Embraer A-29B Super Tucano

Made by Speedy

Version 23.06.19

DISCLAIMER

This document has been created for recreational purposes only. Do not use for training or real life flying.

The author of this document has never had access to restricted or classified documentation on the A-29 Super Tucano. The author has never had access to OEM (Original Equipment Manufacturer) data related to the A-29 Super Tucano, its armament systems nor its defensive systems. All the information within this document is taken from public documentation.

The procedures listed in this document are deliberately simplified for gameplay purposes due to the limitations of the DCS World simulation environment and the limitations of the A-29 Super Tucano Mod. This document is merely a free, personal project that is used for entertainment.

This document is not meant nor designed to teach someone to fly a real A-29 Super Tucano

Note from the Author

Creating these manuals and guides are a labor of love and passion, but it doesn't happen in a vacuum. It takes a lot of time, patience and research and support from many people around me. If you enjoy these manuals and they help you, they've accomplished exactly what they are designed to do. If you are feeling like paying it forward and want to help me keep making these manuals and guides, feel free to buy me a beer or a coffee or support me on Patreon.

Thank you for your support, see ya in the virtual skies

NAPA "SPEEDY"

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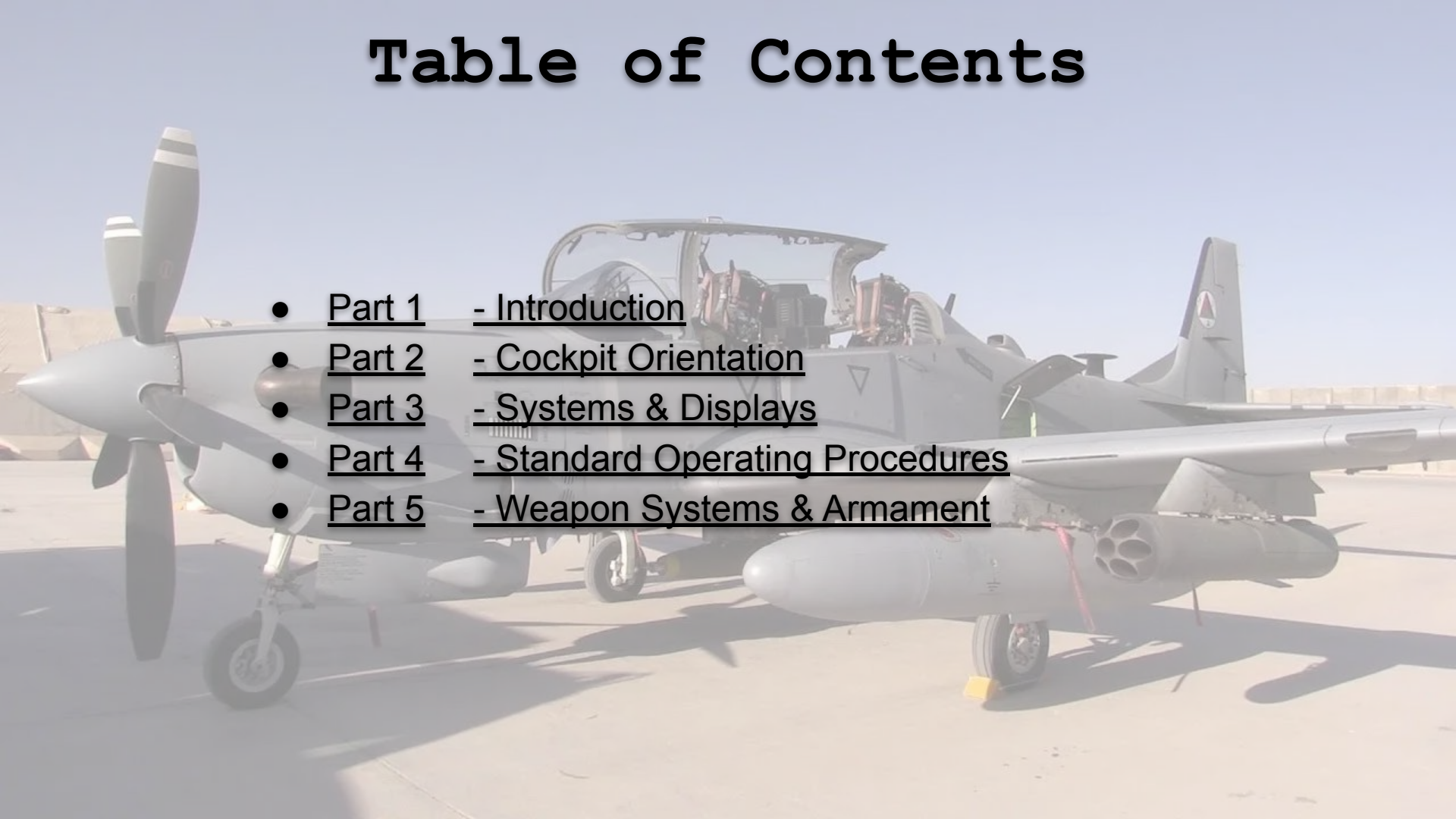


