LEONARDO

HELICOPTERS DIVISION

SAFETY NOTICE

S.N. N° **SN 139-22-001**
DATE December 20, 2021
REV. **0**

AW139

CRASH CARD

GROUND EMERGENCY AND RESCUE OPERATIONS

Disclaimer

"This crash rescue card version has been prepared by Leonardo Helicopters in order to provide stakeholders with general and safety information concerning aircraft layout, emergency ingress and egress, and emergency procedures for fuel and electrical power shutoff procedure user-friendly. Leonardo Helicopters to the extent permitted under the applicable laws, accepts no liability for any damage arising out or in any way connected with the use of this document. The personnel with crash-rescue responsibility shall receive a briefing by the pilot on the specific characteristics of the helicopter with which they are working."

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INTRODUCTION

The purpose and objective of this card is to support ground personnel to respond to accident or incident crash-rescue operations on AW139 within their capability and training and to be able to rescue survivors of a crash in a safe, efficient manner. This crash card is not intended to cover every contingency which may arise, nor does the card detail every safety emergency ingress and egress practice. Specialized basic aircraft firefighting training should be sought to supplement the information contained herein.

It is intended that the AW139 configuration herein covered is generic and it is under the Operators' responsibility to estimate the applicability on their current configurations.

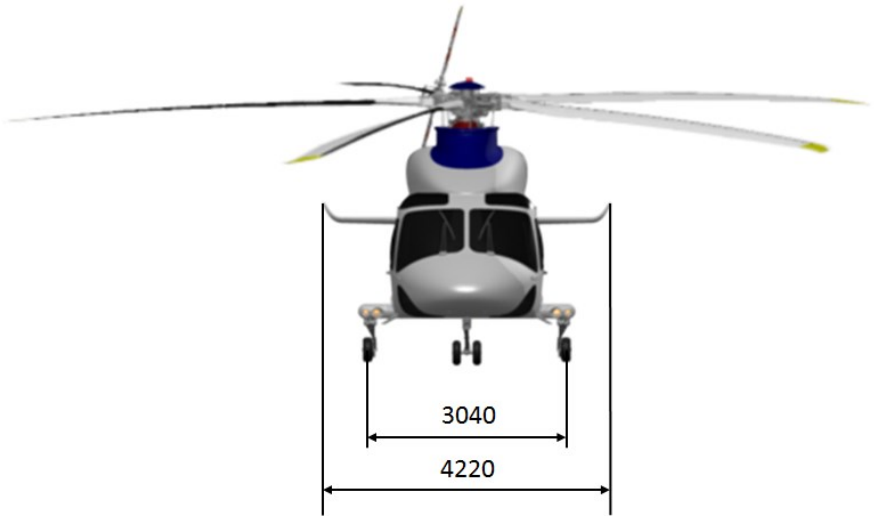
Moreover, this document will not be updated to be personalized for each operator in terms of both language and configuration used.

GENERAL INFORMATION

WEIGHT	[kg]
Empty Weight	4200-5100
Max Take off Weight	7000

OCCUPANCY	[pax]
Max Crew (Cockpit)	2
Max Passengers (Cabin)	Max 12/15

OVERALL DIMENSIONS [mm]



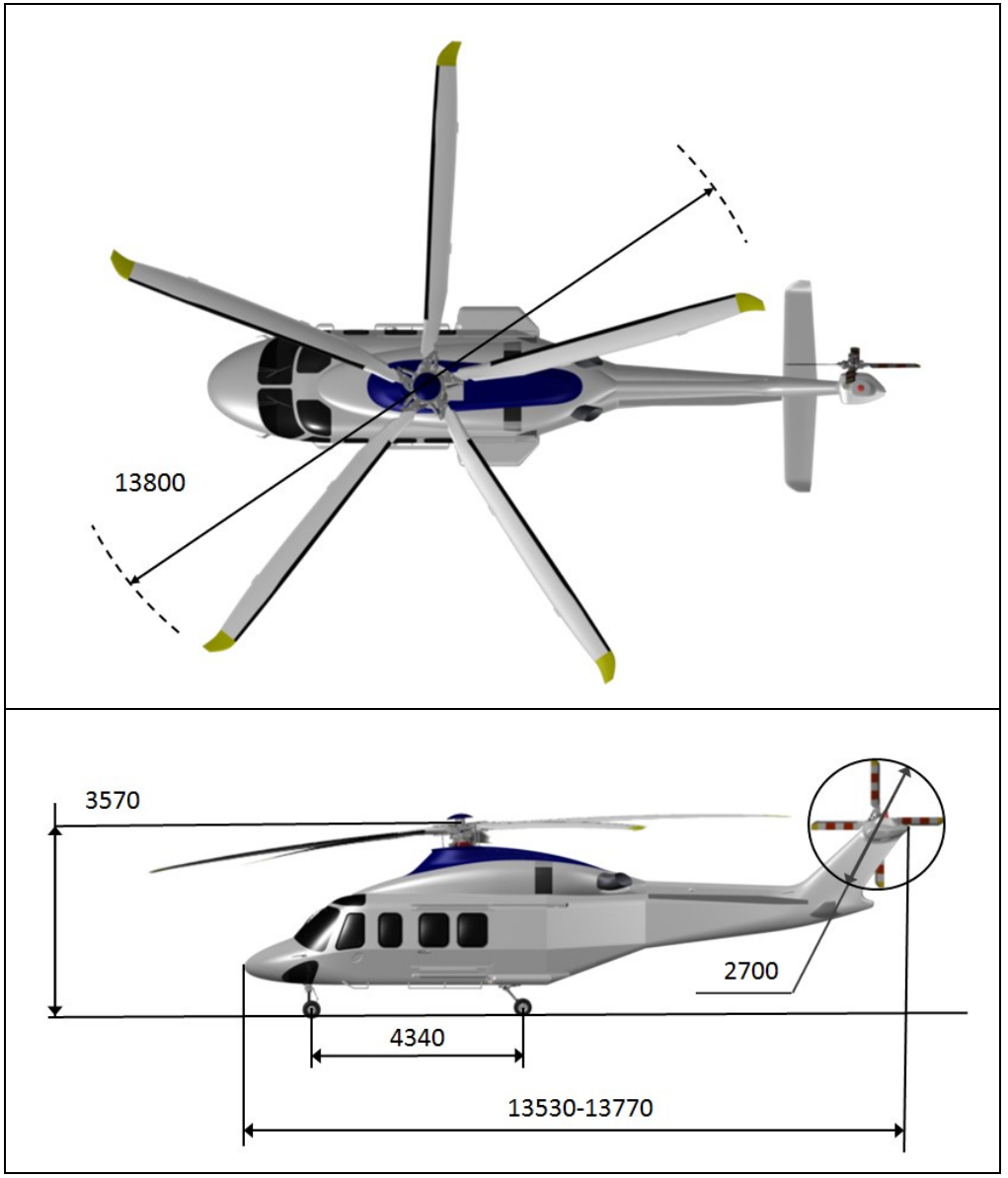


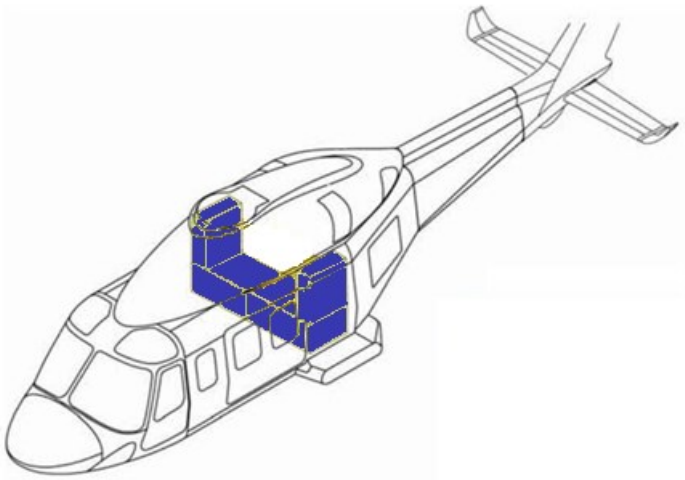
Figure 1 – Overall Dimensions [mm]

