SBD Dauntless

User Manual (FSX)

2-S-12

S5

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The Douglas SBD

Introduction

The Douglas SBD Dauntless was a naval dive bomber made by Douglas during World War II. The SBD was the United States Navy's main dive bomber from mid-1940 until late 1943, when it was supplanted, although not entirely replaced, by the SB2C Helldiver.

The SBD Dauntless has been designed to take advantage of all the graphical features FSX has to offer, including fully-custom specular shine textures, high resolution bump mapping, self-shading and 3D sound cones.

Noteworthy Features

- A gorgeously constructed 3D model, both inside and out!
- 3D 'Sound Cone' Technology.
- 'Tru3D' Gauges for the ultimate smooth flying experience.
- Vstudios customised materials give the most realistic appearance to the SBD.
- Realistic simulation of the bombing system.
- A fully customised lighting system with no less than 10 individual functions.
- Realistic engine wear simulation for those who require it, and simple management for those who do not.
- Six high-resolution and detailed paint schemes.

Known FSX Issues:

- Lights can appear to differ in position when viewed from different viewpoints, such as the tower view. This is a documented FSX issue, and not an issue with the model. Internal lights are known to have issues under 'DX10 Preview Mode'.
- Pressing the 'All Lights Toggle' or 'Smoke System Toggle' keys can trigger engine damage effects, but not the damage model itself.

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Installation & Technical Support

The SBD can be installed by simply double-clicking the packaged .exe file. The SBD should be installed to the root directory of FSX.

Extras including this manual and a full paint kit can be found in the 'root FSX directory/Vertigo Studios' folder and also in your start menu.

Product support is available 24/7 by way of our online support system.

In order to access the support system, please access:

http://www.vertigostudios.co.uk/helpdesk/

Whilst VStudios will endeavour to view and consider any and all forum posts, support can only be guaranteed via the correct (above) method. VStudios has no obligation to provide support on any third-party forum or community.

SBD Package Contents

Variants Included

A-24B Banshee

14, 8(L) BS/3 BG, USAAF, Moresby, c.1942

SBD-1 Dauntless

2-MB-13, MB-2, USMC, c.1940

SBD-3 Dauntless

2-S-12, VS-2, USN, Coral Sea, c.1942

SBD-5 Dauntless

3.F.4, Flotille 3FB, French Navy, Indochina, c.1940's

S5, VS-37, USN, Aruba, c.1944

NZ5057, No.25 Sqn, RNZAF, Bougainville, c.1944

A Note about Systems

The SBD comes equipped with a range of systems, some of which are prone to failure if used incorrectly. However we at VStudios recognise the fact that sometimes, pilots should be able to focus on having fun, and not on checklists.

At the aircraft select menu you may select either EFM or IFM versions of the SBD.

Easy **F**light **M**odel aircraft have no advanced systems and can be flown for fun.

Intermediate **F**light **M**odel aircraft feature systems that require management.

Bombing System

Usage of the bombing system in the SBD is possible.

1. Raise the two red safety covers on the bomb arming panel.
2. Arm the switches beneath.

3. Lower the bombing cradle (top lever)
4. Release the bomb (bottom lever)

5. Raise the cradle and engage the system safety switches.

The Intermediate Flight Model

When an IFM equipped SBD is selected, pilots have to be considerate of their actions. Adhere to the checklists at the end of this manual, and consider:

- CHT and engine conditions, especially when on the ground.
  - Remember to open the cowl flaps whilst on the ground, otherwise the engine may overheat.
- Engine power setting when in flight.
  - Though a trusted power plant, the Wright engine of the SBD cannot tolerate being run at full power for long amounts of time. Monitor the engine and aircraft carefully when flying at higher power settings.

The bombing and lighting systems do not differ between IFM and EFM aircraft.

The aircraft will always show tell-tale signs of wear if being misused. White smoke means that the engine may be beginning to overheat, as does a rough running power plant. Black smoke means that there is a serious problem requiring the attention of the pilot.

Failure to adhere to the warnings can cause failure, fire, or terminal damage to the SBD.

Remember to turn stress settings ON in the FSX realism settings if you wish to experience true dive-bombing physics.

Familiarisation

Camera Views

The SBD has multiple pre-set camera views to choose from, some of which are helpful when navigating the large cockpit. Right click at any time whilst in-game to view the camera menu.

