Virtavia

EA-6B PROWLER

USER MANUAL

INTRODUCTION

The Grumman EA-6B is a modification of the basic A-6 airframe into a long-range, all-weather, advanced electronic countermeasures platform. It is the U.S. Navy and Marine Corps's primary electronic warfare platform and has seen action in nearly every conflict since its introduction in 1971. A total of 170 examples were produced and the aircraft is still in active service.

The Virtavia EA-6B Prowler is a fully 'native' FSX release, which includes visual effects such as self shadowing, bloom and bump mapping.

Support

Should you experience difficulties or require extra information about the Virtavia EA-6B Prowler, please e-mail our technical support on tech.support@virtavia.com

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PACKAGE CONTENTS

The Virtavia EA-6B Prowler package contains six model variants to represent the various stores loadouts typically carried by this aircraft :

2 fuel tanks, 3 ECM pods

2 AGM-88 HARM missiles, 3 ECM pods

5 ECM pods

4 AGM-88 HARM missiles, 1 ECM pod

2 fuel tanks, 3 ECM pods

2 AGM-88 HARM missiles, 3 ECM pods

EXTERIOR MODEL

The exterior model has all the usual animations such as ailerons, elevators, flaps and speedbrakes. There are some additional animations on the model :

Crew Access

    shift-e :   Front canopy and access plate

    2nd Exit (shift-e then 2):   Rear canopy and access steps

Tail Hook

Normally defined as Shift-Q but can be reassigned to 'T' if desired'.

Folding Wings

Normally defined as Ctrl-Shift+K but can be reassigned to 'F' if desired. Only works when on the ground.

EXTERIOR LIGHTING

Pressing the L key will turn on all lights. You may however wish to turn them on using the appropriate switches in the cockpit, as the L key also turns the on navigation, landing lights and flood lighting in the cockpit, which should ideally be switched separately.

Shift-L will toggle the nav lights and the cockpit lights.

Crtl-L will toggle the landing light.

Please refer to the cockpit section of this manual for information regarding light switch location.

ALTERNATIVE VIEWPOINTS IN FSX

There are several different ways of looking at the aircraft and the cockpit, select these alternative views by right-clicking in an empty area and picking the 'Aircraft' menu for external views and the 'Cockpit' menu for views inside the cabin. It is possible to zoom and pan as normal in these alternative views. Cycle though the available ones by pressing the A key.

External View Options

It is possible to pan and zoom as normal in all external views.

'Dirty' view, rear - perfect for viewing the flaps & gear all-out

Tail View - up and behind the Prowler

Front, left side view – close-up of the crew

Nose View – head on

Front View - down low

Front View - up high

Interior Views

It is possible to pan and zoom as normal in all interior views.