POWERPLANTS	#
Pratt & Whitney PT6C-67C	2

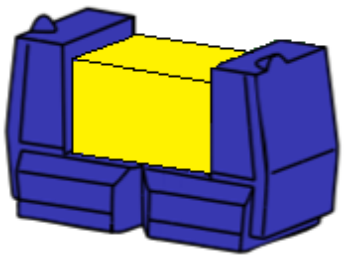
Figure 2 – Engines

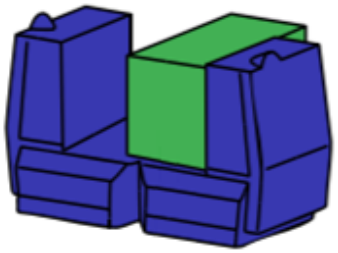
OIL	Capacity [l]
Engine	10.44
MGB	19
TGB	0.9
IGB	1.5
Hydraulic system – max nominal pressure 207 bar	

FUEL SYSTEM



	Main Fuel Tank: max capacity 1588 l





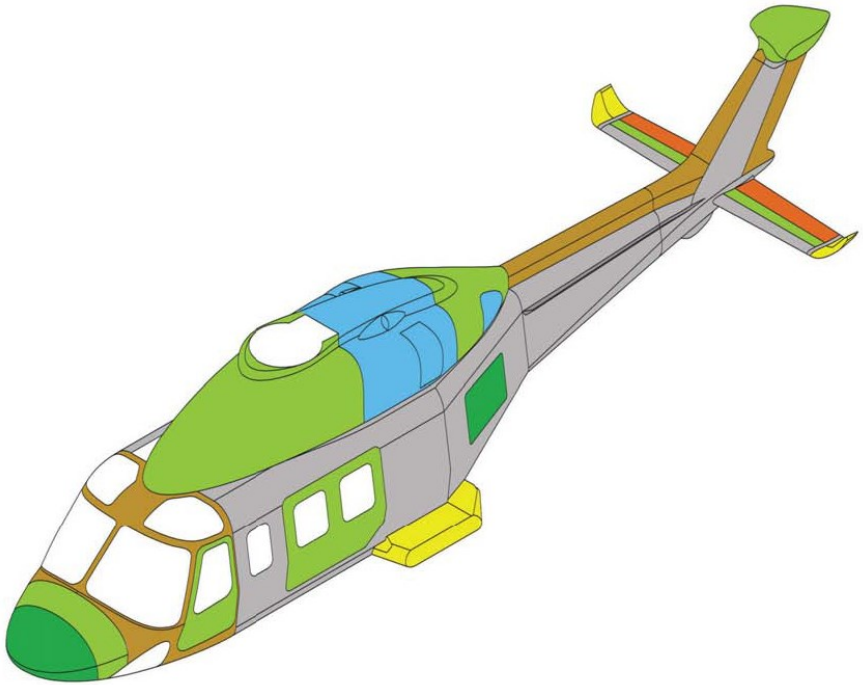
	Auxiliary Fuel Tank version 1: max capacity 500 l
	Auxiliary Fuel Tank version 2: max capacity 500 l

Figure 3 – Fuel Tank and Auxiliary Fuel Tank Location

STRUCTURAL MATERIALS

FUSELAGE

PRESENCE OF COMPOSITE MATERIAL



	Fibreglass		Carbon Fiber
	Kevlar		Titanium
	Kevlar/Fiberglass		Aluminum
	Carbon/Fiberglass		

Figure 4 – Structural Materials – Fuselage

MAIN ROTOR and TAIL ROTOR

PRESENCE OF COMPOSITE MATERIAL

blades in composite/metal material – hub/components in metal materials

DRIVE SYSTEM

PRESENCE OF MAGNESIUM

MAIN, INTERMEDIATE, TAIL GEAR BOX: metal material

Figure 5 – Structural Materials

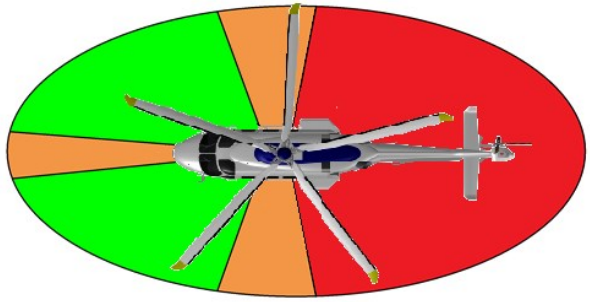
HAZARDS

HAZARDS – APPROACH CONES

THE APPROACH TO THE HELICOPTER IS SUBJECT TO THE AUTHORIZATION OF THE PILOT

in case of extreme urgency

consider the approach cones (flat area) as follows



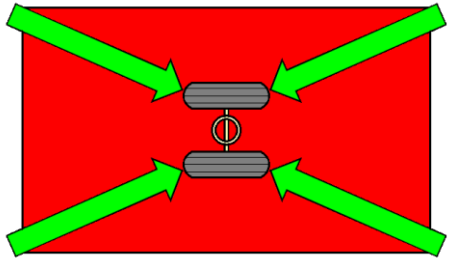
	SAFE AREA
	WARNING AREA
	DANGEROUS AREA

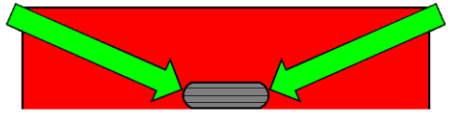
Figure 6 – Hazards – Approach Cones

HAZARD – FRAGMENTATION

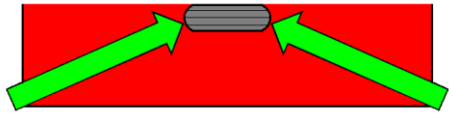
IN CASE OF WHEEL FIRE DEBRIS FROM RIMS AND TIRES MAY POSE A FRAGMENATION HAZARD

PRESSURIZED WHEELS (~5.9 BAR)





MLG Right Wheel



NLG approach path	MLG Left Wheel

	APPROACH PATH
	DANGEROUS AREA

Figure 7 – Hazards – Fragmentation

HAZARDS – PRESSURIZED RECIPIENTS

CHECK THE INTEGRITY OF THE AREAS ADJACENT TO THE PRESSURIZED RECIPIENTS AND APPROACH AS APPROPRIATE

POSSIBLE PRESENCE OF OXYGEN BOTTLES

SYSTEM (number of bottles)	REF IN FIGURE	Pressure [bar] @21 C
Floating (2)	①	>220
Liferaft (2)	②	>160
Engine Fire Extinguisher (2)	③	>40
Wheels (3)	-	~5.9
Cabin Fire Extinguisher (1 up to 3)	Inside cockpit (@ interseat console) and cabin, depending on configurations	9

