Blackshape PH-4N3
frontseat
Checklist

ATTENTION!
DO NOT
STOW THIS CHECKLIST
IN DIRECT SUNLIGHT

Zelf Vliegen
Emoeweg 1, Lelystad
Telefoon: 0320 – 785522

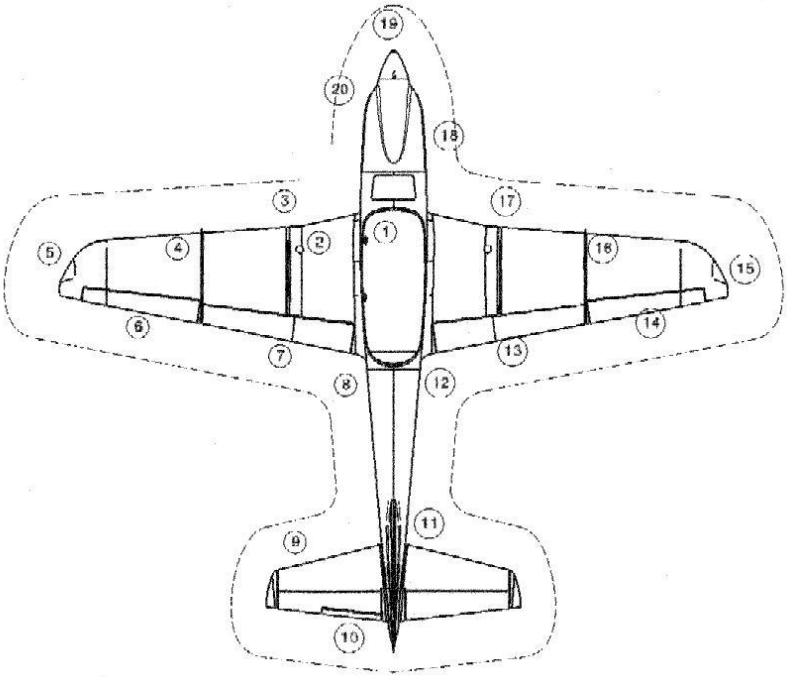
Issue 2, August 2016

Preflight Inspection Blackshape PH-4N3

NOTE:
The PIC (Pilot in Command) is solely responsible and must, before every flight, perform a complete inspection of the aircraft, known as "pre-flight inspection". Below the complete list of "pre-flight inspection" is listed.

GEAR SWITCH DOWN ! ! !	
IN CABIN CHECKS	
Airplane documents	CHECK
Flight controls	CHECK **(for proper direction of movement)**
Ignition Key	PULLED OUT
Parking Brake	ON
Throttle	IDLE
BATT	ON
Avionics	ON
Fuel quantity	CHECK
Circuit breakers	Pressed in
Flaps	CHECK **(extend and retract fully)**
Trim	CHECK **(fully up, fully down, neutral)**
Exterior lights	CHECK
Avionics	OFF
BATT	OFF
Foreign Object inspection	CHECK
Baggage	STOWED
Canopy	Clean and undamaged
Parking Brake	OFF

Walk around check and visual inspection



WALK AROUND CHECKS	
1	Canopy and opening handle - CHECK
2	Tank Cap - CHECK closed
3	Left main landing gear: (A) Main Leg conditions (B) Shocks conditions (C) Tire wear (D) Tire pressure
4	Leading edge and wing skin (LH): (A) CHECK integrity, cleaning and good conditions (B) CHECK inspections doors (C) CHECK the static/pitot for possible contamination or obstruction
5	Left wing tip: (A) CHECK integrity and good conditions (B) CHECK control fittings attachment points, control and joints
6	Left aileron: (A) CHECK integrity and good conditions (B) CHECK control fittings attachment points, control and joints
7	Left flap and hinges: (A) CHECK integrity and good conditions (B) CHECK plays and controls
8	Left side fuselage - Visual inspection
9	Fixed horizontal tail plane: (A) CHECK the leading edge, verify its cleaning (B) CHECK fin junction
10	Elevator: (A) CHECK integrity and good conditions of elevators (B) CHECK control fittings attachment points (C) CHECK movements (D) CHECK trim
11	Vertical Empennage and Rudder: (A)CHECK integrity and good conditions (B) CHECK control fittings attachment points (C) CHECK movements (min plays)
12	Right Side Fuselage - Visual inspection
13	Right Flap and hinges: (A) CHECK integrity and good conditions (B) CHECK plays and controls

