



Virtavia

F7U-3M Cutlass
for MSFS
USER MANUAL

Introduction

The F7U Cutlass was a United States Navy carrier-based jet fighter and fighter-bomber developed by Chance Vought, introduced into service in July 1951 after its first flight on December 12, 1951. It was the first tailless production fighter in the U.S., featuring swept wings and the Navy's first jet equipped with afterburners. The F7U-3 was developed to address the shortcomings of the earlier F7U-1, incorporating a stronger airframe enlarged by one-third, more powerful Westinghouse J46-WE-8B afterburning turbojet engines producing 4,600 lbf thrust each (dry) and 6,000 lbf with afterburner, improved pilot visibility through a slanted radar nose and raised cockpit, and enhanced maintenance access via additional panels. The aircraft had a maximum speed of 697 mph at sea level and a service ceiling of 40,600 ft. Despite its advanced design, the F7U-3 faced significant operational challenges. It was plagued by underpowered engines, particularly in its initial production batch with non-afterburning Allison J35-A-29 engines, which contributed to its nickname "Gutless Cutlass". The aircraft also suffered from a high accident rate due to hydraulic system leaks, unreliable landing gear, inflight engine fires, and a dangerous post-stall gyration phenomenon. Over one-quarter of all Cutlasses built were destroyed in accidents, resulting in the deaths of 4 test pilots and 21 Navy pilots. The F7U-3 was operated by 13 squadrons, including VA-66 and VF-81, but was retired from active service by March 2, 1959, replaced by the F9F-8 Cougar and later the F8 Crusader. The F7U-3 was also notable for its performance characteristics: it had a roll rate of 570 degrees per second, three times that of most contemporary jets, and was considered a stable bombing platform and relatively maneuverable despite its handling difficulties. The F7U-3M variant, a missile-capable conversion, could carry four AAM-N-2 Sparrow I air-to-air missiles, supplementing its four 20mm cannons. A total of 290 F7U-3s were built, including 98 F7U-3M and 12 F7U-3P reconnaissance variants. Today, several F7U-3 Cutlasses are preserved in museums and private collections.



Support

Should you experience difficulties or require extra information about the Virtavia F7U-3M Cutlass, please e-mail technical support on tech.support@virtavia.com

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Three liveries are included in this package :



F7U-3M - BuNo. 139890

VA-116 as W-213 (later as NB-210)
4/2/1957: Struck off charge at NAF Litchfield Park, AZ.



F7U-3M - BuNo. 139875

1956: VX-4 as XF-17 (fate unknown)



F7U-3M - BuNo. 129733

1956: VA-83 as E-308
5/1/1958: Struck off charge at NAF Litchfield Park, AZ.

Exterior Model

The exterior model has most of the usual animations such as landing gear, a sliding canopy and two rudders. The unusual Cutlass however does not have separate elevators and ailerons, it uses 'ailavators' on the wing trailing edge which are these days called 'elevons', these combine the elevator/aileron function. There are also no trailing edge flaps, this aircraft uses powered leading edge slats alone for added lift on take-off and landing. There are some additional animations on the model:

Folding Wings

The Outer Wing Panels can be folded when on the ground by means of a guarded control lever on the pilot's right-side console (refer to the Pilot's Right-Side Console section of this manual for the location of the lever).

Tail Hook

The tail hook can be extended by using the large tail hook lever on the right side of the main instrument panel, or by pressing ctrl-h, which is useful in the exterior view as it allows the tail hook animation to be seen.

Pilot figure

The pilot's head will move left/right with roll input and the pilot figure can be toggled using a cockpit switch (refer to Pilot's Instrument Panel section of this manual for the location of the switch).

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.

The Cutlass does not have any landing or taxi lights as it was designed as a 'day fighter' only.

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

Quick Tips

Starting from cold – Assuming the aircraft was left in the fully shut down state and all switches and levers are in their usual OFF position, you can follow the quick start procedure below or alternatively follow the in-game checklist.

Check the park brake is on (the lever is at the rear of the pilot's right side console. Also on the right-side console, set the Master Battery, Navigation and Beacon Lights Switches to ON. If required, the Pitot Heat Switch can be found at the rear end of this same console.

To set radio frequencies, a simple modern radios set has been added for ease of use, this is activated with a normally unused toggle switch at the top of the instrument panel, it is marked 'Gun Charging'.