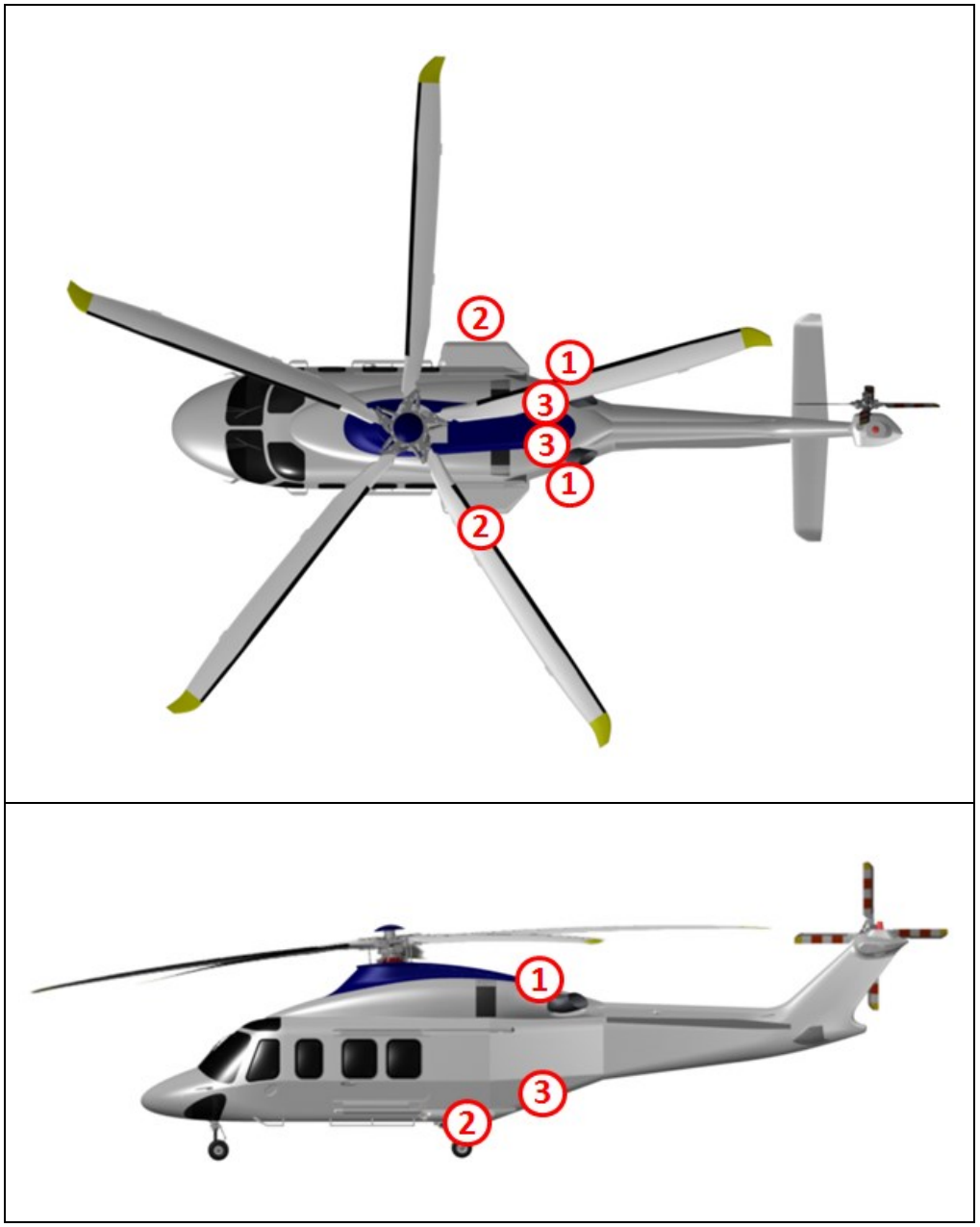


Figure 8 – Hazards – Pressure Recipients

HAZARDS – EXPLOSIVE CHARGES

PRESENCE OF EXPLOSIVE CHARGES
APPROACH AS APPROPRIATE

ACTIVATION (number of charges)	REF IN FIGURE	
Rescue Hoist (1)	①	right side
Cargo Hook (1)	②	bottom side
Engine Fire Extinguisher (2)	③	-

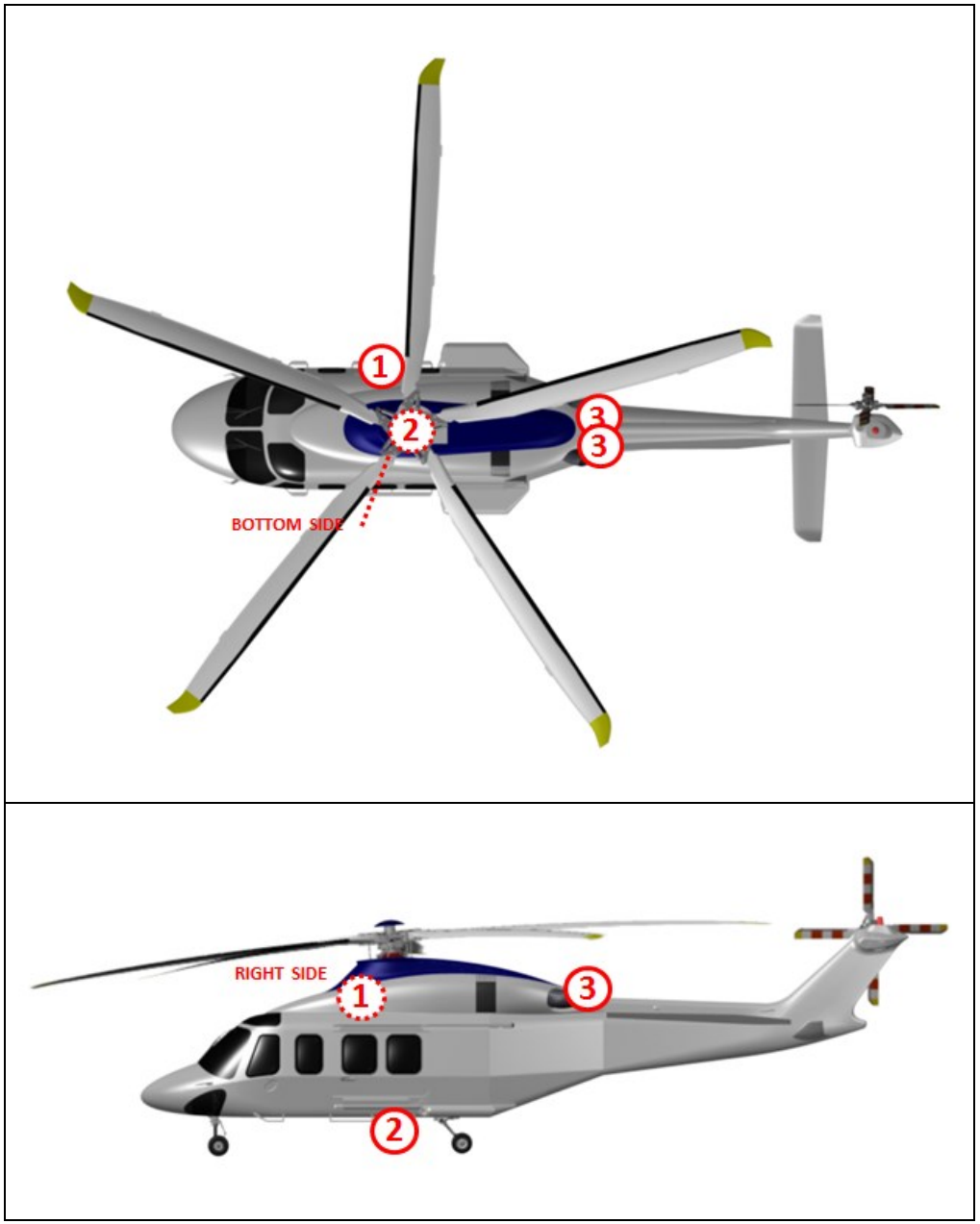


Figure 9 – Hazards – Explosive Charges

HAZARD – BATTERIES

BATTERIES MAY EXPLODE WITH FIRE

POSSIBLE RELEASE OF TOXIC GASES

BATTERY	REF IN FIGURE	
Main and Auxiliary (2)	①	Nose Avionics Bay
Emergency Locator Transmitter, ELT (1) / ADELT (1)	②	Tail / Rear LH side of the fuselage
Emergency Lights System Battery Pack (2)	③	Nose Avionics Bay
Helicopter Emergency Egress Lighting System (5)	④	Inside Doors under window
Flight Data Recorder (1) Satcom Skytrac Transceiver (1)	⑤	Rear Avionic Bay
Life Raft ELT (2), Sea Light (2), Torch (4)	⑥	Sponsons