14	Right aileron: (A) CHECK integrity and good conditions (B) CHECK control fittings attachment points, control and joints
15	Right wing tip: (A) CHECK integrity and good conditions (B) CHECK strobe and navigation lights
16	Leading edge and wing skin (RH): (A)CHECK integrity, cleaning and good conditions (B) CHECK inspections doors
17	Right main landing gear: (A) Main leg conditions (B) Shocks conditions (C) Tire wear (D) Tire pressure
18	Upper/lower cowling: (A) CHECK integrity, cleaning and good conditions (B) CHECK Air intake
19	Propeller and spinner: (A) CHECK fixing and condition of material **(absence of chipping,plays)**
20	Control engine compartment: (A)Foreign bodies absent (B) Colling circuit absence of leaks (C) Coolant CHECK quantity (D) Coolant Radiator Absence of leaks (E) Oil circuit Absence of leaks (F) Propeller rotate 6/10 round (G) Oil CHECK level (H) Oil Radiator Absence of leaks (I) Fuel circuit Absence of leaks (L) Gascolator Bleeding (M) Throttle control cables CHECK (N) Air ducts and filters Visual inspection (O) Air-box CHECK (P) Breakings and reference marks CHECK (Q) Silentblocs CHECK (R) Cowling CLOSE and LOCK (visual check)

NORMAL CHECKLIST BLACKSHAPE PH-4N3

BEFORE STARTING THE ENGINE	
WARNING **BEFORE STARTING THE ENGINE, THE CANOPY MUST BE CLOSED AND LATCHED AFTER STARTING THE ENGINE, THE CANOPY MUST STAY IN THE CLOSED AND LATCHE POSITION UNTIL THE ENGINE IS SHUT DOWN DURING ENGINE OPERATION IT IS PROHIBITED TO ENTER OR EXIT THE AIRPLANE**	
Gear switch down	CHECK
Preflight inspection	COMPLETED
Documents	ON BOARD
Rudder pedals	ADJUSTED
Safety pin for emergency ballistic parachute	REMOVE
Fuel Selector	LEFT OR RIGHT **(least full)**
Belts	FASTENED
Parking Brake	ON
Flight controls	FREE and CORRECT
Throttle	IDLE
RPM (prop control)	MAX
BATT	ON
Avionics	ON
Warning lights landing gear	TEST
Canopy	CLOSED and LOCKED

STARTING THE ENGINE	
Fuel Selector	LEFT OR RIGHT **(least full)**
Ignition Key	Insert
Throttle	IDLE
Choke	OPEN **(if necessary)**
Carburetor Heat	OFF
BATT	CHECK ON
Avionics	CHECK ON
Radio	OFF
Fuel Pump	ON
Strobe	ON
Time	NOTED
Propeller Area	CLEAR
Avionics	OFF
Starting Engine – key in position	START **(Max for 10 seconds)**
After starting	
Alternator	ON
Avionics	ON
RPM	2000 RPM for 2 minutes then 2500 RPM
Fuel Pump	OFF
Fuel pressure	CHECK
Choke	CLOSED **(push)**
Engine Instruments	CHECK
Oil pressure	CHECK **(max 7 bar, cold situation)**

BEFORE TAXI	
Oil Pressure	CHECK **(green arc)**
Oil Temperature	+/- 50°C (increasing during taxi)
Avionics	SET
Radio	ON AND SET
Altimeter	QNH
Navigation lights	ON

TAXI	
Parking Brake	OFF
Throttle	As required
Brakes	CHECK
Directional Control	CHECK
Flight / navigation instruments	CHECK
Compass	CHECK

ENGINE RUN-UP	
Parking Brake	ON
Throttle	2000-2500 RPM
Circuit Breakers	CHECK all in
Engine	
Oil temperature	50°C - 110°C
Oil pressure	2.0 – 5.0 bar
CHT	MAX 135°C
Throttle	4000 RPM
Magnetos	Cycle L – BOTH – R (**Max Drop 300 RPM** **Max Difference L/R 120 RPM)**
RPM full back 3 times **(first flight of the day, 1 time otherwise)**	Decrease RPM / increase MP Decrease RPM / decrease OIL pressure Decrease RPM / increase RPM **(max time 5 sec. to be at 4000 RPM)**
Throttle	IDLE
Amp	CHECK **(light off)**
Fuel quantity	CHECK
Fuel selector	RIGHT **(or fullest)**
Flight Instruments	CHECK
Flaps	T/O
Flight controls	FREE and CORRECT
Trim	NEUTRAL
Safety Belts	FASTENED