Engine Start – The throttle levers on the Cutlass sit down low at a special OFF position when the engines are not running. They would normally be set in that position by the pilot after shutdown. In this simulation, they move there automatically when the engines are stopped. Therefore it is not possible to move the throttle levers when the engines are not running.

Rather than the usual fuel valve switch, each engine on the Cutlass uses a guarded 'Master Engine Switch' to shut it down and isolate it. There is also no starter switch, the throttle lever itself is used to engage the starter. The Master Engine Switches are located outboard and behind the throttle unit.

Now the Master Engine Switches are ON, click once on the left throttle lever and it will move leftwards to the CRANK position. In the real aircraft, the pilot would perform this manually. After a few seconds, the throttle lever will move back again and then advance to the IDLE position. Once RPM reaches 44%, the throttle lever can be manipulated normally. Repeat this process for the other engine.

Trim – The Cutlass is quite nose-heavy under 150 knots, so a lot of nose-up trim is needed to help get airborne. There is a triangle marker

on the trim gauge (top center of panel) which indicates the right position for the trim gauge needle.

Take-Off – To get airborne, set the leading edge slats ON (there is only on/off with the slats) using a controller button or the Slats Switch on the pilot's left-side console front. Advance throttles to full. The afterburners will light automatically. Once moving, the stick should be held fully back to unload the nosewheels and improve directional stability. The aircraft will lift off in a near-level attitude at around 120 knots. Retract gear and slats immediately, reduce power and quickly start dialling back the nose-up trim to suit the desired speed.

Autopilot - The Cutlass did not have a traditional autopilot but for ease of use a basic system has been added in this simulation. There are on/off toggle switches for Master AP, ALT and HDG at the very front end of the pilot's right-side console, along with an amber status lamp for each AP function. The ALT function will just hold the present altitude (there is often a short descent when engaging, it will then gradually re-ascend and then hold level). HDG can be set using the knob on the RMI instrument, see the Instrument Panel section of this manual for more information.

570 degrees per second - The Cutlass was allegedly capable of a very fast roll rate, faster even than its successor, the A-4 Skyhawk. In this simulation, similar fast roll rates are achievable at speeds above 400 knots. At lower speeds the roll rate decreases and becomes very manageable, this makes the aircraft very easy to fly in all flight regimes.

Landing and Engine Shutdown

The landing procedure is detailed in the in-game checklist and is very straightforward with no special procedures required. Use the speedbrakes to reduce high speed to at least 250 kts prior to landing. Gear and slats down at 210 knots or less. The airspeed indicator has a cautionary triangle indicator at 120 knots, as gear down stall speed is around 105 knots. Touchdown at 110 knots. The engines are shut down simply by setting their Master Engine switches to OFF. The throttle levers will then set themselves to the OFF position automatically. The wings can be folded, if desired, using the special lever on the rear end of the pilot's right-side console.

Instrument Panels



It is expected the user will recognize the usual altimeter, airspeed, vertical speed and turn/slip instruments, the other items of interest are detailed below.

1. Exhaust Gas Temperature Indicator - shows EGT for both engines.

2. Airspeed Indicator - The non-linear scale is calibrated in knots. The triangular marker is set at 120 knots and is the ideal landing speed for crossing the runway threshold. Stall speed is 105 kts so great care is needed when airspeed is below the 120 kts marker. The Mach indicator is not animated and should not be relied upon.

3. Engine RPM Indicators - one for each engine, these indicate the percentage of total RPM. Idle speed is at approximately 44% RPM.

4. Radio Magnetic Indicator - the compass (RMI) used in the Cutlass is typical for this era. The background numbered disc always points to the cardinal direction the aircraft is heading. The thin white needle (No.1) indicates the relative direction of the currently tuned NAV1 station (use the MSFS moving map screen to find the station frequencies). The larger white No.2 needle 'sometimes' indicates the direction of the currently tuned NDB station if within range and altitude (MSFS NDB's are not very reliable).