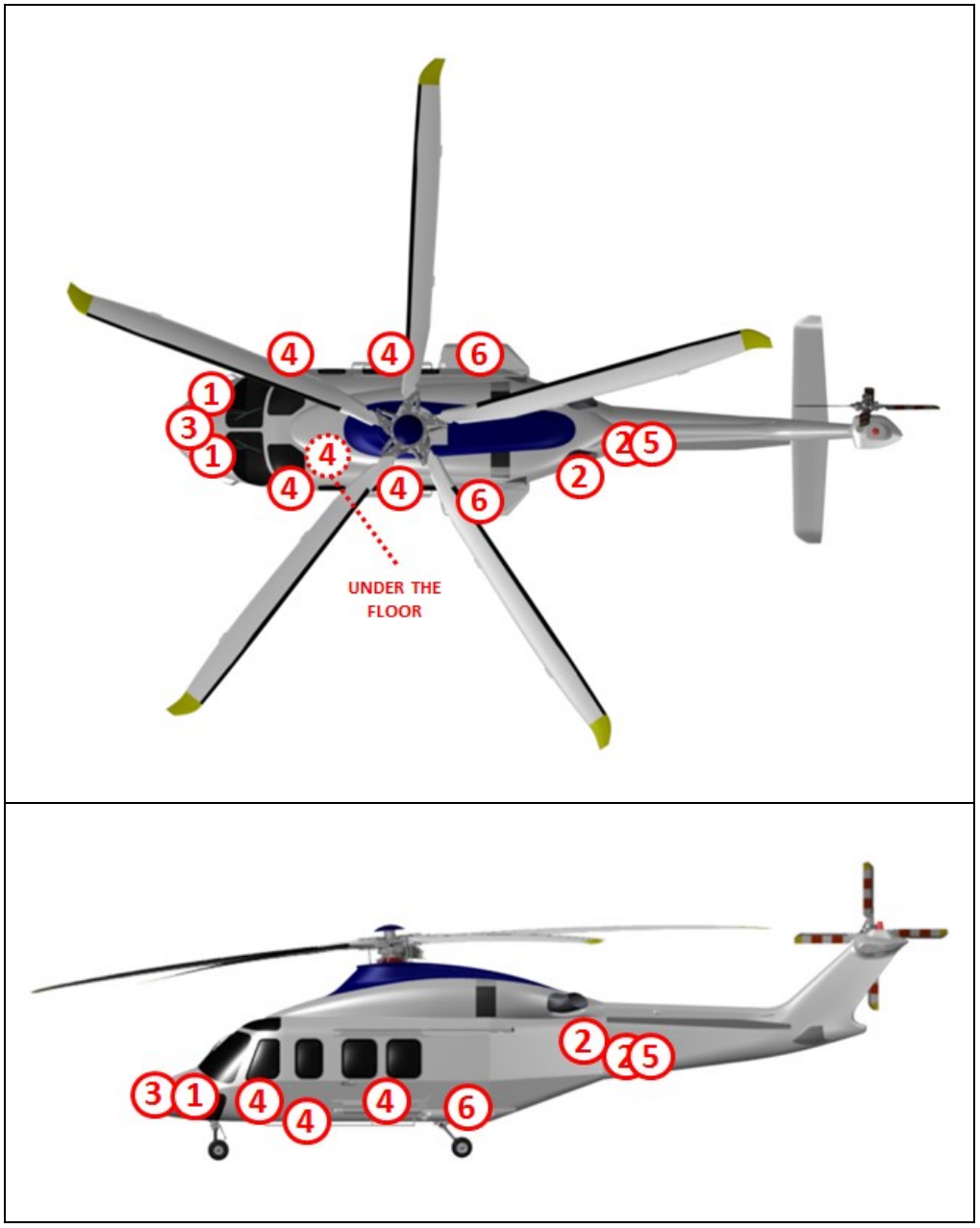


Figure 10 – Hazards – Batteries Location

HAZARDS – HOT SURFACES

PRESENCE OF HOT SURFACES	
SURFACE	**REF IN FIGURE**
Pitots (2, see Figure 13)	①
Engine exhausts (2)	②
Latches, handles, metallic components (in case of fire)	access doors/panels

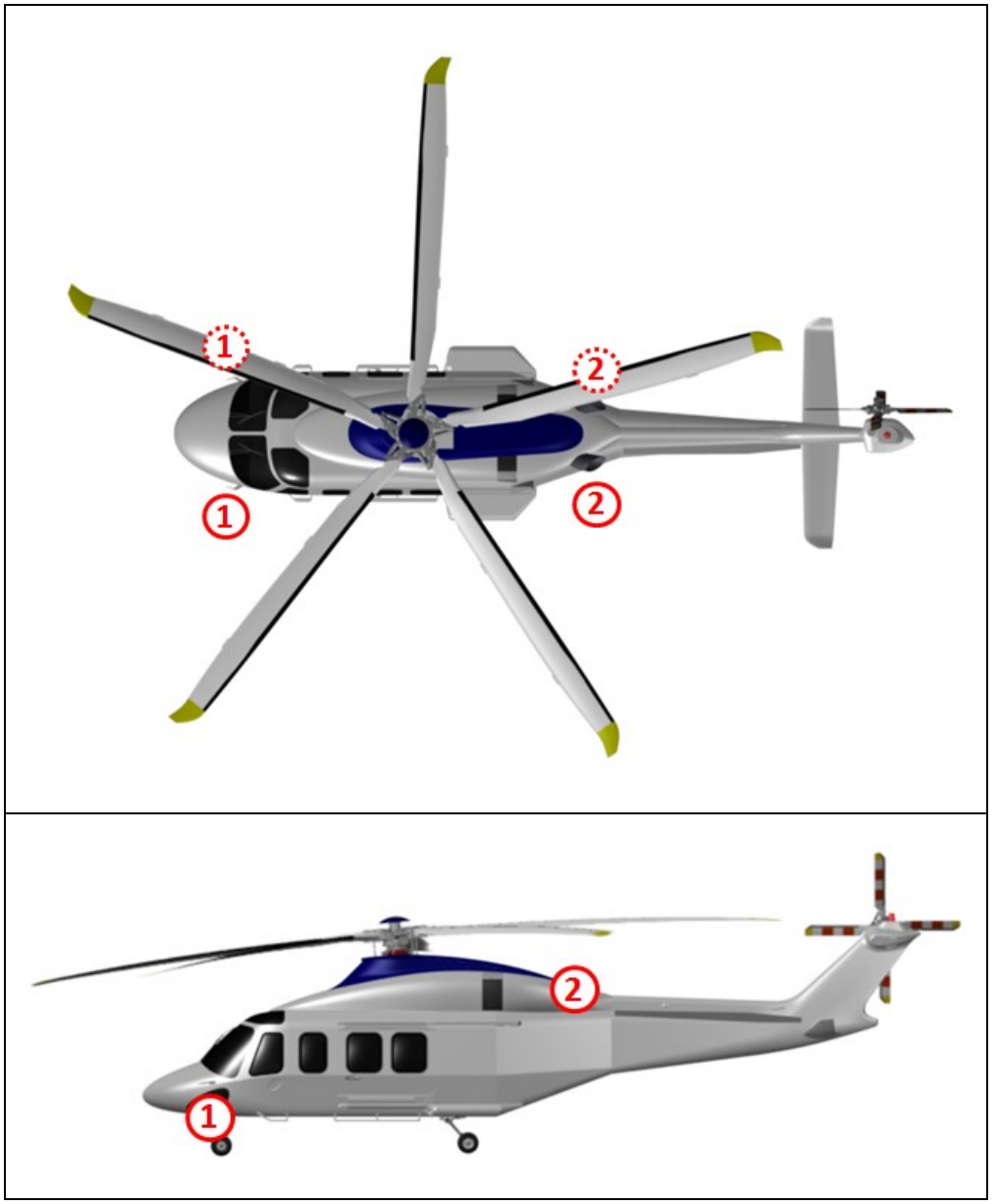


Figure 11 – Hazards – Hot Surfaces

HAZARD – FUEL AND LIQUIDS IN HYDRAULIC SYSTEM

PRESENCE OF FLAMMABLE LIQUIDS

MAX NOMINAL PRESSURE 207 BAR IN HYDRAULIC SYSTEM

Fuel Tank (capacity 1588 l, see Figure 3)