Virtual Cockpit View

Front RI Operator's Seat View

RI Operator's Seat View - Left

RI Operator's Seat View - Right

Moving Around the Cabin

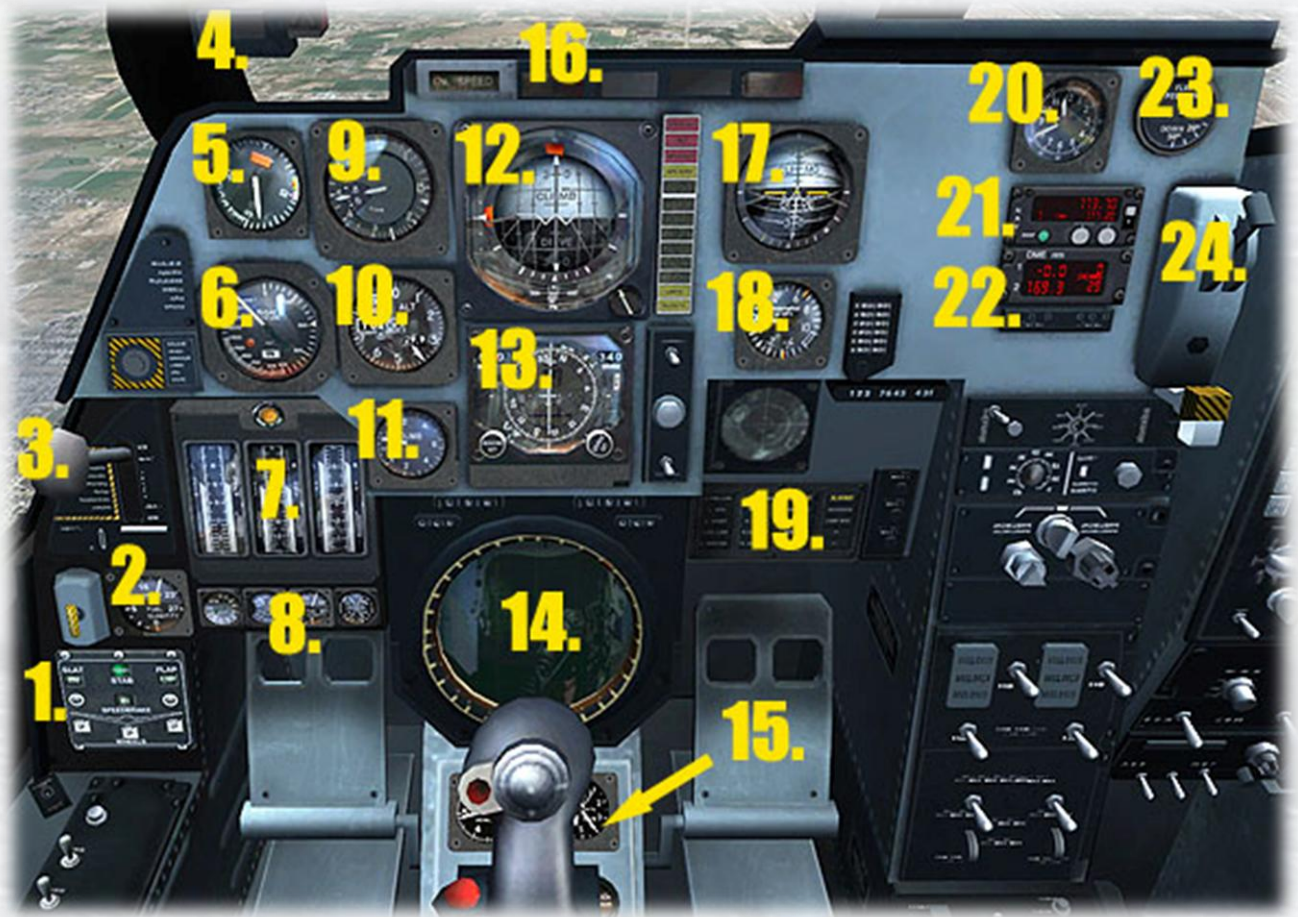Shift-Enter and Shift-Backspace : moves up and down

Ctrl-Shift-Enter and Ctrl-Shift-Backspace : moves side to side

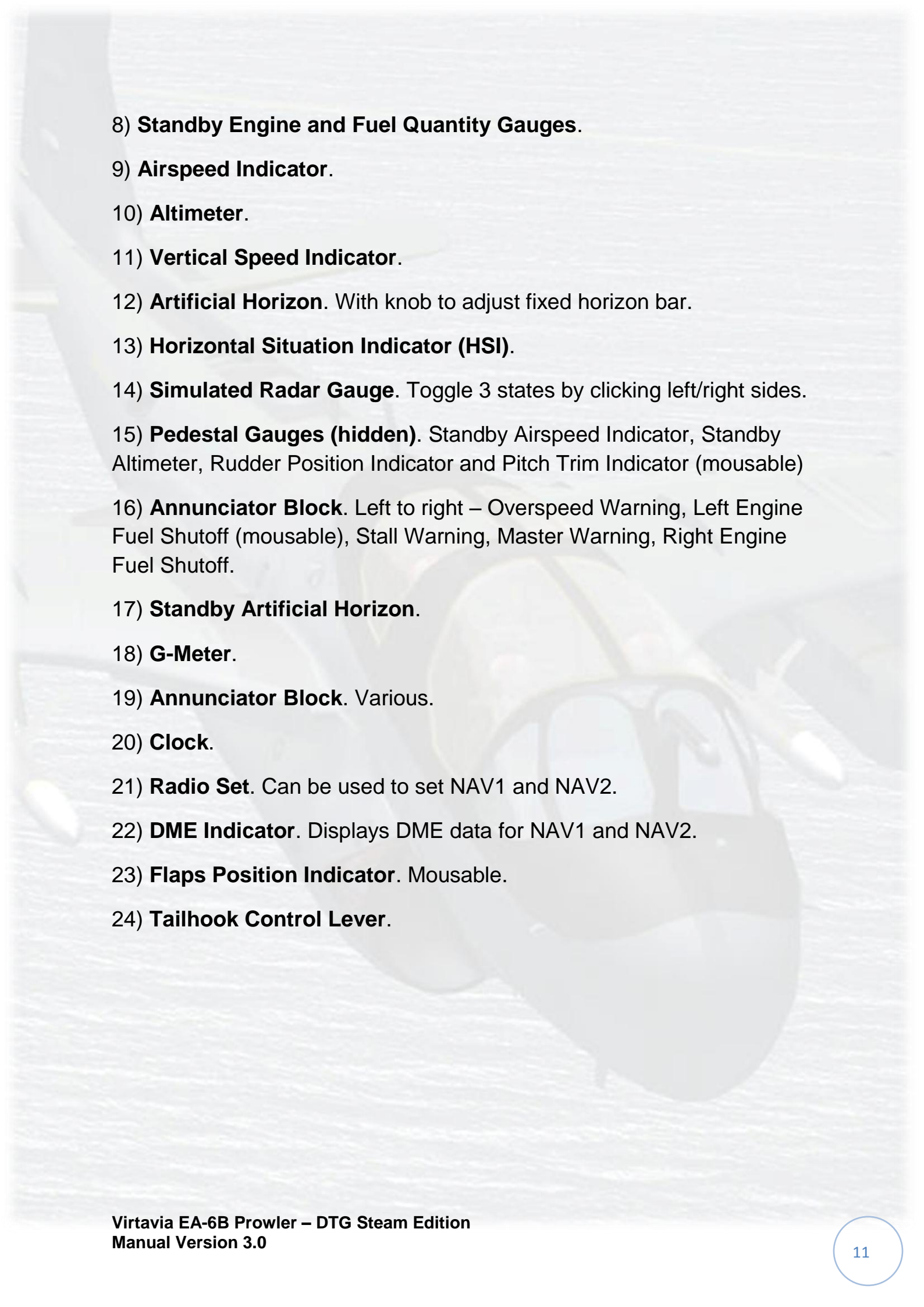Ctrl-Enter and Ctrl-Backspace : moves back and forwards