5. Canopy Power Switch - opens or closes the canopy.

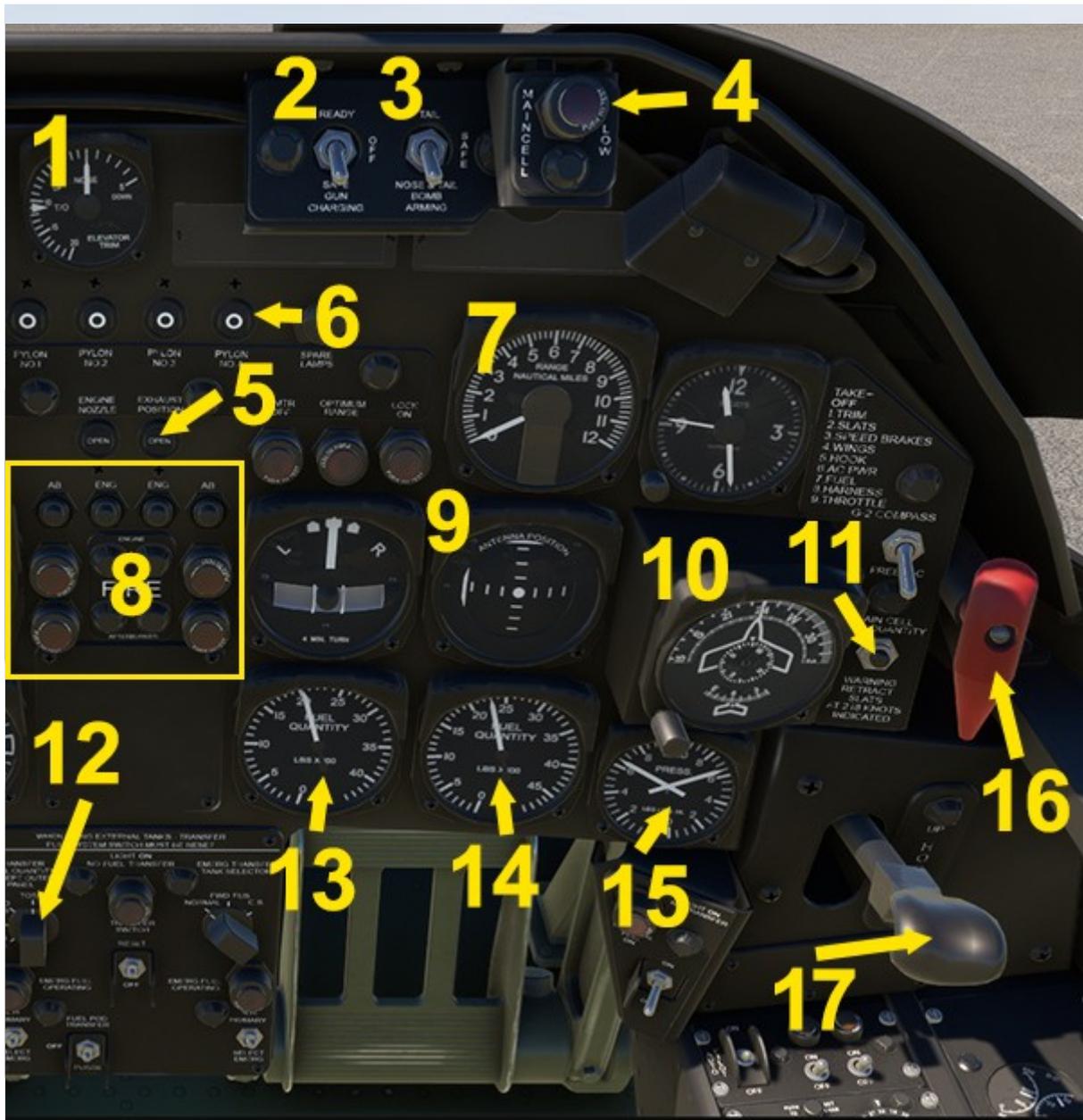
6. Warning Lamp, Speed Brakes - lit if brakes are extended.

7. Engine Oil Pressure Indicator - normal operating range is 8-10 on the dial.

8. Dual Gross Thrust Indicator - shows the gross thrust output of each engine, measured in pounds. Gross thrust is a function of the difference between the total turbine outlet pressure and ambient static pressure.

9. Hydraulic System Pressure Indicator - normal operating pressure is 3,000 PSI.

10. Warning Lamp, Low Fuel Pressure - lit if the pressure drops below 5 PSI, indicating that a booster pump has failed or one or both of the engines has stopped.