ONLY FOR RFI "GOPRO" SWITCH ON

RUNWAY ITEMS	
Parking Brake	OFF
Fuel Pump	ON
BATT / ALT	CHECK ON
Ignition	BOTH
Flaps	CHECK **(TO position)**
Trim	CHECK neutral
Take off area / final	FREE
Transponder	ALT or AUTO
Landing Light	ON
Controls	FREE

TAKE OFF and CLIMB	
Take off authorization	RECEIVED (if applicable)
Brakes	RELEASED
Throttle	FULL POWER
Directional Control	Keep with pedals
Airspeed	CHECK increasing
Rotate	V_R 55 KIAS and V_{TO} 60 KIAS
Brakes	APPLY (**temporarily after lift-off)**
Vertical Speed	CHECK increasing
Climb Speed	75 KIAS
Landing Gear	UP
Flaps (above 300 feet AGL)	UP
Climb Speed	85 KIAS
Landing Light	OFF
Fuel pump	OFF **(above 1000 ft)**
Throttle	As required
Trim	SET

CRUISE	
MP / RPM	SET
Engine	
Oil temperature	90° - 110°C
Oil pressure	2.0 – 5.0 bar
CHT	Less than 135°C
Carburetor Heat	As required

DESCENT	
Flight and avionics instruments	SET
RPM	MAX
Fuel pump	ON
Carburetor Heat	As required
Throttle	As required
Flaps	CHECK V_{FE} - as required

BEFORE LANDING	
Landing light	ON
Safety Belts	FASTENED
BATT / ALT	CHECK ON
Ignition	CHECK BOTH
Fuel Pump	CHECK ON
Throttle	As required
Speed	75 KIAS
Landing gear	DOWN and LOCKED **(3 greens)**
Speed	70 KIAS **(advise flaps 20 degrees)** **
Speed	65 KIAS **(short runway landing)**
Brakes (after landing)	As required

AFTER LANDING	
Flaps	UP
Landing Light	OFF
Fuel Pump	OFF
Time	NOTED

WARNING
FOR STRONG HEADWIND, CROSSWIND, DANGER OF WINDSHEAR OR TURBULENCE: A HIGHER APPROACH SPEED SHOULD BE SELECTED

TAXI	
Power	2000 – 2500 RPM x 1 minute
Transponder	STBY or AUTO

ENGINE SHUT OFF	
Parking Brake	ON
Engine Instruments	CHECK
Radio	OFF
ALT	OFF
RPM	Min 1600 – 1700 RPM
Ignition	OFF
Key	Remove
BATT	OFF
Fuel Selector	Keep in latest used position
Avionics	OFF
All electrical switches	OFF
Safety pin for emergency ballistic parachute	INSERT
Place caps on the pitot tube and any other safety	

FLIGHT IN RAIN
NOTE: **FLIGHT PERFORMANCE MIGHT BE REDUCED. T/O DISTANCE AND MAXIMUM HORIZONTAL AIR SPEED MIGHT BE ESPECIALLY AFFECTED. THE INFLUENCE ON FLIGHT CHARACTERISTICS OF THE AIRPLANE MIGHT BE SUBJECT TO VARIATION. FLIGHTS THROUGH HEAVY RAIN SHOULD BE AVOIDED DUE TO THE REDUCED VISIBILITY**

WARNING **NO WATERPROOF**

OPERATING SPEEDS AND LIMITATIONS

OPERATING SPEEDS	
Take-off for 50 feet obstacle	75 KIAS
Beste Angle (Vx) wing flaps cruise	65 KIAS at 10 degrees
Beste Rate (Vy) wing flaps cruise	85 KIAS at 1100 fpm
Glide	70 KIAS (2 persons)
Vno Speed in rough air	135 KIAS
Va speed with full control surfaces deflections	85 KIAS
Vne (never exceed)	164 KIAS
Vfe flaps 10 degrees (T/O)	80 KIAS POH
Vfe flaps 20 degrees (approach)	75 KIAS POH
Vfe flaps 30 degrees (landing)	70 KIAS POH
Vldg	70 KIAS 20 degrees
Downwind flaps 10 degrees	20 / 5000 / 80
Base flaps 20 degrees (gear down)	23 / 5000 / 75
Final flaps 30 degrees (advise 20 degrees)	23 / MAX / 70
Crosswind max	16,1 kts
Balked landing (go-around)	70 KIAS

