

Black Square B60 Piston Duke & Grand Duke

Checklist & Procedures for MS Flight Simulator

by PH-BKO (v1.1)

NOTES

This checklist / procedure list is for flight simulator use only. This document is based on the Black Square B60 Piston Duke MSFS manual.

Bold items should be followed. Items that are not bold, could be skipped "safely".

SPECIFICATIONS / LIMITATIONS

	Stock	Grand Duke
Max. Takeoff Weight (lbs)	6.775	7.000
Max. Landing Weight (lbs)	6.600	7.000
Service Ceiling (ft)		30.000
Normal Range (30 min. reserve) (nm)	950	1.175
Usable Fuel Weight (lbs)	1.212	1.422
Full Fuel Payload (lbs)	1.368	1.303
Takeoff Distance (ft)	2.626	2.360
Landing Distance (ft)	3.065	2.885

SPEEDS (KTS)

	Stock	Grand Duke
Rotation (Vr)	85	76
Clean stall	81	78
Min. controllable	85	70
Best Angle of Climb (single/dual engine)	100/99	94/96
Best Rate of Climb (single/dual engine)	112/120	118/126
Best Glide	110	115
Max. Full Flap Extension		140
Max. Approach Flap / Landing Gear Extension		174
Never Exceed		233

PREFLIGHT

Preflight Inspection	COMPLETE
Control Locks	REMOVE
Seat & Seatbelts	SECURE
Cabin Door	LATCHED
Nose Baggage Door	LATCHED
Parking Brake	SET
Weights & Fuel (EFB)	SETUP
Landing Gear	DOWN
Electrical Switches	OFF
Engine & Avionics	OFF
Switches	
Oxygen Pressure	1550-1850 PSI
Circuit Breakers	ALL IN
Intercooler Air	OFF (PUSH)

Cabin Press Shutoff	OPEN (PUSH)
Alternate Static Air	NORMAL
CO Detector	TEST
Environmental Mode	OFF
Flaps	UP
Prop Sync	OFF
Throttles	CLOSED
Propellers	HIGH RPM
Mixture	FULL RICH
Trims	CENTERED
Fuel Selectors	ON

BEFORE ENGINE START

Beacon Light	ON
Battery Master	ON
Bus Volts	≥ 23V
Fuel Quantities	CHECK
Annunciators	TEST & CONSIDER
L Boost Pump	ON
L Boost Pump	VERIFY AUDIBLE
L Boost Pump	OFF
R Boost Pump	ON
R Boost Pump	VERIFY AUDIBLE
R Boost Pump	OFF

ENGINE START (COLD)

RIGHT ENGINE	
Pre-Oiler	R FOR 30SEC
R Oil Pressure	> 15 PSI
R Throttle	FULL OPEN
R Boost Pump	ON FOR 5-8SEC
R Fuel Flow	> 50 PPH
R Boost Pump	OFF
R Throttle	OPEN 1/2"
R Starter	ENGAGE
R Throttle	1000-1200 RPM
R Oil Pressure	GREEN IN 30SEC
R FUEL PRESS	EXTINGUISHED
Annunciator	
R Generator	ON
R Generator Load	< 0.25 IN 2 MIN
Bus Volts	28V
Engine Instruments	CHECK
Battery Temperature	< 120F

REPEAT FOR LEFT ENGINE

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ENGINE START (HOT)

RIGHT ENGINE

R Mixture	CUT-OFF
R Boost Pump	ON FOR 10-20SEC
R Boost Pump	OFF
R Mixture	FULL RICH
R Throttle	FULL OPEN
R Boost Pump	ON FOR 2-3SEC
R Fuel Flow	> 50 PPH
R Boost Pump	OFF
R Throttle	OPEN 1/2"
R Starter	ENGAGE
Repeat if not starting	
R Throttle	1000-1200 RPM
R Oil Pressure	GREEN IN 30SEC
R FUEL PRESS	EXTINGUISHED
Annunciator	
R Generator	ON
R Generator Load	< 0.25 IN 2 MIN
Bus Volts	28V
Engine Instruments	CHECK
Battery Temperature	< 120F

REPEAT FOR LEFT ENGINE

ENGINE START (FLOODED)