1. Pitch Trim Indicator - the triangle marker indicates the optimum nose-up trim for take-off.

2. Modern Radios Toggle Switch - a re-purposed switch. Turns visibility of the modern radios on/off.

3. Pilot Figure Visibility Toggle Switch - another re-purposed switch. Flipping the switch to the up position makes the pilot disappear.

4. Warning Lamp, Low Fuel Quantity, Main Cell - in the Cutlass, the fuselage mid cell (Center2 tank in MSFS) is fed by the other cells and serves as the main feed cell to the engines, hence its fuel level is of

primary importance. Should this cell's quantity drop below 63 gallons, this warning lamp will illuminate.

5. Nozzle Eye Indicators - the 'eye' indicators display the status of the exhaust nozzle petals position, ie. if they are fully open or retracted (not ever 'closed'). The fully open position will be the state at idle or afterburner-on and is shown as 'OPEN' in the indicator, whereas a retracted nozzle will show as 'PART'.

6. Missile Pylon Eye Indicators - these 'eyes' indicate the presence or absence of a missile on the appropriate wing pylon. If a missile is attached, it will display an 'O". An empty pylon will result in an 'E" being displayed.

7. DME Indicator - on the real Cutlass, this would be the target range indicator. It has been re-purposed for MSFS as a DME instrument and simply shows the distance in Nautical Miles **times 10** to the currently tuned NAV1 station.

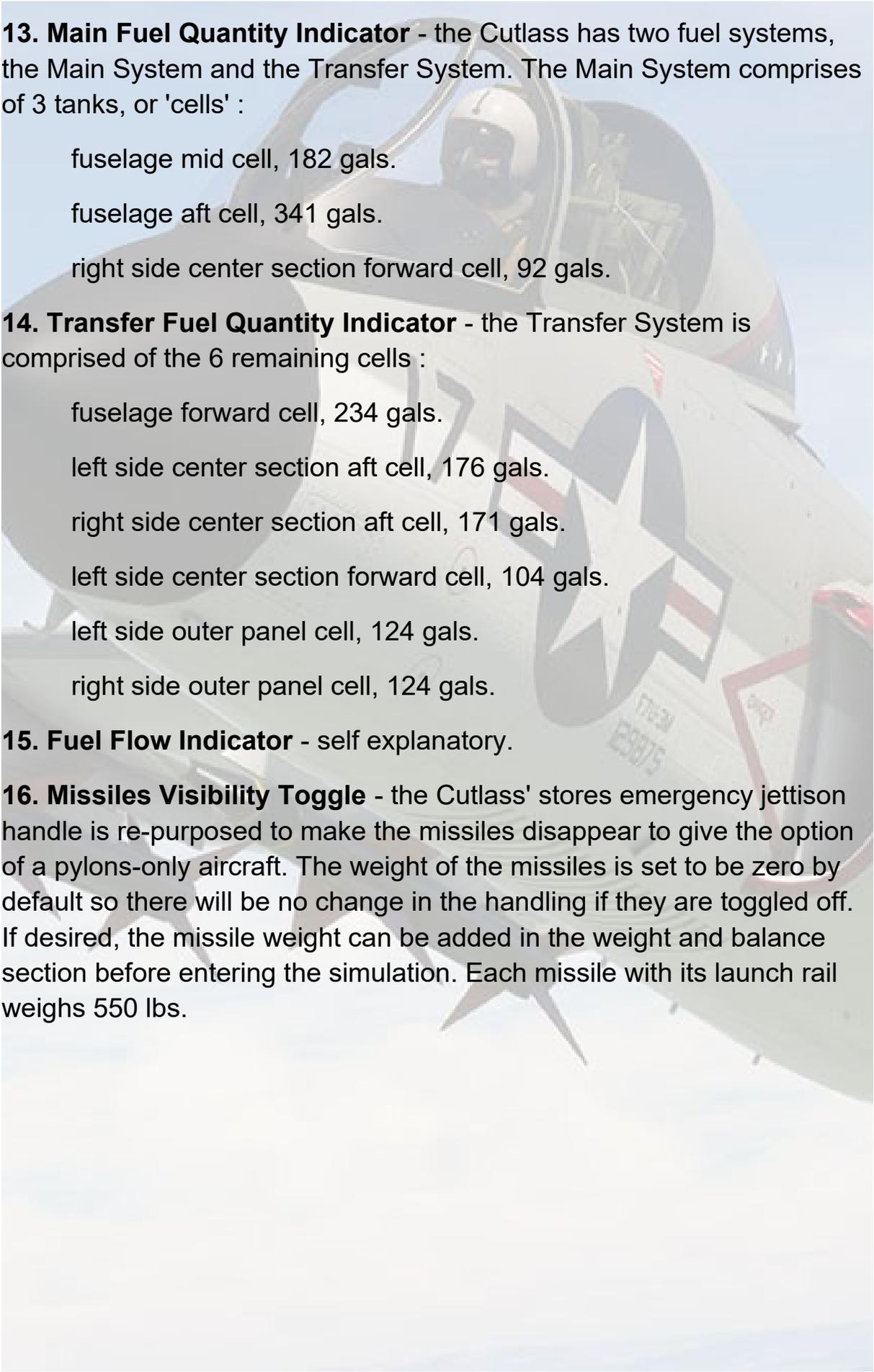
8. Fire Warning Lamps - each engine has a separate warning lamp for fire in the engine and the afterburner. These can be tested using the row of small buttons above the lamps.