Virtual Cockpit

Rear Cockpit

Gunsight

Rear Gun

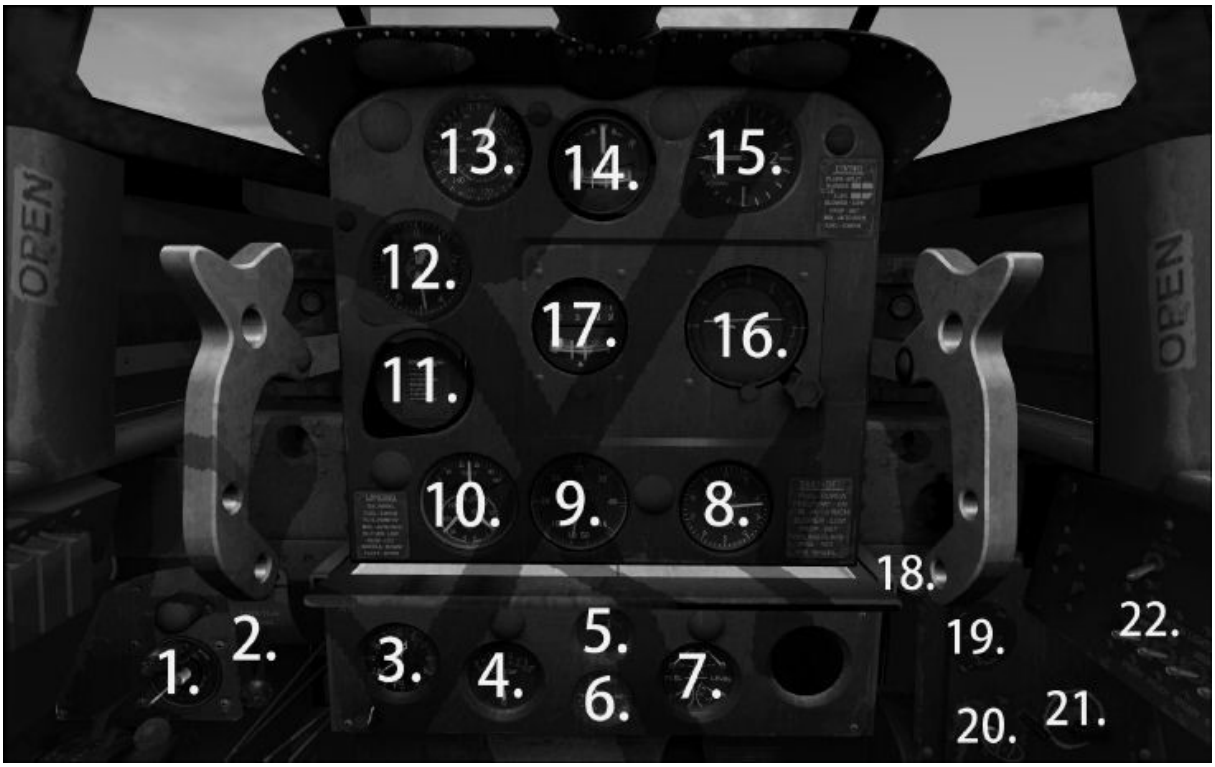
Left of Cockpit

Right of Cockpit

Left Side of Aircraft

Right Side of Aircraft

Cockpit Tour – Forward Panel



Key

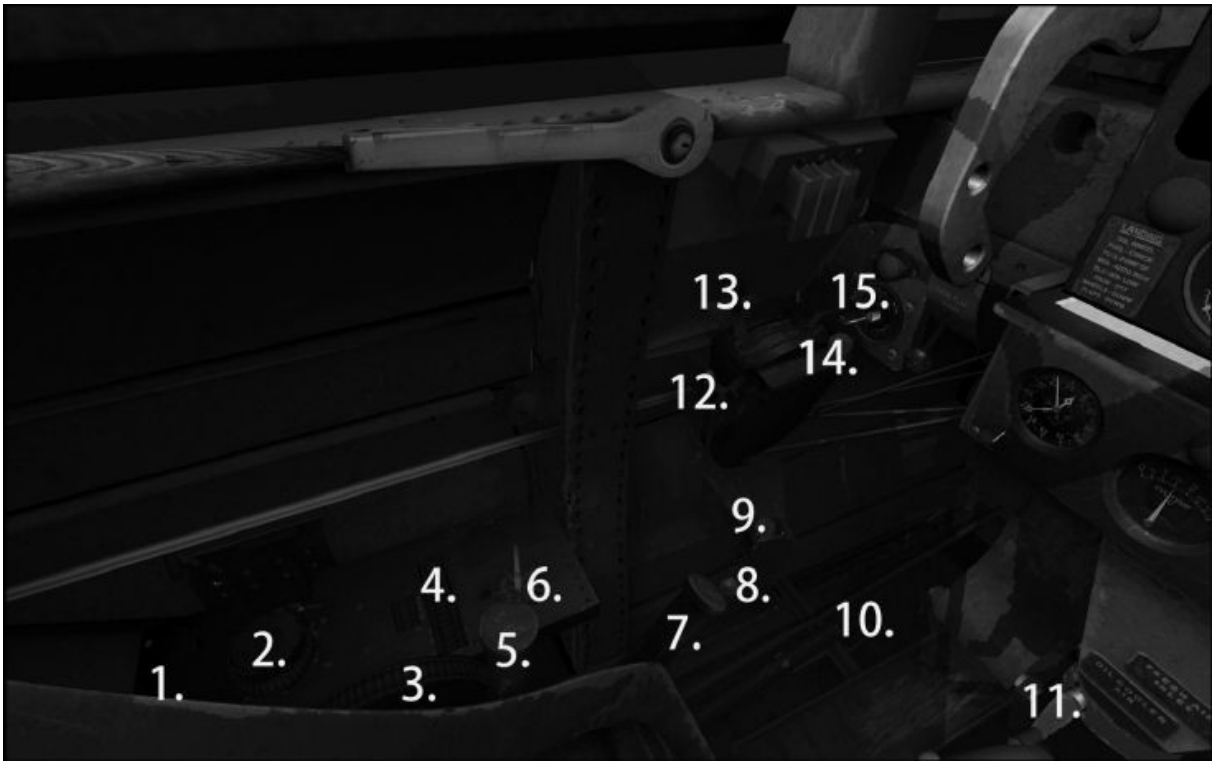
1. Magneto Selector Switch
2. Cowl Flap Lever
3. Clock
4. Cylinder Head Temperature
5. Oil Temperature
6. Oil Pressure
7. Fuel System Display
8. Tachometer
9. Manifold Pressure
10. Engine Condition Display

11. Checklist

12. Altimeter
13. Air Speed Indicator
14. Turn and Slip Indicator
15. Vertical Speed Indicator
16. Artificial Horizon
17. TSI and Compass
18. Parking Brake Lever
19. Autopilot Control Switch
20. Engine Primer
21. Right Knee Console

22. Recognition Lights Control Panel

Cockpit Tour – Forward-Left Panel



Key

1. Tail Wheel Lock
2. Rudder Trim Wheel
3. Elevator Trim Wheel
4. Aileron Trim Wheel
5. Tail Hook Lever
6. Fuel Selector
7. Flap Lever
8. Bomb Release Lever
9. Bomb Cradle Control
10. Flap Indicator
11. Oil Cooler Control
12. Prop Condition Lever
13. Blower Control
14. Mixture Lever
15. Throttle

Cockpit Tour – Forward-Right Panel

Key

1. Parking Brake Lever
2. Autopilot Control
3. Engine Primer
4. Engine Starter
5. Recognition Lights Control Panel
6. Power System Switches
7. Voltmeter
8. Exterior Lighting Controls
9. Right Knee Console (Camera Name)