Auxiliary Tank (capacity 500 l, see Figure 3)

Figure 12 – Hazards – Fuel Location

HAZARDS – PITOTS

PITOTS ARE HEATED DURING COLD OPERATIONS

THE SHARP SHAPE CAN CAUSE INJURY

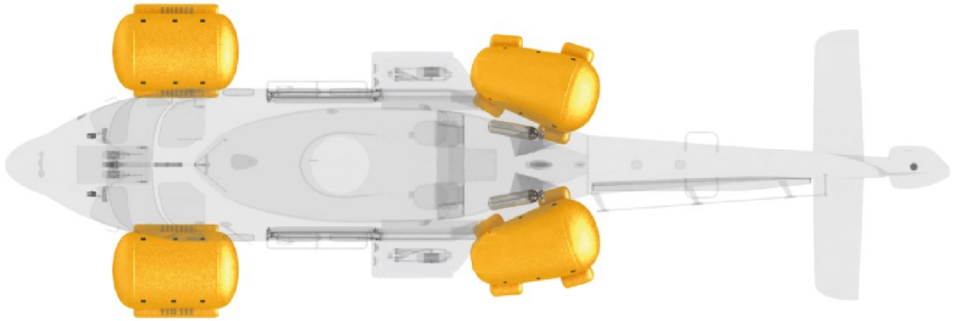
One Pitot for each side

Figure 13 – Hazards – Pitots

HAZARDS - EMERGENCY FLOATATION SYSTEM (EFS)

THE FRONT AND BACK BALOONS MAY INFLATE SUDDENLY

THE INFLATION BOTTLES INSTALLED RIGHT AFTER THE SPONSONS HAVE A PRESSURE ABOVE 220 BAR



Two Baloons for each side. See Figure 37 for the de-activation procedure

Figure 14 – Hazards – Emergency Floatation System

HAZARDS – EMERGENCY LIFE RAFTS

LIFE RAFTS MAY INFLATE SUDDENLY

PRESSURE OF THE INFLATION BOTTLES INSTALLED INSIDE THE SPONSON IS ABOVE 160 BAR

One Life Raft for each side

Figure 15 – Hazards – Emergency Life Rafts

HAZARDS - EMERGENCY LOCATION TRANSMITTER (ELT)

THE ELT BEACON MAY DEPLOY SUDDENLY

One ELT Beacon for the Helicopter

Figure 16 – Hazards – Emergency Location Transmitter

HAZARDS – IGNITER BOXES

VOLTAGE HIGH AMPERAGE OUTPUT
BEFORE SERVICING DISCONNECT INPUT CURRENT
BEFORE OPERATING CONNECT OUTPUT LEADS AND IGNITER PLUG

One Igniter Box for each engine

Figure 17 – Hazards – Igniter Boxes

HAZARDS – CHAFF & FLARE

CHAFF & FLARE MAY BE RELEASED

Figure 18 – Hazards – Chaff & Flare

SAFETY INFORMATION: GROUND STAFF (OUTSIDE

THE HELICOPTER)

IT IS RECOMMENDED TO APPROACH PERSONNEL NOT ADEQUATELY TRAINED ON GENERAL RISKS OR HELICOPTER EMERGENCY MEASURES

PERSONNEL IS REQUIRED TO WEAR THE APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT

USE CAUTION WHEN APPROACHING THE HELICOPTER, CHECKING THE STRUCTURE INTEGRITY

THE APPROACH OF THE HELICOPTER IS NOT ALLOWED IN CASE OF ANY POSSIBILE RECOVERY OR IGNITION OF FLAMES. VERIFY THE ABSENCE OF SPILLS OF FLUIDS AND FUEL

IN THE EVENT OF SMOKE, FLAMES, SPARKS FIRE FIGHTING TRAINED PERSONNEL ONLY IS ALLOWED TO OPERATE

IT MIGHT BE NECESSARY TO WEAR THE SELF-CONTAINED BREATHING APPARATUS

POSSIBLE PRESENCE OF STATIC ELECTRICITY ON THE HELICOPTER

ELECTRICALLY GROUND THE HELICOPTER IF POSSIBLE

ACCESS INTO THE HELICOPTER

USE NORMAL ACCESS

IF THE NORMAL ACCESS CANNOT BE USED, ACT ON THE EMERGENCY ACCESS DOORS

NORMAL ACCESS DOORS

Pilot and Copilot Doors (LH/RH) - Passenger Doors (RH/LH)

EMERGENCY ACCESS DOORS

Pilot and Copilot Emergency Windows (LH/RH)

Passenger Emergency Windows (4 RH/ 4 LH)(*)

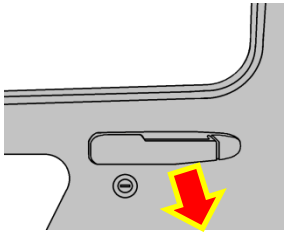
(*) STC configurations may differ from that reported in this document

Figure 19 – Normal and Emergency Access Doors Scheme

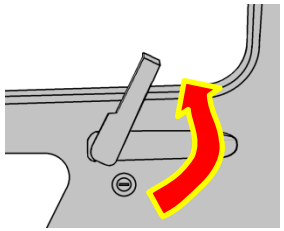
NORMAL ACCESS - OPEN THE PILOT/CO-PILOT DOOR

TYPE: HINGED DOOR LH/RH

FROM OUTSIDE

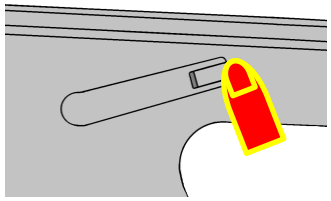


1) Pull the handle

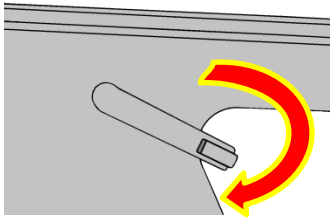


2) Turn the handle upwards

FROM INSIDE



1) Push the button on the handle



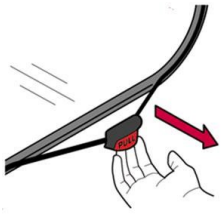
2) Rotate the handle downwards

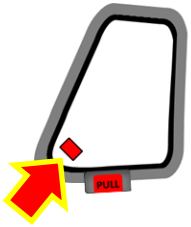
Figure 20 – Pilot/Co-Pilot Door - Opening Procedure

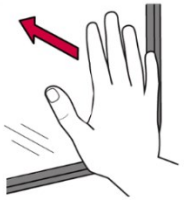
EMERGENCY ACCESS - OPEN THE PILOT/CO-PILOT EM. EXITS

TYPE: HINGED DOOR LH/RH

FROM OUTSIDE (left side for clarity)





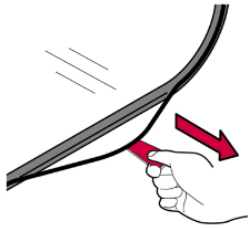


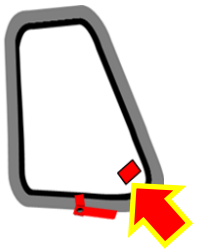
1) Pull tab to remove cord

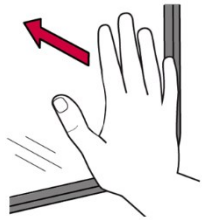
2) Push in window

in case the tab is not present break the window

FROM INSIDE (left side for clarity)