9. ILS Indicator - a simple indicator with the typical vertical locator bar (LOC) and horizontal glideslope bar (GS). OFF flags are included to indicate non-availability of these functions.

10. G2 Compass - a simple G2 type compass, typical for the era. No other functions.

11. Main Cell Fuel Quantity Switch - when pressed, the Main Fuel Quantity Indicator (see item 13 below) will change to indicate the quantity in the Main Cell (fuselage mid) only.

12. Transfer Fuel Quantity Selector Switch - this rotary switch permits the checking of the fuel quantity sequentially in the center section, forward fuel cell and the total fuel in the Transfer System. Fuel in the Wing Outer Panels (the folding parts of the wing) was not measured in the Cutlass.



13. Main Fuel Quantity Indicator - the Cutlass has two fuel systems, the Main System and the Transfer System. The Main System comprises of 3 tanks, or 'cells' :

fuselage mid cell, 182 gals.

fuselage aft cell, 341 gals.

right side center section forward cell, 92 gals.

14. Transfer Fuel Quantity Indicator - the Transfer System is comprised of the 6 remaining cells :

fuselage forward cell, 234 gals.

left side center section aft cell, 176 gals.

right side center section aft cell, 171 gals.

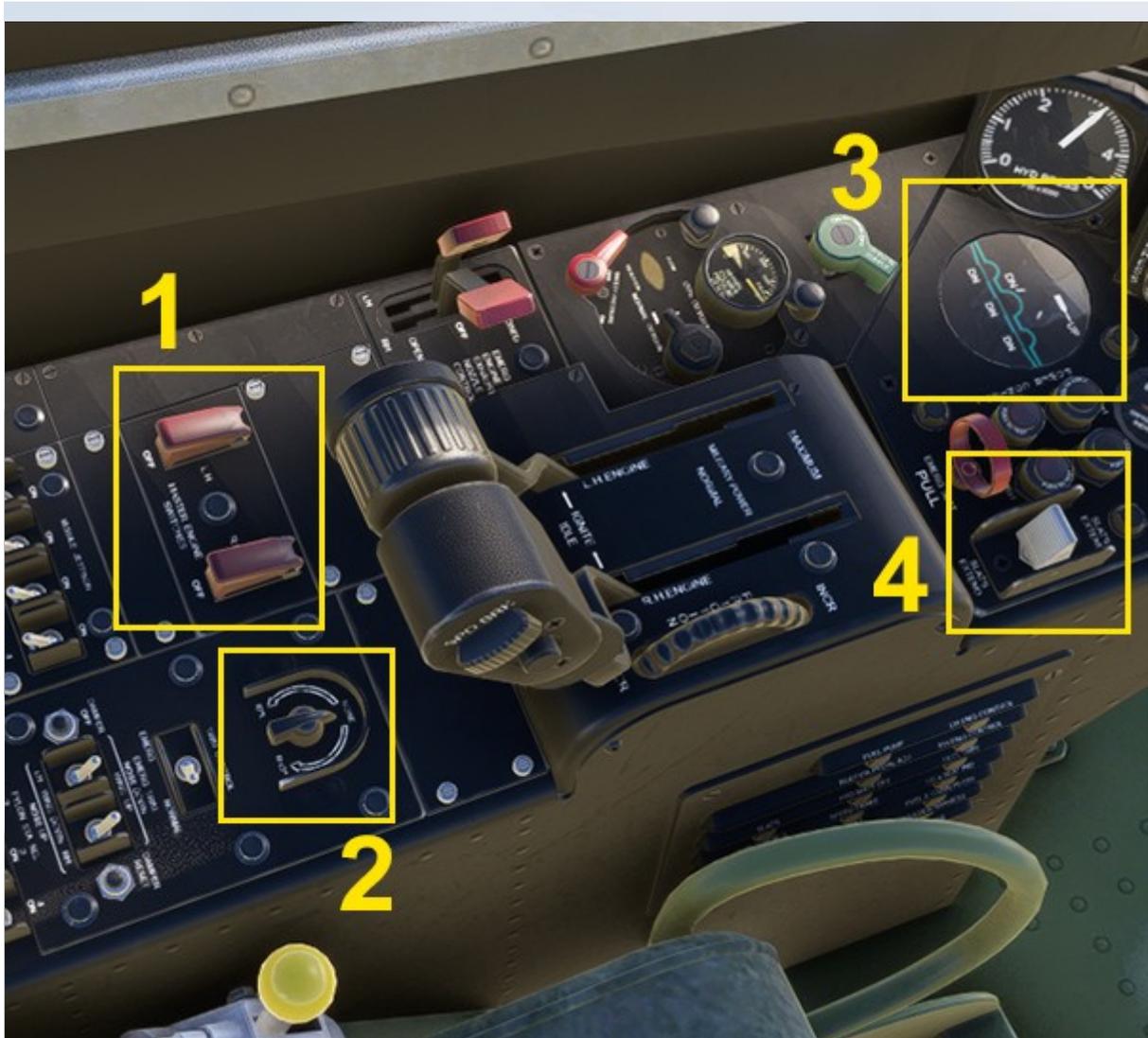
left side center section forward cell, 104 gals.

left side outer panel cell, 124 gals.

right side outer panel cell, 124 gals.

15. Fuel Flow Indicator - self explanatory.

16. Missiles Visibility Toggle - the Cutlass' stores emergency jettison handle is re-purposed to make the missiles disappear to give the option of a pylons-only aircraft. The weight of the missiles is set to be zero by default so there will be no change in the handling if they are toggled off. If desired, the missile weight can be added in the weight and balance section before entering the simulation. Each missile with its launch rail weighs 550 lbs.