Virtual Cockpit Functions

Pilots Panel

1) **Landing Gear Warning Lights**.

2) **Fuel Quantity Gauge**.

3) **Landing Gear Lever**.

4) **Annunciators / Angle of Attack Indexer**. Lamps for low alt – no gear, Speedbrake toggle (mousable) and Tailhook toggle (mousable).

5) **Angle of Attack Indicator**.

6) **Radar Altimeter**.

7) **Main Engine Condition Indicators**. RPM, EGT and Fuel Flow.

8) **Standby Engine and Fuel Quantity Gauges**.

9) **Airspeed Indicator**.

10) **Altimeter**.

11) **Vertical Speed Indicator**.

12) **Artificial Horizon**. With knob to adjust fixed horizon bar.

13) **Horizontal Situation Indicator (HSI)**.

14) **Simulated Radar Gauge**. Toggle 3 states by clicking left/right sides.

15) **Pedestal Gauges (hidden)**. Standby Airspeed Indicator, Standby Altimeter, Rudder Position Indicator and Pitch Trim Indicator (mousable)

16) **Annunciator Block**. Left to right – Overspeed Warning, Left Engine Fuel Shutoff (mousable), Stall Warning, Master Warning, Right Engine Fuel Shutoff.

17) **Standby Artificial Horizon**.

18) **G-Meter**.

19) **Annunciator Block**. Various.

20) **Clock**.

21) **Radio Set**. Can be used to set NAV1 and NAV2.

22) **DME Indicator**. Displays DME data for NAV1 and NAV2.

23) **Flaps Position Indicator**. Mousable.

24) **Tailhook Control Lever**.

Two·D Panel Pop·Ups in VC

The following keystrokes will toggle the 2D pop-up panels associated with the accompanying 2D panel suite :

Shift-2 : Autopilot panel

Shift-3 : Electrics and transponder

Shift-4 : Radios and Autopilot panels

Shift-5 : Standard FSX GPS unit

Shift-6 : RIO Radar Display (tracks air traffic only).

RIO Panel · front

1) **Autopilot Annunciator Panel**.

2) **Fuel Quantity Gauge**.

3) **Clock**.

RIO Panel · left rear

1) **Radio Magnetic Indicator (RMI)**.

2) **GPS Display**. Standard display from FSX GPS with mousable buttons along top edge.

3) **Radio Set**. Can be used to set NAV1 and NAV2.

4) **Airspeed Indicator**.

5) **Altimeter**.

6) **DME Indicator**. Displays DME data for NAV1 and NAV2.

7) **Flaps Position Indicator**. Mousable.

8) **Standby Artificial Horizon**.

9) **Clock**.

RIO PANEL · RIGHT REAR

1) **Traffic Radar Scope**. Displays local air traffic. Knobs toggle range, aircraft tags and brightness.

2) **Radio Magnetic Indicator (RMI)**.