1) Pull strap to remove cord

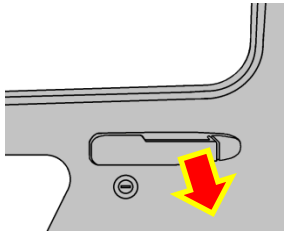
2) Push out window

Figure 21 – Pilot/Co-Pilot Emergency Exits - Opening Procedure

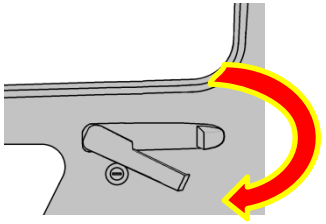
NORMAL ACCESS - OPEN THE PASSENGER DOOR

TYPE: SLIDING DOORS RH/LH

FROM OUTSIDE



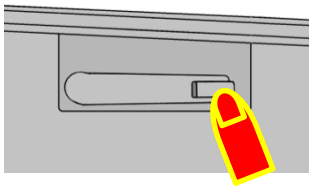
1) Pull the handle



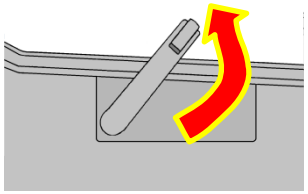
2) Turn the handle 90° upwards

3) Slide backwards

FROM INSIDE



1) Push the button on the handle



2) Rotate the handle upwards

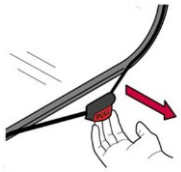
3) Slide backwards

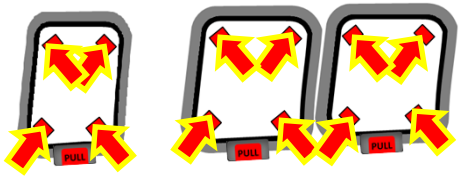
Figure 22 – Sliding Passenger Door - Opening Procedure

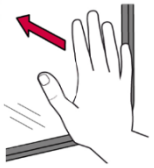
EMERGENCY ACCESS - OPEN THE PASSENGER EMERGENCY EXITS

TYPE: SLIDING DOORS RH/LH

FROM OUTSIDE (left side for clarity)



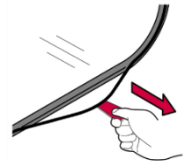


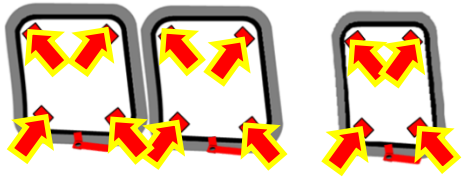


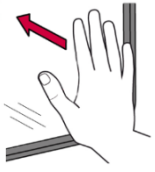
1) Pull tab to remove cord	2) Push in window

in case the tab is not present break the window

FROM INSIDE (left side for clarity)







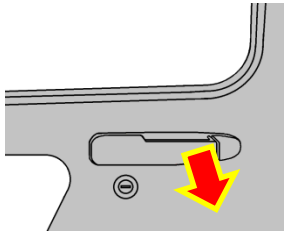
1) Pull strap to remove cord	2) Push in window

Figure 23 – Sliding Passenger Emergency Exits - Opening Procedure

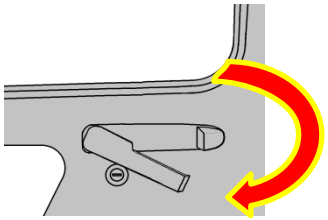
NORMAL ACCESS - OPEN THE PASSENGER DOOR

TYPE: HINGED DOOR LH/RH

FROM OUTSIDE

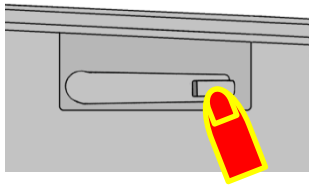


1) Pull the handle

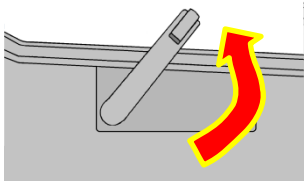


2) Turn the handle downwards

FROM INSIDE



1) Push the button on the handle



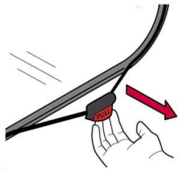
2) Rotate the handle upwards

Figure 24 – Hinged Passenger Door - Opening Procedure

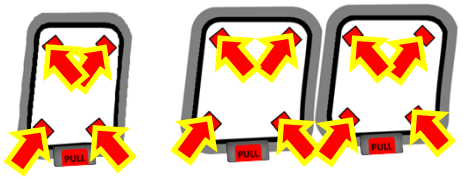
EMERGENCY ACCESS - OPEN THE PASSENGER EMERGENCY EXITS

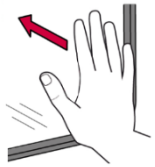
TYPE: HINGED DOOR LH/RH

FROM OUTSIDE (left side for clarity)



1) Pull tab to remove cord

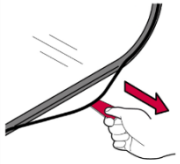




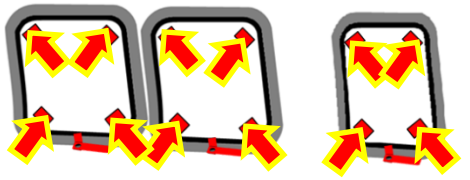
2) Push in window

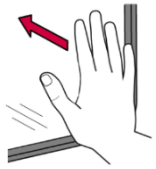
in case the tab is not present break the window

FROM INSIDE (left side for clarity)



1) Pull strap to remove cord



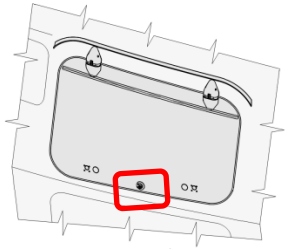


2) Push in window

Figure 25 – Hinged Passenger Emergency Exits - Opening Procedure

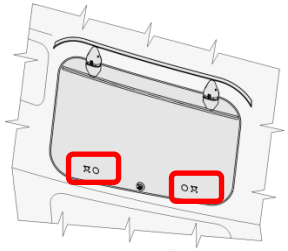
OPEN THE BAGGAGE DOOR

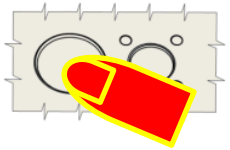
TYPE: HINGED DOOR LH/RH – Standard Version



Unlock the door

Operate the lock with the applicable key





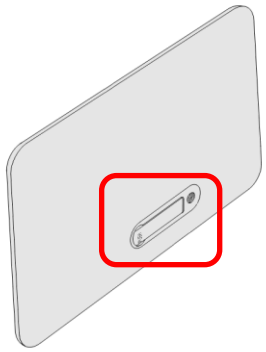
Push the two large sections

until the small ones come out

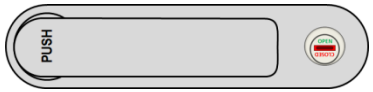
Lift the door with hands until the gas spring is in locked position

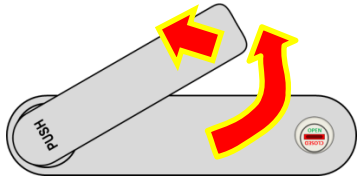
Figure 26 – Baggage Door - Opening Procedure

TYPE: HINGED DOOR LH/RH – Enhanced Version



Operate the lock with the applicable key to unlock the handle





Push on the handle (PUSH)

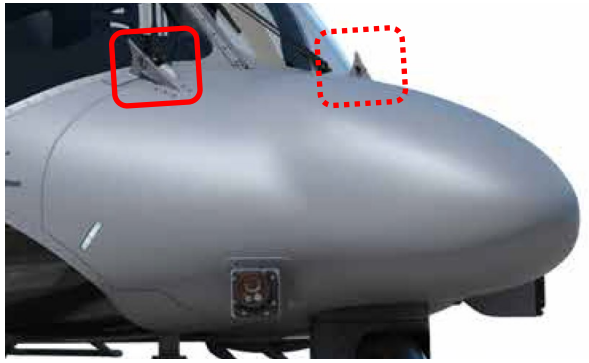
Turn and pull the handle to open the door