10. Bombing System Controls
11. Interior Lighting Controls
12. Diving Flap Control
13. Landing Gear Lever
14. Flap Control

Cockpit Tour – Gunners' Cockpit

Key

1. Throttle
2. Altimeter
3. Air Speed Indicator
4. Manifold Pressure Indicator
5. Voltmeter
6. Cylinder Head Temperature

Charts and Checklists

Charts & Checklists Introduction

Over the next few pages are charts and checklists applicable to all models of SBD in this package. The images are taken from the real-world flight manuals. The images are therefore copyright of their respective owners.

Performance Charts

The following pages contain charts detailing the SBD's performance.

Performance Characteristics (None Combat)

		1000 **Bomber**	180 Gal **Scout**	310 GAL **Scout**
Gross Weight	LBS	8327.0	7772.8	8605.3
Wing Loading	# / Sq FT	25.7	24.0	26.6
Power Loading Normal Rated Power at SL	# / HP	8.77	8.19	9.06
Hight Speed at SL	KNOTS	194	202	201
Hight Speed at 16000 FT	KNOTS	214	223	222
Stalling Speed at SL Power Off Flaps Full Down	KNOTS	63.5	60.6	63.6
Stalling Speed at SL Poer Off Flaps up	KNOTS	73.0	69.2	73.0
Time To climb to 15000 FT	Min	11.0	9.55	11.0
Service Ceiling	FT	26720	28800	26680
Take-Off Distance - SL	FT	701	609	778
Crusing Speed at 65% Power (618 HP) At 5000 FT	KNOTS	174	182	181
Crusing Speed at 65% Power (618 HP at 16000 FT)	KNOTS	192	203	200

