescue strop.



3. Attach free end of strop to large hook.

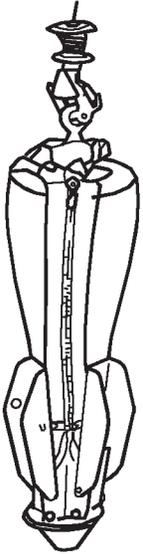
4. Pull both retainer straps free and connect ejector snap to V-ring of other retainer strap. Pull tight.
5. Ensure rescue strop is above PRU waist lobes and high on back. Wrap arms around strop and place hands in armpits. Keep head down, and give thumbs up signal to helo-hoist operator.

6. Position of aircrewman during hoist. Upon clearing water, cross feet.

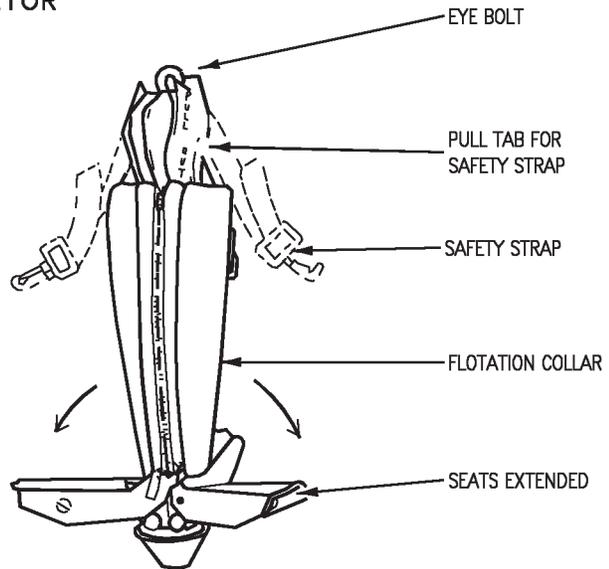


Figure 17-3. Ejection Procedures (Sheet 23 of 24)

PROCEDURES FOR USE OF THE FOREST PENETRATOR



Forest penetrator with flotation collar and seats retracted (safety straps omitted to show connection of rescue hook to eye-bolt).



Forest penetrator with flotation collar and seats extended.

1. Unsnap LPU waist lobes.
2. Extend only one seat on forest penetrator.
3. Sit on seat facing flotation collar. Using elbows, separate LPU waist lobes and pull shaft of penetrator close to chest.
4. Pass safety strap under arm around back, and under other arm. Connect safety strap and tighten.
5. Turn head down and to the left. Give thumbs up signal to helo-hoist operator.



6. Upon clearing water, cross feet.

18AC-NFM-00-(70-15)31-SCAN

Figure 17-3. Ejection Procedures (Sheet 24 of 24)

WARNING

The aircraft should be ditched only when ejection has failed.

DUTIES BEFORE IMPACT

- | | |
|-------------------------------|--|
| 1. Make radio distress call. | 8. Oxygen mask - TIGHTEN |
| 2. IFF - EMERGENCY | 9. Lower seat, assume position for ditching (feet on rudder pedals, knees flexed). |
| 3. External stores - JETTISON | 10. Shoulder harness - LOCK |
| 4. Landing gear - UP | 11. Canopy - JETTISON |
| 5. Flaps - DOWN | 12. Fly parallel to swell pattern. |
| 6. Arresting hook - DOWN | 13. Attempt to touch down along wave crest. |
| 7. Visor - DOWN | 14. Throttles - OFF BEFORE IMPACT |

DUTIES AFTER IMPACT

1. Manual override handle - PRESS BUTTON AND ROTATE AFT AND UP
2. Shoulder harness - RELEASE
3. Emergency oxygen - ACTIVATE

NOTE

- The emergency oxygen will actuate when the crewmember stands up. However, to avoid the time delay resulting from the distance required for the emergency oxygen actuation cable to travel to reach "cable stretch", the emergency oxygen should be activated prior to manually egressing with the SKU-3/A or SKU-7/A seat kit attached.
 - In the event of under water egress, it is possible to survive underwater with oxygen equipment until escape can be made.
4. Stand straight up without twisting to release survival kit sticker clips from the seat.

WARNING

If the cockpit has flooded, the LPU may have inflated due to the FLU-8 water activated automatic inflation device. If so, care must be taken during exit to avoid catching the lobes causing entanglement or LPU damage.

5. Abandon aircraft.
6. If the LPU has not automatically inflated - INFLATE
7. Deploy survival kit and inflate liferaft.

WARNING

If aircraft is abandoned under water, exhale while ascending to the surface to prevent bursting of lungs due to pressure differential between lungs and outside of body.

Figure 17-4. Ditching