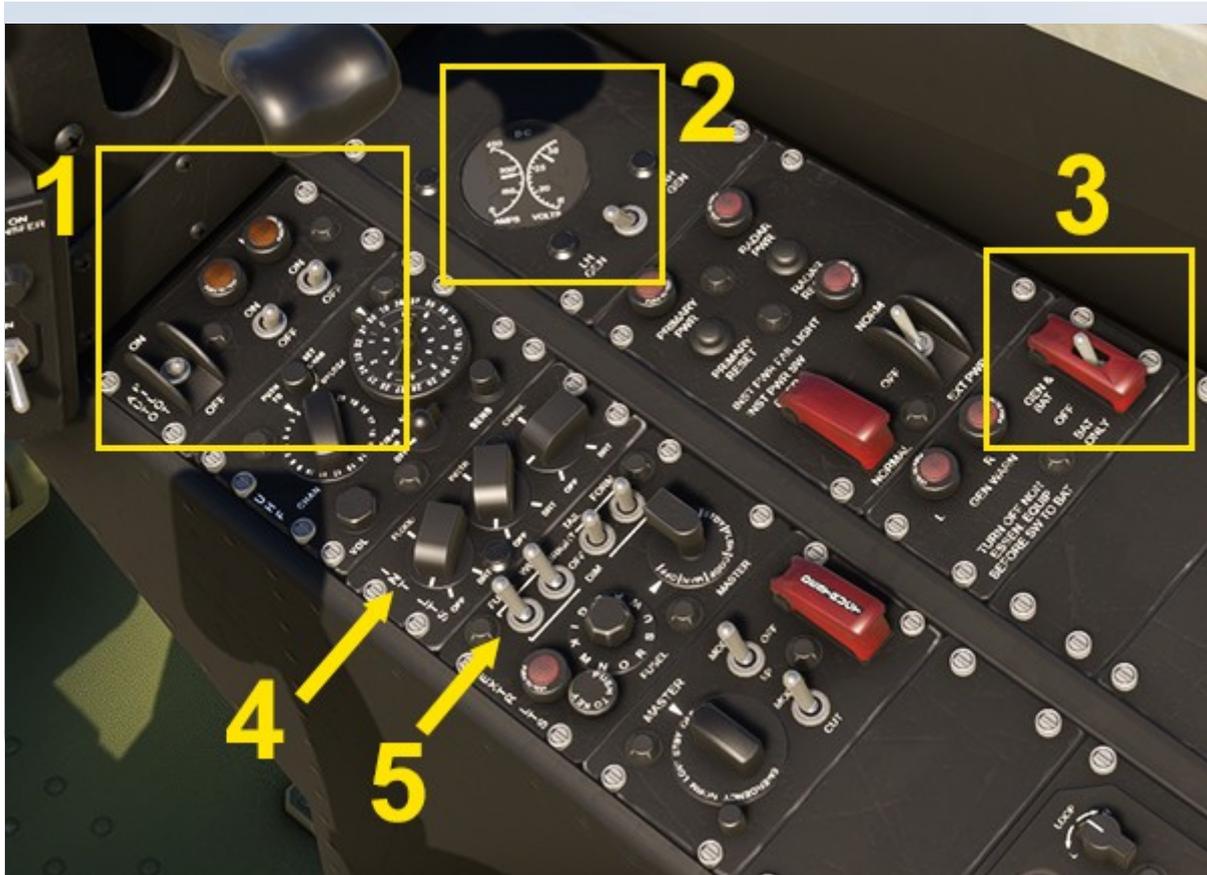


1. Master Engine Switches - rather than fuel valve switches, the Cutlass uses these 'Master Engine' switches to isolate the engine from the fuel system. This is the only way to shut down the engines. The engines will not start unless these switches are in the forward 'on' position.

2. Rudder Trim Knob - the MSFS tooltip is available with this knob and will show how many degrees of trim is applied.

3. Landing Gear and Slat Position Indicator - the slats only have two positions, retracted or extended.

4. Slats Switch - this 'spring-loaded' switch only has to be clicked once, not held, and the slats will extend. Retracting requires a single click with the right mouse button.



1. Autopilot Switches - Engaging the ALT hold switch will cause the autopilot to 'grab' the current altitude. It is not possible to set the altitude. The HDG switch will similarly capture and hold the present heading, however the heading can now be adjusted using the HDG knob on the RMI instrument. A small triangle pointer will move around the dial when the knob is turned making it easy to see the selected heading. The tooltip is also active on the HDG knob. The Master switch will simply disengage both HDG and ALT.

2. Voltammeter - displays current main bus voltage and generator amperage. The amps needle is driven by the engine 1 generator, the nearby switch is used to change this to engine 2.