The Embraer EMB 314 Super Tucano, also named ALX or A-29, is a Brazilian turboprop light attack aircraft designed and built by Embraer as a development of the Embraer EMB 312 Tucano. The A-29 Super Tucano carries a wide variety of weapons, including precision-guided munitions, and was designed to be a low-cost system operated in low-threat environments.

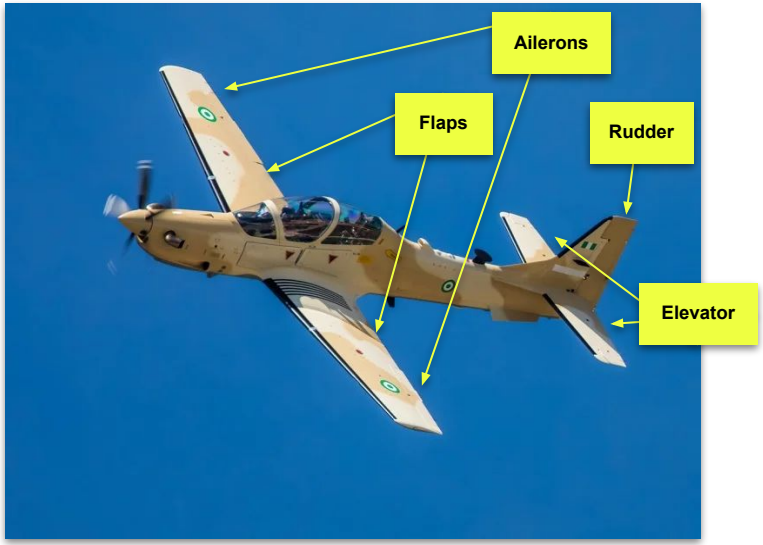
The all-glass cockpit is fully compatible with night-vision goggles. The A-29 is equipped with avionics systems from Elbit Systems of Haifa, Israel, including a head-up display (HUD), advanced mission computer, navigation system, and two 6in x 8in colour liquid crystal multi-function displays.

There are five hardpoints for carrying weapons, and the aircraft is capable of holding a maximum external load of 1,500kg. The aircraft is armed with two wing-mounted 12.7mm machine guns with a rate of fire of 1,100 rounds a minute and is capable of carrying general-purpose bombs and guided air-to-air and air-to-ground missiles.