Two·D Panel and Pop·Ups

The instruments are the same as in the virtual cockpit with the addition of Sim Icons top right for ATC, Map, Checklist and GPS. Other Sim Icons are available lower down, along the bottom edge of the HSI, these cover the Electrics (Starters) Panel, Autopilot mini-panel and the main Radios Stack with Autopilot. Additionally, there is a Sim Icon resembling concentric circles on the top right of the radar screen, this toggles the radar gauge to appear in the centre of the screen.

The image below shows the full range of pop-up panels available from the Sim Icons, or alternatively by using the following key strokes :

Shift-2 : Autopilot panel

Shift-3 : Electrics and transponder

Shift-4 : Radios and Autopilot panels

Shift-5 : Standard FSX GPS unit

Shift-6 : RIO Radar Display (tracks air traffic only).

REFERENCE INFORMATION

Virtavia EA-6B Prowler Procedures

Engine Engine Start:

1. Ensure sufficient fuel for engine start.
2. Ensure battery and avionics switches are ON
3. Press the engine #2 starter
4. At 15% RPM switch on fuel supply for #2 engine
5. Observe engine auto-ignition at approximately 22% RPM, signified by spike in EGT
6. Monitor engine parameters, allow 30-45 seconds for engine to stabilize at ground idle (approximately 60% RPM)
7. Repeat steps for engine #1
   NOTE: For simplified procedure, use Ctrl+E for auto engine start.

Takeoff at normal loaded weight of 50,000lbs (clean configuration):

1. Ensure sufficient fuel for the mission.
2. Set pitch trim to 3.0° aircraft nose-up.
3. Set flaps to TAKEOFF (Flaps position 1).
4. Slowly apply full power (press F4 to ensure throttle is fully-forward).
5. Begin to rotate the nose at 130 KIAS.
6. Un-stick will occur at approximately 140 KIAS.
7. Depress wheel brakes once airborne to stop wheels.
8. Retract landing gear.
9. Raise flaps at 170 KIAS, continue to climb.

Takeoff at high gross weight of 60,000lbs (wing and fuselage stores attached):

1. Ensure sufficient fuel for the mission.
2. Set pitch trim to 3.5° aircraft nose-up.
3. Set flaps to TAKEOFF (Flaps position 1).
4. Slowly apply full power (press F4 to ensure throttle is fully-forward).
5. Begin to rotate the nose at 145 KIAS
6. Un-stick will occur at approximately 155 KIAS
7. Depress wheel brakes once airborne to stop wheels.
8. Retract landing gear.
9. Raise flaps at 185 KIAS, continue to climb.

Climb (external stores on wing pylons and fuselage):

1. Climb at max power is authorized and recommended (Press F4 to ensure max thrust).
2. Maintain a moderate pitch angle until reaching 315 KIAS.
3. Maintain 315 KIAS using pitch until reaching desired altitude or cruise Mach number.

Cruise:

1. Once at desired altitude, slowly bring the aircraft level and trim as best as possible before enabling the autopilot.
NOTE: If using autopilot vertical speed hold, manually reduce the vertical speed as you approach the desired altitude to assist the autopilot altitude capture mode.

External stores on wing fuel burn estimates

Altitude	Airspeed	Mach number	Fuel Burn
500ft	605 KIAS	.847	40.49 lbs/NM
30,000ft	306 KIAS	.790	14.73 lbs/NM
35,000ft	317 KIAS	.925	20.58 lbs/NM
		= Optimum	

Descent:

1. The EA-6B is not capable of descent rates exceeding -25,000ft/min without exceeding structural limitations.
2. For a fast descent, reduce thrust to idle and descend at a pitch of -25° whilst being mindful of the airspeed limitations.
3. Speed brakes can be applied to slow the descent. The speed brakes do not affect lift, only drag.

Approach and landing, 42,000lbs
(stores on wing pylons and fuselage, land-based):

1. Slow the aircraft to 250 KIAS or the recommended pattern speed.
2. Lower the landing gear at or below 200 KIAS.
3. Extend wingtip speed brakes (optional)
4. Set flaps to TAKEOFF (position 1) at 178 KIAS.
5. At landing weight of 42,000lbs with external stores attached, approach speed should be approximately 133 KIAS.

6. The optimum AoA (angle-of-attack) for approach in this configuration is between 18-24 units AoA.
   NOTE: AoA and pitch angle are different; your AoA can be significantly higher than your perceived pitch angle on approach.
7. At 10ft AGL, retard the throttles.
8. At landing weight of 42,000lbs with external stores attached, touchdown speed should be approximately 123 KIAS.
9. The EA-6B does not exhibit a significant ground effect, so flair of several degrees is required.
   NOTE: If sufficient runway length exists, aerodynamic braking (IE holding the nose off the ground as long as possible and using the fuselage to create excess drag) is authorized.
   NOTE: If using aerodynamic braking, DO NOT apply the wheel brakes until the nose wheels are in firm contact with the runway surface.