**NOTE: Increase Speed by 5 kts if 2 persons weight above standard.

MANEUVERING LOAD FACTORS		
No flaps	+4(6)	-2
Flaps	+2	0.0

APPROVED MANEUVERS
This airplane is for non-aerobatic use only.
The aerobatic use does not includes: - All the maneuvers related to “normal” flights, Stalls (except whip stalls), Lazy eight, Turns with angle of inclination not exceeding 60 degrees

ENGINE POWER SETTING			
Power setting	Engine speed (RPM)	MP	Speed
100% TO perform	5800	28	140 KIAS (**max 5 min)**
Max cruise	5500	28	135 KIAS
90%	5000	28	130 KIAS
75%	5000	26	120 KIAS
65%	5000	24	100 KIAS
55%	5000	22	90 KIAS

EMERGENCY CHECKLIST BLACKSHAPE PH-4N3

ENGINE FAILURES

ENGINE FAILURE DURING TAKE-OFF RUN	
Engine Throttle	IDLE
Brakes	As required
Flaps	UP
Fuel Selector	OFF
Ignition	OFF
BATT / ALT	OFF

ENGINE FAILURE IMMEDIATELY AFTER TAKE-OFF	
Insufficient engine power	
Airspeed	70 KIAS
Engine Throttle	FULL Power
Fuel Selector	LEFT or RIGHT
Ignition	BOTH
Fuel Pump	Check ON

WARNING
IF ADEQUATE ENGINE PERFORMANCE CANNOT BE RESTORED IMMEDIATELY, PREPARE FOR AN EMERGENCY LANDING. IF POSSIBLE, LAND STRAIGHT AHEAD, AVOIDING OBSTACLES

SHORTLY BEFORE LANDING	
Engine Throttle	IDLE
Fuel Selector	OFF
Ignition	OFF
Flaps	As required
BATT / ALT	OFF
Engine off	Perform Emergency Landing

ENGINE FAILURE IN FLIGHT	
Airspeed	70 KIAS
Engine Throttle	OPEN 1/3
Carb Heat	OPEN
Fuel Selector	LEFT or RIGHT
Ignition	BOTH
Fuel Pump	ON
Ignition	START
If no improvement	Perform emergency

LOW FUEL PRESSURE	
Fuel Pump	ON
Fuel Selector	LEFT or RIGHT
Fuel Quantity	CHECK
Get ready to perform	Emergency Power-Off Landing
Land as soon as possible	

LOW OIL PRESSURE	
OIL Temp	CHECK
Get ready to handle an imminent engine failure: reach the glide range of an area suitable for an	Emergency landing
Ignition	OFF
Get ready to perform	Emergency Power-Off landing

HIGH OIL TEMPERATURE	
OIL Temp above green arc	Reduce power to minimum
If Oil Temp FALLS	
Land	As soon as possible
If OIL Temp does NOT FALL	
CHECK CHT and EGT	
CHT and EGT Fall	Land as soon as possible
CHT and EGT does NOT FALL Get ready to perform	Emergency landing

ROUGH ENGINE OPERATION	
Engine Throttle	Maintain the position
Carburetor Heat	ON
Fuel Pump	ON
Ignition Cycle	L – BOTH – R – BOTH
Engine Parameters	CHECK
If no improvement – get ready	Emergency Power-Off landing

EMERGENCY LANDING

EMERGENCY POWER-OFF LANDING	
Airspeed	70 KIAS
Fuel Selector	OFF
Ignition	OFF
Safety belts	FASTENED
Radio	Communicate on 121,5 Mhz, give location and intention
Landing gear	DOWN **(3 greens)**
Flaps	As required
BATT / ALT	OFF
After touchdown	Apply brakes as required

PRECAUTIONARY POWER-ON LANDING	
NOTE: **A PRECAUTIONARY LANDING WOULD BE REQUIRED IF CONTINUING THE FLIGHT WOULD ENDANGER THE AIRCRAFT OR ITS OCCUPANTS. CIRCUMSTANCES, INCLUDING MECHANICAL DEFECTS, LOW FUEL QUANTITY OR DETERIORATING WEATHER CONDITIONS COULD REQUIRE A PRECAUTIONARY LANDING.**	
Identify landing area. Pay particular attention to wind direction and obstacles	
Safety belts	FASTENED and TIGHTENED
Initiate	DESCENT
Flaps	As required
Landing gear	DOWN **(3 greens)**
Fly over the landing area (not below 500 ft) to confirm suitablility and that the approach route is free of obstacles	
Climb to circuit	
Radio	Communicate location and intentions