The current build for this mod, has only the front seat as functional

General characteristics

- **Crew:** 2 (Pilot plus one navigator/student in tandem)
- **Length:** 11.38 m (37 ft 4 in)
- **Wingspan:** 11.14 m (36 ft 7 in)
- **Height:** 3.97 m (13 ft 0 in)
- **Empty weight:** 3,200 kg (7,055 lb)
- **Max takeoff weight:** 5,400 kg (11,905 lb)
- **Powerplant:** 1 × Pratt & Whitney Canada PT6A-68C turboprop engine, 1,604 hp
- **Propellers:** 5-bladed Hartzell, 2.39m (7 ft 10 in) diameter constant-speed, fully feathering, reversible-pitch propeller

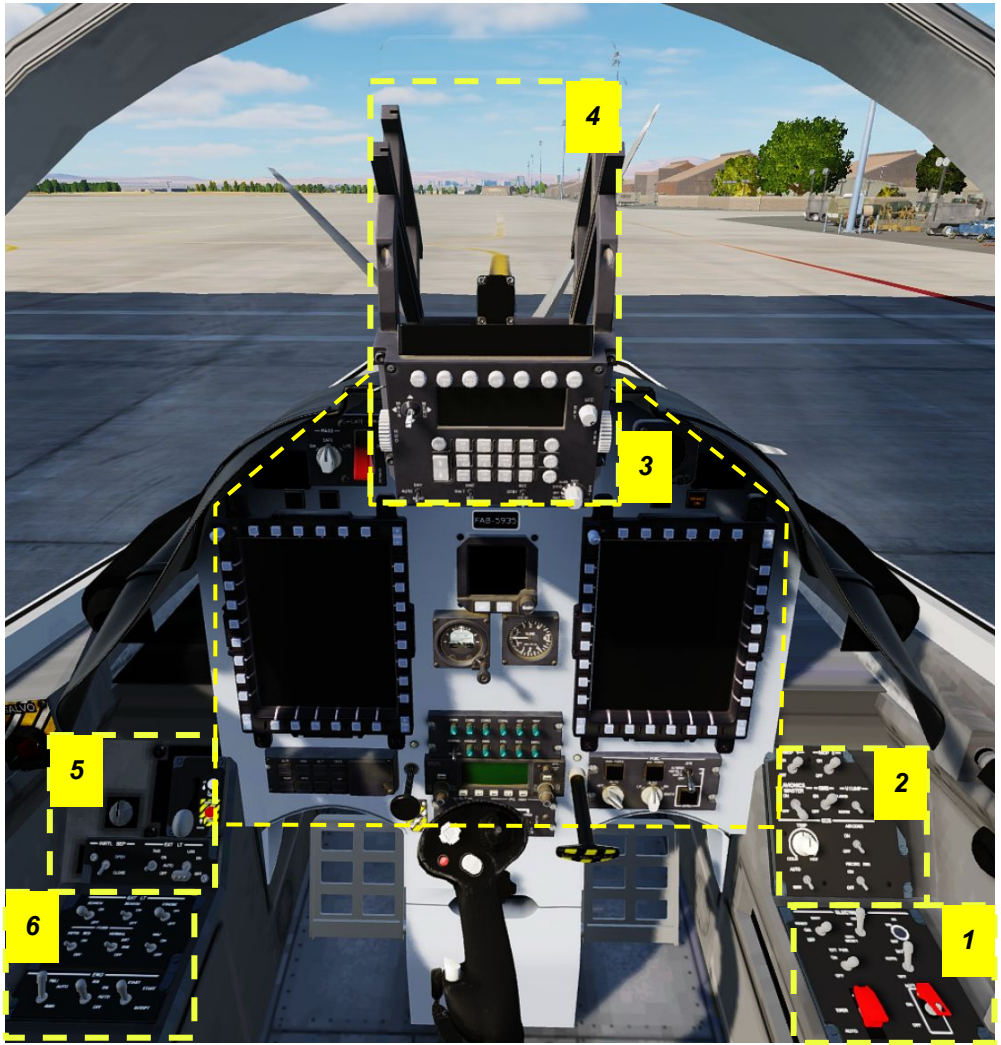


Performance

- **Maximum speed:** 320 kts
- **Cruise speed:** 280 kts
- **Stall speed:** 80 kts
- **Range:** 720 nm
- **Combat range:** 300 nm
- **Service ceiling:** 35,000 ft
- **g limits:** +7 /-3.5
- **Rate of climb:** 3,230 ft/min