Lift the door with hands until the gas spring is in locked position

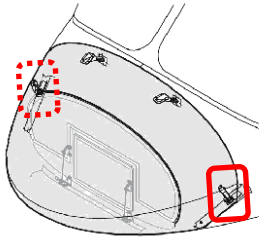
Figure 27 – Baggage Door - Enhanced Version - Opening Procedure

OPEN THE NOSE RADOME DOOR

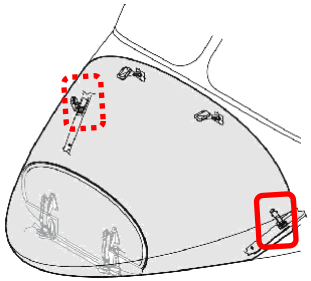
TYPE: HINGED DOOR



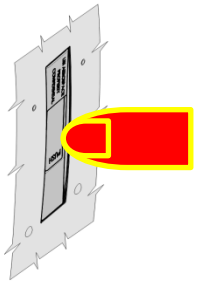
If Cable Cutter Kit is installed, remove the plug for each cutter

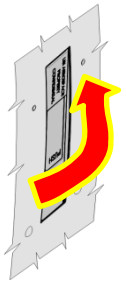


SHORT NOSE



LONG NOSE





Push the PUSH section until you disengage the hook of the latch	Pull the small section, lift the latch to disengage the hook form the structure and restrain the hook to the latch

Figure 28 – Nose Radome Door - Opening Procedure

ENGINE ACCESS

IGNITER BOXES - VOLTAGE HIGH AMPERAGE OUTPUT
BEFORE SERVICING DISCONNECT INPUT CURRENT
BEFORE OPERATING CONNECT OUTPUT LEADS AND IGNITER PLUG

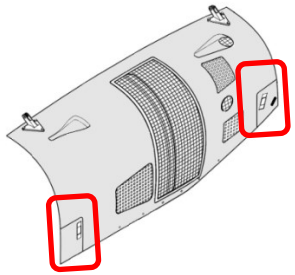
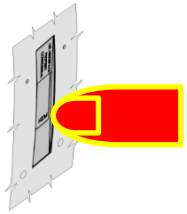
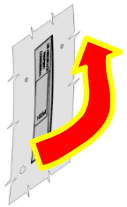
ENGINE COWLINGS OPENING PROCEDURE	
	
	
	
Push the PUSH section until you disengage the hook of the latch	Pull the small section, lift the latch to disengage the hook from the structure and restrain the hook to the latch
Lift the access door with hands, disengage the rod from the structure and lock the access door with the rod in the open position	

Figure 29 – Engine Cowlings Opening Procedure

FIREFIGHTING RECOMMENDATIONS

FIRE IN THE BAGGAGE COMPARTMENT
 **IF SMOKE/FIRE IS CONFIRMED USE THE EXTINGUISHER OTHERWISE OPEN THE BAGGAGE DOOR DIRECTLY**
See Figure 27 for the baggage door opening procedure

RECOMMENDED FIRE FIGHTING AGENTS	
engine fires	HALON or dry chemicals
exhaust nozzle fire	HALON or dry chemicals
APU fire	HALON or dry chemicals
fuel fire	dry chemical for leaking fuel and foam on ground spill area
wheel and brake fires	water fog or dry powder
	approach landing gear as per Figure 7 strand upwind of fire to avoid hydraulic fluid fumes
electrical fires	HALON or dry chemicals
cockpit and cabin area fires	HALON 1211 or dry powder
baggage compartment fire	HALON
aft equipment compartment fire	HALON

Figure 30 – Recommended Fire Fighting Agents

SAFETY INFORMATION: GROUND STAFF (INSIDE THE HELICOPTER)

THE FOLLOWING PROCEDURES MUST BE CARRIED OUT

1) **IN CASE OF EMERGENCY ON GROUND**
2) **ONLY IF PILOTS ARE INCAPACITATED**
3) **STRICTLY IN ORDER OF PRESENTATION**

USE CAUTION WHEN MOVING INSIDE THE HELICOPTER, CHECKING THE STRUCTURE INTEGRITY. SIGNS COULD INCLUDE BUT ARE NOT LIMITED TO, DEFORMITY OF STRUCTURE, FLAME IMPINGEMENT OR UNEVEN SURFACES

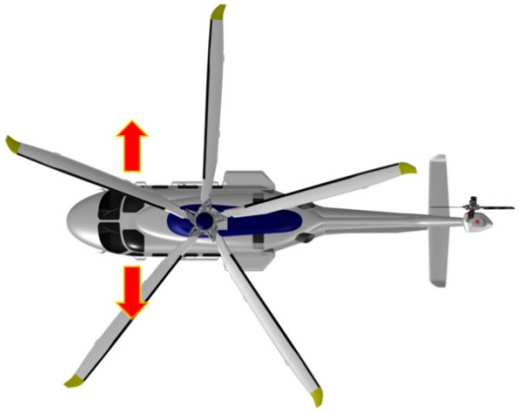
IN CASE OF CHOCKS AVAILABILITY
ACCESS THEIR NEED
AND LOCK THE WHEELS

WHEN ENTERING THE COCKPIT AREA, BE CAREFUL NOT TO MOVE THE CYCLIC AND COLLECTIVE CONTROLS BEFORE SHUTTING DOWN THE ENGINES

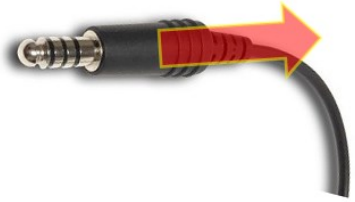
PERSONNEL RESCUE

FLIGHT HELMET DISCONNECTION

THE DIRECTION OF THE PLUG MIGHT BE DIFFERENT FROM THAT OF THE PILOT/CO-PILOT'S EGRESS



Pilot/Copilot exit directions



Disconnect the Flight Helmet unplugging the jack from the Inter-Communication System along its direction

Figure 31 – Helmet Disconnection

SAFETY BELTS

Pilot/copilot seat belt

Passengers' seat belt

Rotate the gear of the buckle in ANY direction to unfasten the belt

Figure 32 – Opening of the Safety Belt

EMERGENCY ENGINE SHUTDOWN

PERFORM THIS PROCEDURE TO FAST SHUTDOWN THE ENGINE AND ALLOW QUICKLY THE OTHER RESCUE OPERATIONS

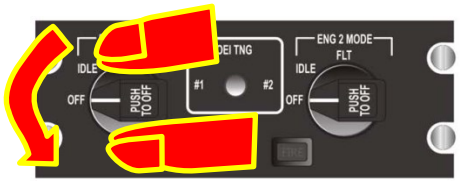
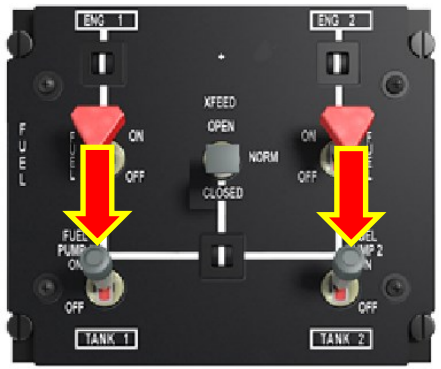
STEP 1 - ENGINE SHUTDOWN	
	
The Engine Control Panel is located in the Interseat Console	
	
Push and rotate counterclockwise to switch off each engine	If engine does not shut down move the Engine Control Lever of the Overhead Console to Off position