PRECAUTIONARY POWER-ON LANDING CHECKLIST
TO BE CONTINUED NEXT PAGE!!! → → → → → → → → →→

PRECAUTIONARY POWER-ON LANDING (CONTINUATION)	
Approach	
Engine Throttle	As required
Fuel Pump	ON
Flaps	LANDING
Airspeed	70 KIAS
Touchdown shall be performed with minimum airspeed, nose wheel should be kept above the ground as long as possible	
After touchdown	
Brakes	As required
Fuel Selector	OFF
Ignition	OFF
BATT / ALT	OFF

NOTE:
IF NO SUITABLE LEVEL LANDING AREA CAN BE FOUND, AN UP-HILL LANDING SHOULD BE PERFORMED IF POSSIBLE

GLIDING

GLIDING	
Flaps	UP
Airspeed	70 KIAS
Glide ratio	11:1
Example: for every 1.000 ft of altitude the aircraft can move forward 15.000 ft or 2.8 NM	

LANDING GEAR FAILURE	
Circuit Breaker	CHECK **(reset if tripped)**
Airspeed	MAX 70 KIAS
Landing gear lever	DOWN
Landing gear lights	CHECK **(3 greens)**
If the landing gear does not go down due to electrical issue	
Airspeed	Max 65 KIAS
Actuate individually each emergency gear extension handle until their stops to ensure the gear is down and locked	
Follow the normal landing procedure	
Airspeed	Max 80 KIAS
If the landing gear does not go down due to mechanical issue	
Airspeed	Max 65 KIAS
Landing gear	FULL UP
Flaps	FULL UP
Follow	Emergency landing procedure

FIRE and SMOKE

ENGINE FIRE DURING START-UP ON THE GROUND	
Engine Cranking	CONTINOUS
If the engine starts	
Power	High RPM for 2 – 3 minutes
Engine	Shut off **(inspect for damages)**
If the engine fails to start	
Throttle	FULL OPEN
Engine Cranking	CONTINOUS
Fuel Selector	OFF
Cabin Heater	CLOSE
Ignition	OFF
All electrical switches	OFF
Evacuate the aircraft	
Extinguish the fire using a powder of CO^2 extinguisher direction the jet directly on the intake of the engine cowling.	

IN FLIGHT ENGINE FIRE	
Fuel Selector	OFF
Engine Throttle	FULL power
Cabin Heater	CLOSE
Airspeed	70 KIAS
Fuel Pump	OFF
Ignition	OFF
Flaps	As required
Get ready for	Emergency Power-off landing
BATT / ALT	OFF in final

IN FLIGHT CABIN FIRE	
BATT	OFF
Cabin Heater	OFF
Cabin Ventilation	CLOSE
Fire	Smother
When fire is out	
Cabin Ventilation	OPEN
Cabin Heater	Keep OFF
If the situation cannot be controlled	
Proceed to	Emergency landing immediate

FIRE OF ELECTRICAL ORIGIN INCLUDING SMOKE DURING FLIGHT	
BATT	OFF
Cabin Ventilation	CLOSE
Cabin heater	CLOSE
Fire	Smoother
If fire is out and electricity is required to continue the flight	
Cabin Ventilation	OPEN
Avionic Switch	OFF
All switches	OFF
Circuit Breakers	Press All
Circuit Breakers	Press BATT
BATT Switch	ON
Avionic Switch	ON
Circuit Breakers	Operate individually and check the presence of smoke
Radio	ON
Land as soon as possible	
If the situation cannot be controlled	
Proceed	Emergency landing immediate

GROUND FIRE OF ELECTRICAL ORIGIN INCLUDING SMOKE	
If engine is OFF	
BATT / ALT	OFF
If engine is RUNNING	
Engine Throttle	IDLE
Fuel selector	OFF
Ignition	OFF
Canopy	OPEN
Extinguisher	Use as required

UNINTENTIONAL FLIGHT INTO ICING AREA	
1	Leave the area of ice formation through a change of altitude and/or flight direction. Fly to an area with a higher air temperature.
2	Keep moving the control surfaces to maintain their movability.
3	Increase RPM to avoid icing of propeller blades (Maximum RPM)

WARNING
IN CASE OF FORMATION OF ICE ON THE WINGS, THE STALL SPEED WILL INCREASE

RECOVERING FROM UNINTENTIONAL SPIN	
Engine Throttle	IDLE
Rudder Pedals	Opposed to direction of rotation
Control Stick	Ease forward, ailerons neutral
Rudder Pedals	Centered after rotation stop
Flaps	UP
Elevator	Pull cautiously. Bring the airplane from descent into level flight. Do not exceed the maximum permissible airspeed (Vne).