Part 2 - Cockpit Orientation

1. Right Panel
2. Front Right Panel
3. Front Panel
4. Up-Front Controller & Heads Up Display
5. Front Left Panel
6. Left Panel

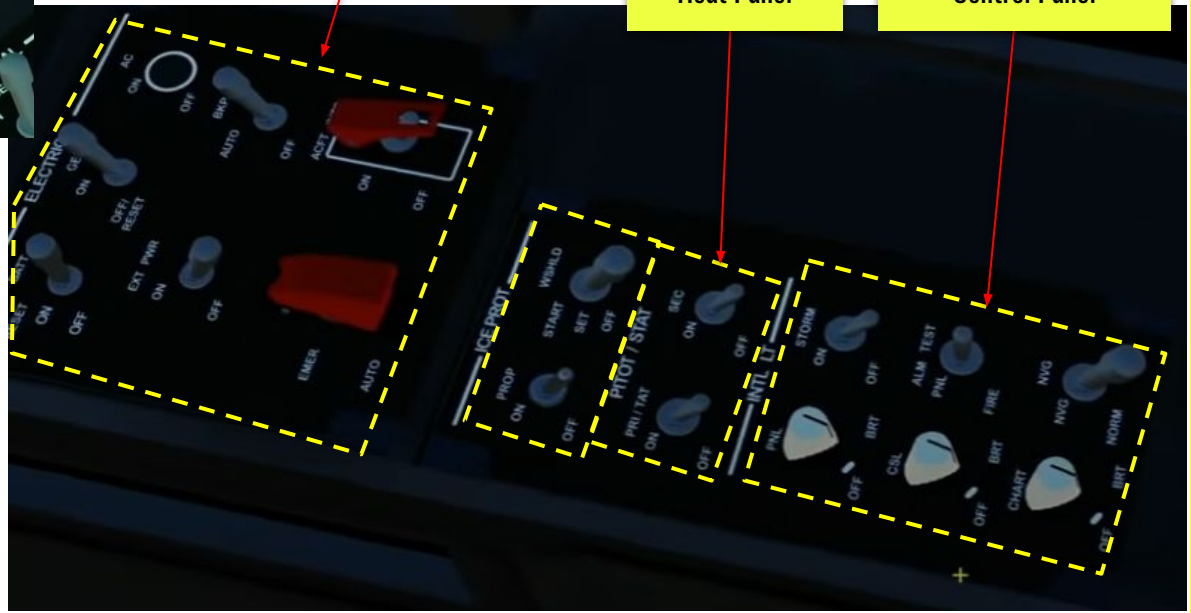


Avionics Power Panel

Electrical Panel

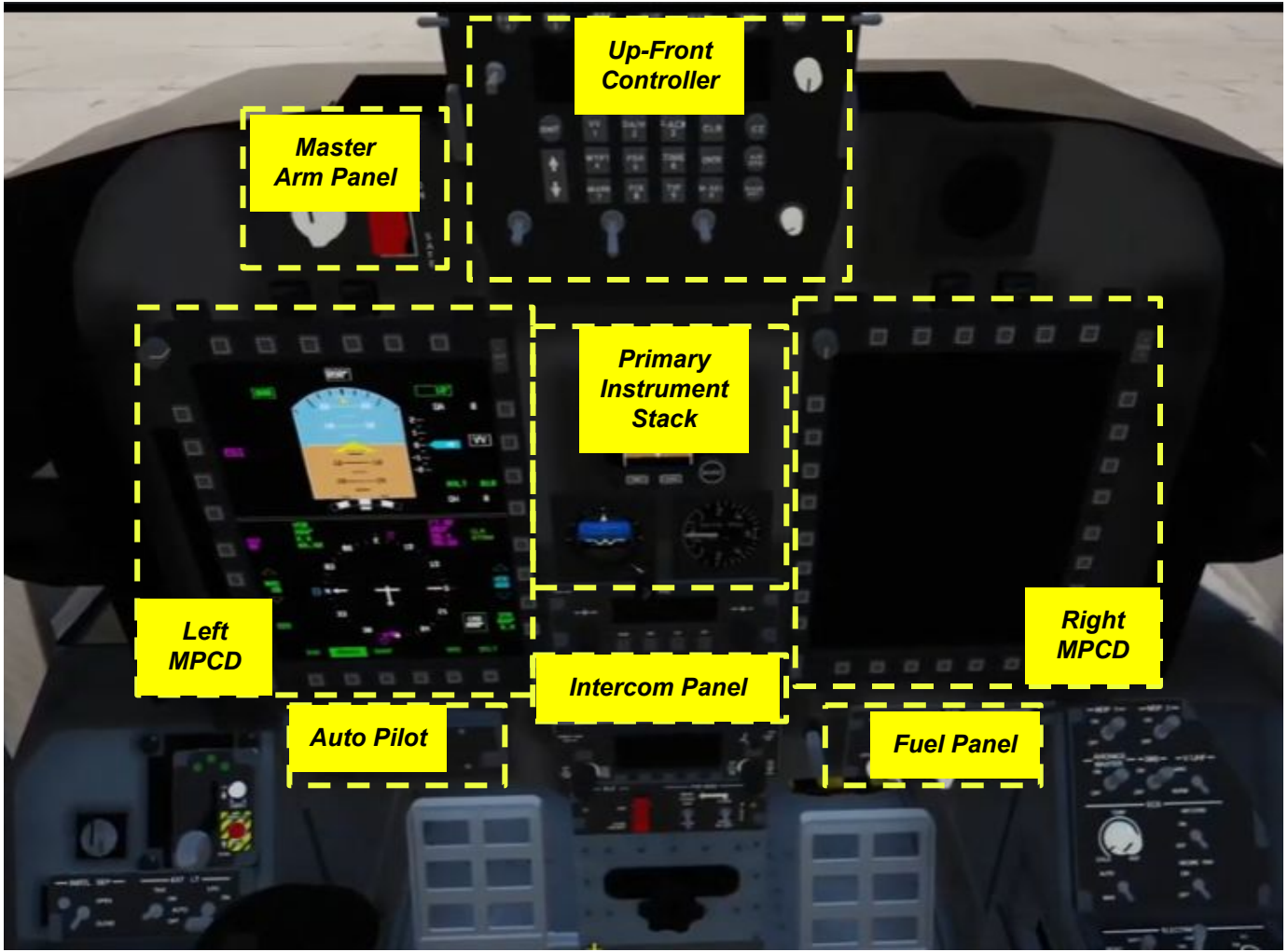
Pitot / Static Heat Panel

Interior Lighting Control Panel



Right Side Panel

Part 2 - Cockpit Orientation


Up-Front Controller
Master Arm Panel
Primary Instrument Stack
Left MPCD
Right MPCD
Intercom Panel
Auto Pilot
Fuel Panel

Ext. Lights Panel
- Search
- Beacon
- Strobe *(Not Modeled)*
- NAV
- BRT/DIM *(DIM ONLY)*
- IR *(Not Modeled)*