RIGHT ENGINE

R Mixture	LEAN
R Throttle	OPEN 1/2"
R Starter	ENGAGE
R Throttle	ADVANCE UNTIL START
R Throttle	IDLE
R Mixture	FULL RICH
R Oil Pressure	GREEN IN 30SEC
R FUEL PRESS	EXTINGUISHED
Annunciator	
R Generator	ON
R Generator Load	< 0.25 IN 2 MIN
Bus Volts	28V
Engine Instruments	CHECK
Battery Temperature	< 120F

REPEAT FOR LEFT ENGINE

AFTER ENGINE START

Boost Pumps	ON IF > 90F/32C
Lights	AS REQUIRED
Weather Radar	OFF / STANDBY
Avionics	ON
Inverter	MAIN
INVERTER Annunciator	EXTINGUISHED
Cabin Temp & Mode	AS REQUIRED
Mixture	LEAN FOR TAXI
Parking Brake	RELEASE
Brakes	CHECK

STARTER DOES NOT DISENGAGE

Alternators	OFF
Battery Master	OFF
Mixture	CUT-OFF
Magnetas	OFF

RUN UP & INSTRUMENT CHECKS

RUN UP

Parking Brake	SET
Annunciators	TEST & CONSIDER
Remote Compass	SLAVED & ALIGNED
Fuel Selectors	CROSSFEED
Boost Pumps	ON
Mixture	FULL RICH
Throttle	2000 RPM
Exercise Left Propeller	TO 300 RPM
	DROP
Exercise Right Propeller	TO 300 RPM
	DROP
Check Left Magnetos	≤ 150 RPM
	DROP
Check Right Magnetos	≤ 150 RPM
	DROP
Instrument Air	GREEN & NO LIGHTS
Left Generator	OFF
Left Generator Load	ZERO
Right Generator	OFF
Right Generator Load	ZERO
Left Generator	ON
Left Generator Load	> 0.25
Right Generator	ON
Right Generator Load	> 0.1

ENVIRONMENTALS & ANTI-ICE

Throttle	2500 RPM
Cockpit Window	CLOSED
Cabin Altitude	FIELD ELEV.
Cabin Differential	ZERO
Cabin Climb Rate	10 O'CLOCK
Cabin Altitude Goal	1000FT BELOW FIELD ELEV.
Cabin Press Mode	TEST

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Cabin Alt, Diff & Climb	OBSERVE DESCENT
Cabin Altitude Goal	INIT. CLIMB
Cabin Press Mode	NORMAL
Throttle	1500 RPM
Propeller Heat	ON
Prop Heat Gnd Test	HOLD
Propeller Amps	14-28A & CYCLES
Propeller Heat	OFF
Windshield Heat	ON
Windshield Volts	220-260V
Ammeters	INCREASE
Windshield Heat	OFF
Left Pitot Heat	ON
Ammeters	INCREASE
Right Pitot Heat	ON
Ammeters	INCREASE
L Fuel Vent Heat	ON
Ammeters	INCREASE
R Fuel Vent Heat	ON
Ammeters	INCREASE
Heating Switches	OFF
Surface Deice	MANUAL
Boot Pressure	15-20 PSI
Surface Deice	SINGLE CYCLE
Boot Pressure	15 - 20 PSI
Surface Deice	OFF
INSTRUMENTS & FLIGHT SURFACES	
Throttle	1000-1200 RPM
Fuel Selectors	ON
Pitch Trim Power	ON
Electric Trim	EXERCISE
Autopilot	TEST
Heading Bug	30 DEG. LEFT
Autopilot Master	ENGAGE
Heading Mode	ENGAGE
Yoke Movement	OBSERVE
Flight Director	BANK LEFT
Heading Bug	30 DEG. RIGHT
Yoke Movement	OBSERVE
Flight Director	BANK RIGHT
Autopilot	OFF
Flight Director	OFF
Elevator Trim	SET TAKEOFF
Flaps	CHECK OPERATION
Flaps	TAKEOFF
CABIN DOOR	EXTINGUISHED
Annunciator	
Flight Controls	FREE & CORRECT
Altimeter	SET
Departure Altitude	SET
Takeoff Heading	SET
Panel Lights	DIM FOR TAKEOFF
Parking Brake	RELEASE