WARNING

THE AIRCRAFT IS NOT SUITABLE TO SPIN MANEUVRES. SPIN RECOVERY HAS NOT BEEN DEMONSTRATED. IF RECOVERY MANEUVRES FAIL, PREPARE TO ACTUATE THE BALLISTIC RECOVERY SYSTEM ACCORDING TO MANUFACTURER'S INSTRUCTION.

	LANDING WITH A DEFLATED TIRE ON THE MAIN LANDING GEAR
1	Final approach with flaps in LDG position
2	Land airplane on the side of runway opposite to the side with the defective tire to compensate for change in direction which is to be expected during the landing roll.
3	Land with wing slightly tipped in the direction of non-defective tire. To increase the maneuverability during rolling, the nose-wheel should be brought to the ground as soon as possible after touch-down.
4	To ease the load on the defective tire, the aileron should be fully applied in the direction of the non-defective tire.

ELECTRICAL FAILURE

TOTAL ELECTRICAL FAILURE	
BATT Circuit Breaker	If tripped, reset (only once)
BATT / ALT	CHECK ON
If no improvement	Land as soon as possible

GENERATOR FAILURE	
GEN Annunciator illuminated / Indication on Avionic System (Dynon)	
BATT	RESET OFF/ON
GEN Circuit Breaker	If tripped, reset
If unsuccessful	
(A) Switch OFF all non-flight essential electrical consumers (B) Monitor Voltmeter/Ammeter (C) Land as soon as possible	

NOTE:
ON SHUTDOWN OF GENERATOR, THERE IS UP TO 30 MINUTES OF BATTERY POWER IF IT IS FULLY CHARGED AND PROPERLY MAINTAINED.

ELECTRIC CHARGE	
AMP / VOLT	CHECK
ALT	OFF
VOLT	Green arc
ALT	ON
VOLT	CHECK
If no improvement	
GEN	OFF

FLAP SYSTEM FAILURE	
Flaps Mode	MAN
Flaps Actuator	Check operation / position
If no improvement	
Flaps circuit breaker	RESET
Actuator	CHECK operation
In case of failure	Landing procedure with no flaps

TRIM SYSTEM FAILURE	
Circuit Breaker	CHECK, reset if tripped
Trim Control	CHECK correct operation
If no improvement	Continue the flight normally considering a greater effort on the control stick

IN FLIGHT LOSS OF CANOPY	
Airspeed	Do not exceed 65 KIAS
Maneuverability	CHECK at 60 KIAS
Land as soon as possible	

OPENING THE EMERGENCY PARACHUTE	
Level aircraft	If possible
Ensure Min opening height if possible	Min 33 m
Fuel Selector	OFF
Alternator	OFF
BATT	OFF
All electrical switches	OFF
Opening handle	Pull vigoursly
Safety belts	Fastened and tightened
Open canopy safety latches	
Before impact	Curried up position
After impact	Move away from the aircraft aqap

NOTE:
SHOULD YOU ACUALLY NEED TO OPEN THE EMERGENCY BALLISTIC PARACHUTE, ALLOW FOR THE TIME IT WILL NEED TO UNWRAP COMPLETELY (ABOUT 2 SECONDS).

WARNING
THE CAPACILITY OF THE BALLISTIC RECOVERY SYSTEM HAS NOT BEEN DEMONSTRATED IN FLIGHT

ZELFVLIEGEN

Circuitbreakers PH-4N3 (situated right lower panel)

Batt	Avionics master	Fuel pump	Nav/pos lights	Strobe lights	Taxi lights	LG control	Left LG	Nose LG	Right LG	AP pitch/roll	Spare	Front
30A	15A	2A	3A	7½A	1A	2A	7½A	7½A	7½A	3A	20A	
Batt ctrl	Pilot display	Pax display	Com	Intercom	Transp	VOR	Aux	12 V socket	Starter	Trim	Flaps	
2A	5A	5A	5A	1A	3A	4A	3A	5A	3A	1A	3A	