Landing Gear Status Lights

Landing Gear Handle

Engine Control Panel

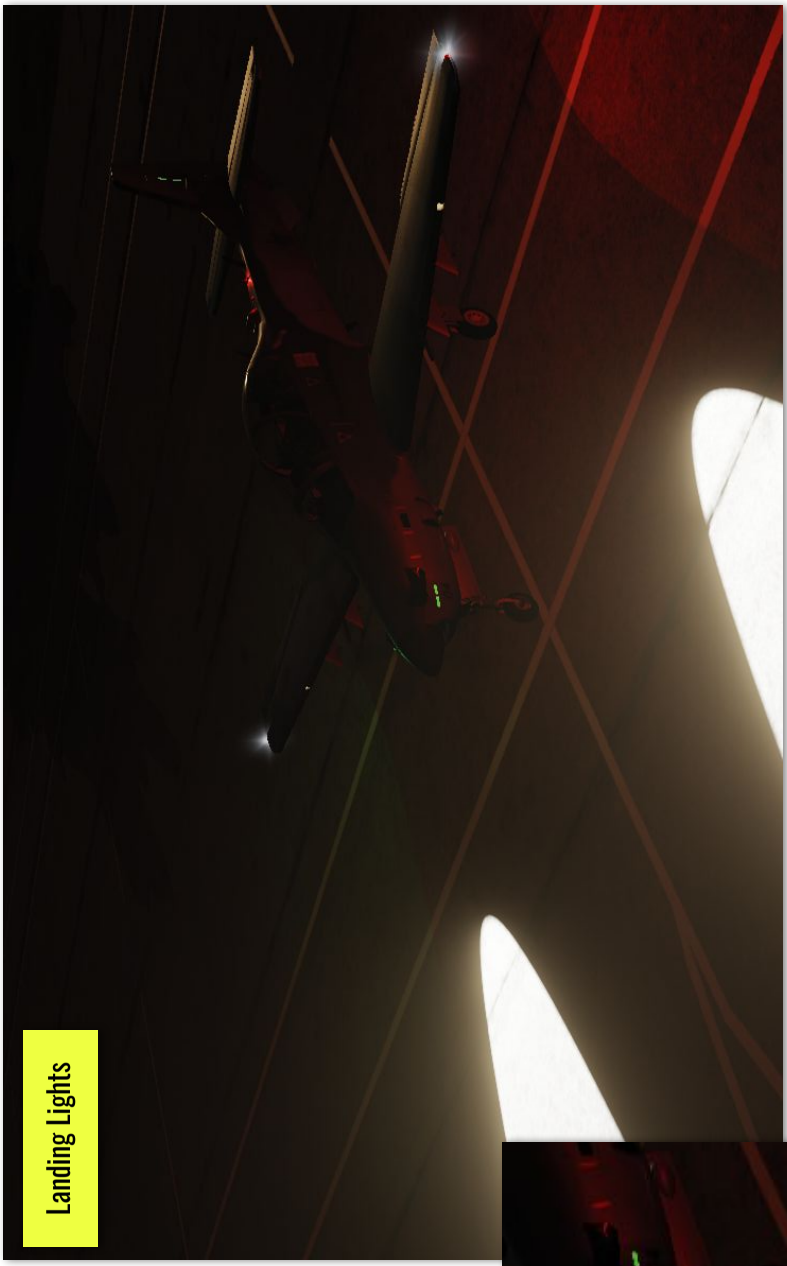
Emergency Fuel Cut-Off

Back-up Trim Control Panel

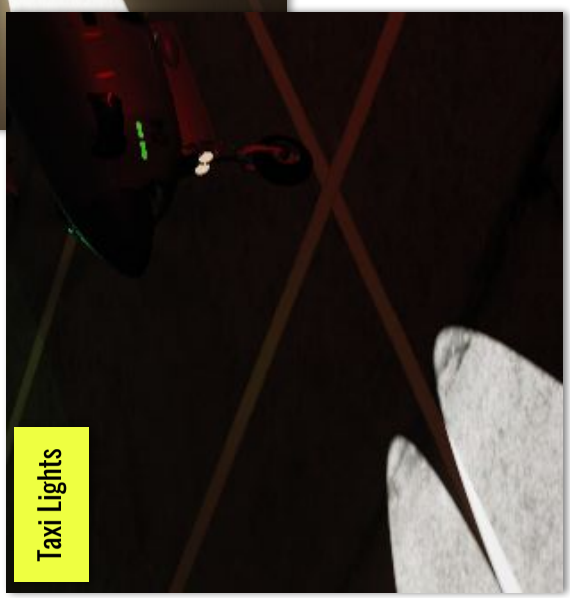
Exterior Lights

Part 2 - Cockpit Orientation

Exterior Lights



Landing Lights



Taxi Lights

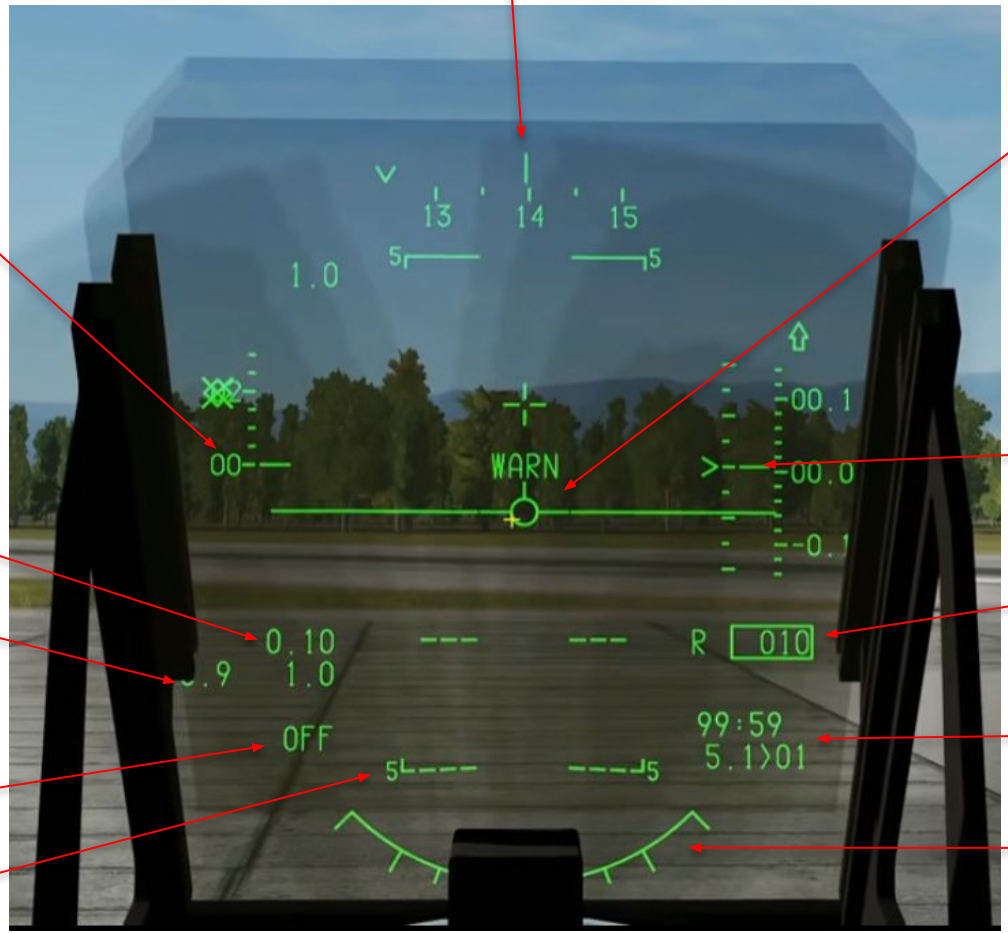
Part 3 - Systems & Displays

The all-glass cockpit is fully compatible with night-vision goggles. The A-29 are equipped with avionics systems from Elbit Systems of Haifa, Israel, including a head-up display (HUD), advanced mission computer, navigation system, and two 6in x 8in colour liquid crystal multi-function displays.

The head-up display with 24° field of view and the advanced weapon delivery system. The pilot is provided with a hands-on throttle and stick (HOTAS) control.