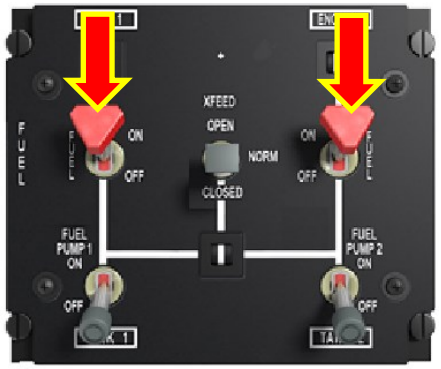
Figure 33 – Engine Shutdown

STEP 2 – ENGINE FUEL SUPPLY INTERRUPTION

The Fuel Control Panel is located in the Interseat Console



Move both the fuel pump switches to off position



Move both the fuel switches to off position to shut off the valves

Figure 34 – Engine Fuel Supply Interruption

STEP 3 – ENGINE FIRE EXTINGUISHING

PERFORM THIS STEP ONLY IN CASE OF ENGINE FIRE

The Engine Fire Detect/Exting. Control Panel is located in the Instrument Panel

Raise the guard switch of the engine under fire (see ENG 1 in figure)

Press the FIRE/ARM push button to charge the Bottles

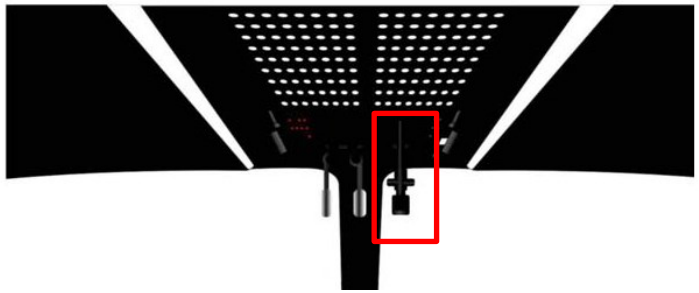
Select Bottle1 by moving the switch to BTL1.
If necessary do the same with Bottle 2.

Figure 35 – Engine Fire Extinguishing

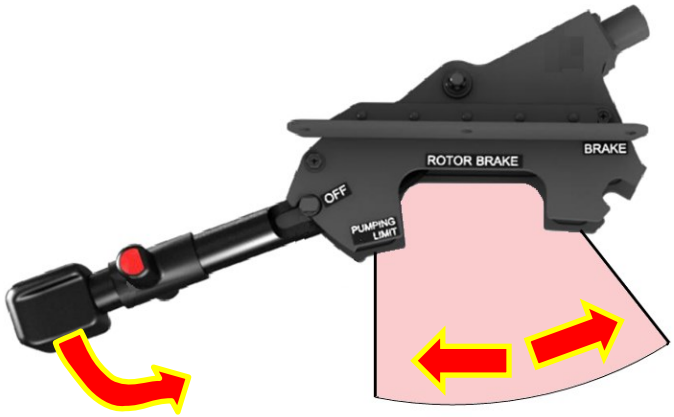
NEXT OPERATIONS

ROTOR BRAKE

THE PROCEDURE DOESN'T WORK WITH ENGINES STILL ON



The Rotor Brake lever is on the Overhead Console



Move the lever from OFF to the BRAKE position and pump within the indicated range if necessary

Figure 36 – Rotor Brake

EMERGENCY FLOATATION SYSTEM (EFS)

DE-ACTIVATE THE SYSTEM

The Floatation Control Panel is located in the Interseat Console

Set the master switch to OFF position

Figure 37 – Floatation System – De-activation

EMERGENCY LOCATOR TRASMITTER (ELT)

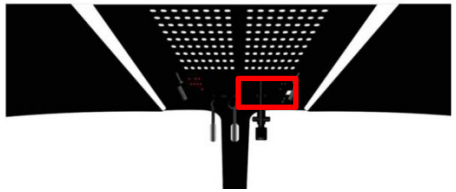
DE-ACTIVATE THE SYSTEM AND INFORM THE AIR TRAFFIC CONTROL ABOUT THE AIRCRAFT EVENT AND LOCATION

	
The System Control Panel is on the Instrument Panel	Set the switch to ARM

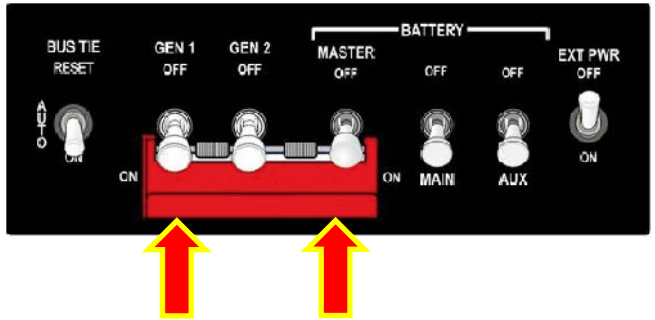
Figure 38 – ELT System – De-activation

INTERRUPTION OF THE POWER SUPPLY FROM THE CONTROL PANEL

PERFORM THIS PROCEDURE ONLY WHEN THE ENGINES ARE SWITCHED OFF AND THE ROTORS ARE STOPPED

	
	forward

The Electrical Power System Control Panel is on the Overhead Console



Move the Red Gand Bar backward to cut off all the power sources

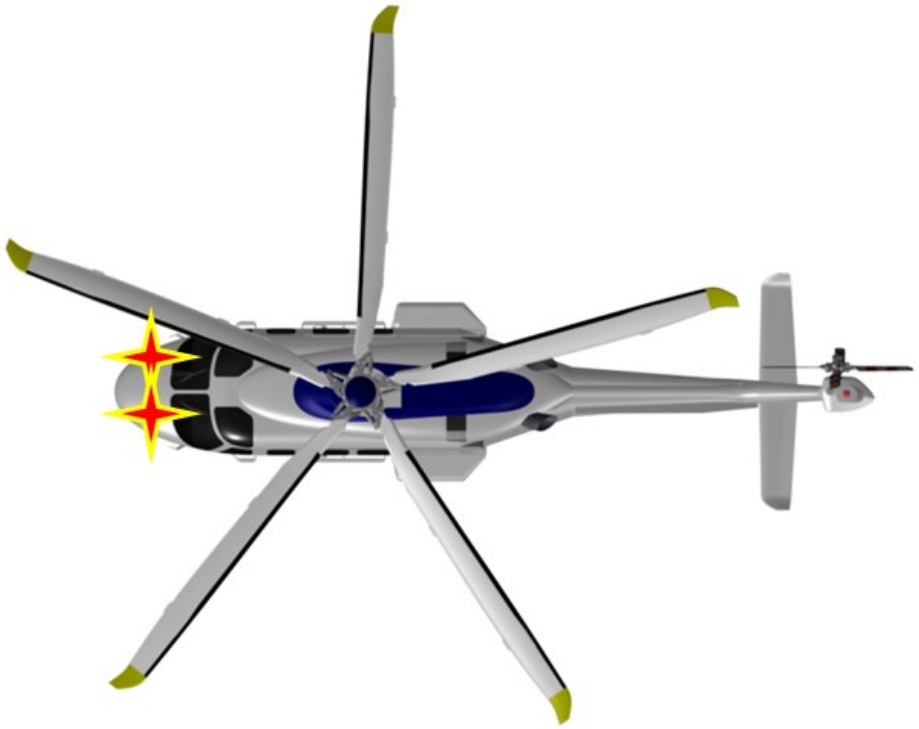
Figure 39 – Interruption of the Power Supply from the Control Panel

MANUAL DISCONNECTION OF THE BATTERIES

PERFORM THIS PROCEDURE ONLY WHEN THE ENGINES ARE SWITCHED OFF AND THE ROTORS ARE STOPPED

IN CASE OF NEED TO RECONNECT THE BATTERIES CONTACT LHD AI&P TEAM – RISK OF CVFDR DATA LOSS

See Figure 28 for the nose radome door opening procedure



Rotate counterclockwise the knob

Figure 40 – Battery Location and Disconnection Procedure

ADJUSTMENT OF THE PILOT SEATS

Raise the right-hand lever below the seat pan to unlock and move backward/forward the seat

Figure 41 – Adjustment of the Pilot Seats

REMOVAL OF THE PILOT SEAT

SEAT REMOVAL MAY REQUIRE THE USE OF THE SPREADER-CUTTER

Figure 42 – Removal of the Pilot Seats