3. Master Battery Switch - the red guard part of the switch is not used.

4. Interior Lights Control - 3 lighting rheostats, left to right, control red flood lighting, main panel gauges/text and side consoles gauge/text.

5. Exterior Lights Control - only the first two toggle switches are operable. These control the Navigation Lights and the Beacon Light.



- 1. Pitot Heat Switch** - labelled as 'anti-ice', but just toggles the pitot heat.
- 2. Parking Brake Lever** - the lever is actually an emergency brake but is re-purposed here as a parking brake, which the real Cutlass does not have.
- 3. Wing Fold Handle** - clicking open the cover and exposes the handle.

F7U-3M Cutlass Specs

Specifications :

Empty Weight: 18,210 lbs.
Normal Aircraft Weight, full fuel: 31,643 lbs.
Crew: 1
Maximum fuel load: 1,548 Gal. / 10,371 lbs.
Maximum missile load (4): 2,200 lbs.

Reference speeds :

gear down, slats out stall speed : 105 knots
gear up, slats in stall speed : 120 knots
cruise speed : 490 knots at 40,000 ft
claimed maximum speed : 606 knots
max slats extended : 210 knots
rotation speed min : 120 knots
climb speed military power : 250 knots
climb speed afterburner : 350 knots
service ceiling : 40,600 ft

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