Approach and landing, 38,000lbs
(stores on wing pylons and fuselage, carrier recovery):

1. Slow the aircraft to 250 KIAS or the recommended pattern speed.
   NOTE: The maximum aircraft gross weight for carrier recovery is 36,000lbs.
2. Lower the landing gear and tail hook at or below 200 KIAS.
3. Extend wingtip speed brakes.
4. Set flaps to TAKEOFF (position 1) at 175 KIAS.
5. At landing weight of 38,000lbs with remaining external stores attached, approach speed should be approximately 123 KIAS.
6. The optimum AoA (angle-of-attack) for approach in this configuration is between 18-24 units AoA.
   NOTE: AoA and pitch angle are different; your AoA can be significantly higher than your perceived pitch angle on approach.
7. At landing weight of 38,000lbs in clean configuration, touchdown speed should be approximately 118 KIAS.
8. The EA-6B does not exhibit a significant ground effect, so flair of several degrees is required.
   NOTE: Aerodynamic braking is NOT authorized on carrier recovery!
   NOTE: If recovering on a carrier, advance throttles to full and retract speed brake as soon as the wheels contact the deck. If cable is arrested, idle throttles and raise flaps.
   NOTE: Do not fold wings until flaps and slats indicate UP.

Virtavia EA-6B Prowler Reference

The Grumman EA-6B is a modification of the basic A-6 airframe into a long-range, all-weather, advanced electronic countermeasures platform. It is the U.S. Navy and Marine Corps primary electronic warfare platform and has seen action in nearly every conflict since its introduction in 1971. A total of 170 examples were produced and the aircraft is still in active service.

Specifications:

Four-seat, carrier-borne electronic warfare aircraft	
Empty weight:	31,160 lbs
Typical TO weight:	50,000 lbs
Max TO weight:	61,500 lbs
Fuel capacity:	2,390 US Gal
Drop tanks:	300 US Gal each
Initial climb rate:	12,000 ft/min
Service ceiling:	39,000 ft

Aircraft Limitations

Stall speed, clean:	103 KIAS
Max gear extension:	250 KIAS
Max gear retraction:	280 KIAS
Max indicated airspeed:	650 KIAS
Maximum speed:	Mach 0.90 at sea level
Maximum speed:	Mach 0.95 at 35,000 feet
Maximum G:	+6/-3

Notes on configuration and load-out

All applicable load stations are included in the configuration file. In the event the user wishes to use a model with particular weapon settings, they will need to add weight to the particular weapon station. The recommended weights for each load station are as follows:

Station_load.0	Pilot	205.00 lbs
Station_load.1	Navigator	210.00 lbs
Station_load.2	ECM Op. 1	225.00 lbs
Station_load.3	ECM Op. 2	195.00 lbs

Station_load.4	Survival Gear	200.00 lbs
Station_load.5	Left drop tank	250.00 lbs
Station_load.6	Right drop tank	250.00 lbs
Station_load.7	5x AN/ALQ-99	2308.00 lbs
Station_load.8	3x AN/ALQ-99	1383.00 lbs
Station_load.9	2x AGM88 HARM	1600.00 lbs
Station_load.10	4x AGM88 HARM	3200.00 lbs

In the fuel load-out editor the drop tanks are listed as following:

| External 1: | Left drop tank |
| External 2: | Right drop tank |

NOTE: If you are using a model that does not have one of these fuel tanks, set the fuel level for the given tank to 0. You must do this as the fuel tank will always default to the maximum capacity of the tank.

Autopilot
Although this aircraft is equipped with an auto flight system, it is designed to be flown by hand through the majority of the flight envelopment. The auto flight system however, is fully functional and more than capable of controlling the aircraft's axes of control. It is recommended that when attempting to use the auto flight to hold an altitude to level off as best as possible to avoid any pitch oscillations.

Trim Characteristics
The aircraft will require only small trim adjustments throughout its flight envelope, with the exception of landing, where the gear and flaps cause a nose-down tendency. The aircraft is capable of trimming +/- 12° in either direction; though it is highly unlikely that this much trim would be required at any phase of flight.

General Notes on Handling
The EA-6B flies very similarly to the A-6E Intruder. It is capable of most aerobatic maneuvers though these are strongly discouraged in normal operations. Intentionally stalling and spinning this aircraft is not authorized, though behavior in the stall is generally mild and all that is necessary is a deliberate effort to lower the nose and reduce the angle-of-attack.