BEFORE TAKEOFF	
Mixture	MAX POWER
Oil Temperatures	$\geq 35C$
Battery Temperature	$< 120F$
BATTERY CHARGE	EXTINGUISHED
Annunciator	
Air Conditioning	OFF
Lighting	AS DESIRED
Transponder	ALT
Weather Radar	ON

TAKEOFF	
Throttles	FULL OPEN
Brakes	RELEASE
Engine Instruments	CHECK
Landing Gear	UP
Flaps	RETRACT AT 110KTS
Autopilot	ENGAGE
Cabin Alt, Diff & Climb	OBSERVE CLIMB
Landing Lights	OFF

MAX. CONTINUOUS POWER (INIT CLIMB)	
Mixture	MAX POWER
Propellers	2750 RPM
Manifold Pressure	41.5 INHG
Cowl Flaps	OPEN
Prop Sync	ON
Cabin Temp & Mode	AS DESIRED

NORMAL (EN ROUTE) CLIMB	
Mixture	MAX POWER
Propellers	2750 RPM
Manifold Pressure	35.5 INHG
Cowl Flaps	OPEN
Boost Pumps	OFF
Prop Sync	ON
Cabin Pressure	MONITOR
Cabin Temp & Mode	AS DESIRED
Engine Performance	MONITOR

TRANSITION ALTITUDE	
Altimeters	STANDARD (1013/29.92)
Cabin Pressure	MONITOR
Recog. Lights	OFF

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CRUISE

Cowl Flaps	AS REQUIRED
Boost Pumps	OFF
Pitot Heat	ON IF OAT < 4C
Windshield Heat	AS REQUIRED
Propeller Heat	AS REQUIRED
Surface Deice	AS REQUIRED
Fuel Imbalance	≤ 25 GAL
Lean Mixture	LOP OR ROP
Propellers	2200 RPM
Manifold Pressure	32.0 INHG
Cabin Temp & Mode	AS DESIRED
Cabin Pressure	MONITOR
Engine Performance	MONITOR

BALKED LANDING

Mixture	MAX POWER
Propellers	2750 RPM
Manifold Pressure	41.5 INHG
Engine Instruments	CHECK
Landing Gear	UP AT POSITIVE RATE
Flaps	RETRACT AT 110 KTS
Cowl Flaps	OPEN

DESCENT

Cabin Altitude Goal	DEST. ALT
Cowl Flaps	CLOSE
Throttle	REDUCE
Engine Performance	MONITOR
Cylinder Head Temp	≥ 125C
Ice Protection	AS REQUIRED

AFTER LANDING

Boost Pumps	OFF IF < 90F/32C
Cowl Flaps	OPEN
Flaps	UP
Cabin Alt, Diff & Climb	VERIFY ZERO
Cabin Press Mode	DUMP
Weather Radar	OFF/STANDBY
Lights	AS DESIRED
Ice Protection	ALL OFF
Cabin Temp & Mode	AS DESIRED

SHUTDOWN & SECURE

Parking Brake	SET
Avionics Switches	OFF
Boost Pumps	OFF
Electrical Switches	OFF
Throttle	CLOSED
Propellers	HIGH RPM
Mixture	CUT-OFF
Magnetos	OFF
Generators	OFF
Battery Master	OFF
Parking Brake	RELEASE
Control Locks	INSTALL

APPROACH

Seat & Seatbelts	SECURE
Cabin Alt, Diff & Climb	CHECK PROGRESS
Fuel Selectors	ON
Fuel Imbalance	≤ 25 GAL
Recog. Lights	ON
Pitot Heat	ON IF OAT < 4C
Windshield Heat	OFF
Propeller Heat	OFF
Cabin Temp & Mode	OFF
Altimeters	LOCAL QNH
Cowl Flaps	AS REQUIRED
Mixture	MAX POWER
Flaps	APPROACH (≤ 174 KTS)

LANDING

Cabin Differential	ZERO
Boost Pumps	ON
Prop Sync	OFF
Propellers	2750 RPM
Mixture	MAX POWER
Flaps	AS REQUIRED
Landing Gear	DOWN & LOCKED
Landing Lights	ON
Autopilot	DISCONNECT