Performance Characteristics (Combat)

		1000 **Bomber**	180 Gal **Scout**	310 GAL **Scout**
Gross Weight	LBS	9019.0	8277.3	8974.9
Wing Loading	# / Sq FT	27.8	25.5	27.7
Power Loading Normal Rated Power at SL	# / HP	9.49	8.72	9.45
Hight Speed at SL	KNOTS	194	202	201
Hight Speed at 16000 FT	KNOTS	212	223	221
Stalling Speed at SL Power Off Flaps Full Down	KNOTS	66.1	62.5	65.1
Stalling Speed at SL Poer Off Flaps up	KNOTS	76	71.6	73.8
Time To climb to 15000 FT	Min	12.3	10.9	12.1
Service Ceiling	FT	25200	27620	26100
Take-Off Distance - SL	FT	853	711	862
Crusing Speed at 65% Power (618 HP) At 5000 FT	KNOTS	173	182	181
Crusing Speed at 65% Power (618 HP at 16000 FT)	KNOTS	190	202	199

Checklists

Check off list for take-off

Propeller	Hight RPM
Mixture	Auto Rich
Fuel	Right Tank
Check Trim Tabs	
Tail Wheel	Locked
Cowl Flaps	Open
Oil Cooler	Air Scoop Open
Low Blower Speed	

Check off list for Landing

Wheels Down	140 KNOTS MAX
Propeller	Hight RPM
Fuel	AUX
Mixture	Full Rich
Tail Wheel	Locked
Low Blower Speed	
Landing Flaps	Down 140 kts MAX
Oil Cooler	Air Scoop Open
Cowl Flaps	Open (Close after Landing)

Flight Charts

Engine	The Model SBD-3 Airplane is powered by a Wright Cyclone Engine. The engine has 2 speed super-charger. The Carburetor is a HOLLY model 1375H			
Engine Rating				
Condition	Blower Ratio	B.H.P	R.P.M	Altitude
Take-off	Low	1000	2350	Seal Level
Normal	Low	950	2300	S.L. - 5000
Normal	High	800	2300	9,600 – 16,000
Maximum Diving Speed			2900	

Starting

Throttle set for around 900 R.P.M.
Propeller Control Set to Low R.P.M Position
Fuel Mixture set to auto rich.
Set fuel tank selector valve to right main or Aux tank.
Ignition switch off.
Blower Control set to low.
Open Cowl flaps (must be kept open during warm-up)
Battery and Generator switch to on
Parking brake on
Fuel pump on
Prime with engine primer approximately 3 strokes.
Ignition switch to “Both”
Starter engage

Warm-up

To warm-up, run at 900 RPM with a propeller in positive high pitch. A normal oil pressure of 30lbs should be indicated within 30 seconds after starting., After normal oil pressure is observed, shirft to low pitch (hight R.P.M) and completely warm-up at from 1000 to 1200 R.P.M. Move propeller control from low to high pich a few times to warm up the oil in the hub cylinder.

During ground check tests (for magnetos, instruments, etc.) accept full power test. The manifold pressure should not exceed 30” Hg. For full power test ONLY set manifold pressure to 41” Hg. The propeller should turn at 2350 RPM when set in high R.P.M position.

WARNING:

Never exceed 41”Hg Manifold Pressure.

Check Generator.
Keep engine cowl flaps open.
Observe instrument readings.

Stopping

Stop the engine without closing the fuel valve by first running at not less than 1000 R.P.M for 30 seconds (propeller in the positive high pitch position and then setting the mixture contol lever to idle cut off.

Supercharger Control

(not currently moddeled but allows you to simulate the supercharger if so desired)

The engine is equipped with a two-speed supercharger. Normally, the low supercharger speed may be used at all times.
The high supercharger speed maybe used above 10,500 feet altitude to obtain maximum airplane speeds and rates of climb.
The high supercharger speed shall not be used for cruising at altitudes at which cruising power is available in the low shupercharger speed, as fuel economy is inferior to that of low supercharger speed operation and the tendency to detonate is greater.
70% rated power is maintained to approximately 12,000 feet in low speed supercharger. Lesser powers are mainteained to corresponding higher altitudes.
In using the high supercharger speed, the control shall be shifted at or above the altitude at which 31”Hg manifold pressure is obtained with full throttle and low supercharger speed (approximately 10,500 feet)