The CMFD's pages can be split into two general categories

- Menu Page
- Aircraft Status
  - ADHSI
  - EICAS
  - (SMS) Stores Management
  - Aircraft Info
- Navigation
  - Airfield Database
  - FYT - Waypoint Info
  - Route - Flight Plan
  - UFC Repeater



Heading Indicator

Airspeed Indicator

Flight Path Marker

Altimeter

Aoa Indicator

Radar Altimeter

Mach Speed

Time to WP
Distance>WP#

Master Mode
Info

Angle-of-Bank Indicator

Pitch Ladder

The upfront controls (UFC) include the Integrated Control Panel (ICP) and the Display. The ICP is essentially all the buttons on the UFC. These provide for quick access of either navigation control, radio frequencies and channels and fire control system modes and data. Most of your time will be spent using the ICP to control these functions but less frequently used functions, such as power and audio volume, are located on console panels.

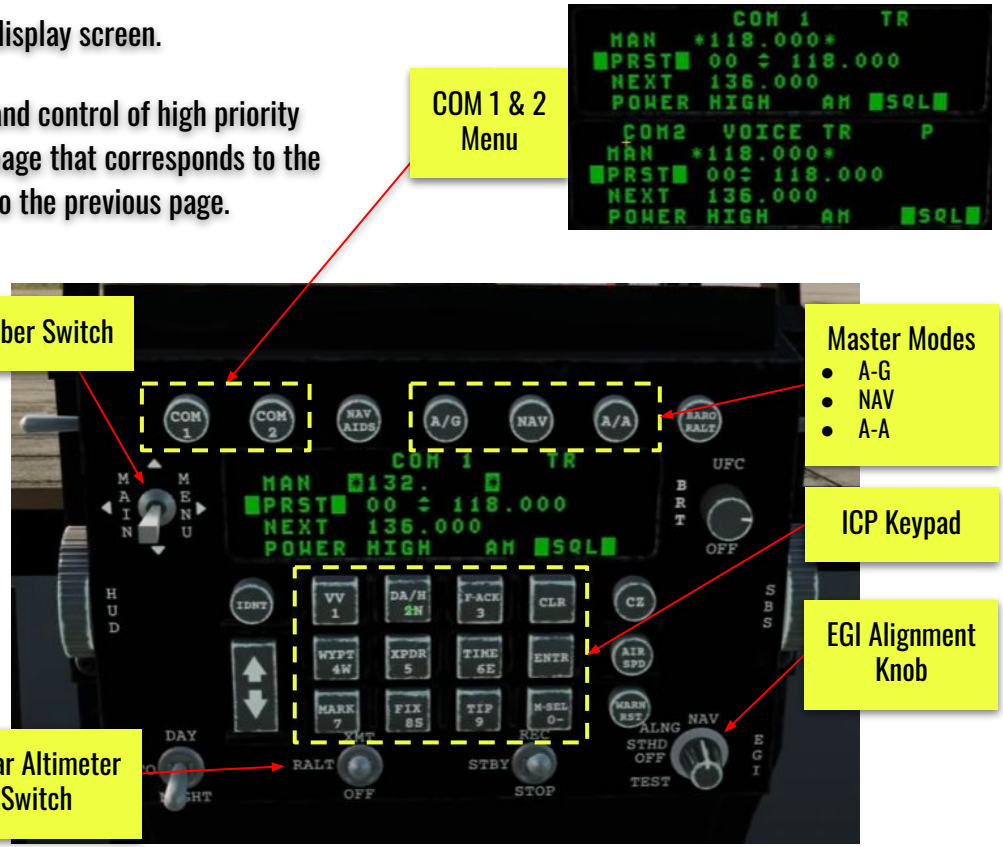
Data accessed through the ICP is displayed on the display screen.

Three override buttons provide for quick selection and control of high priority systems. These override the current DED page to show the page that corresponds to the pressed button. Pressing the button a second time returns to the previous page.

- *COM 1* selects the Primary radio page
- *COM 2* selects the Aux radio page
- *NAV AIDS* selects the page to manipulate and control different radio navigation settings

Master Mode Buttons.

Pressing these buttons selects the Air-to-Air or Air-to-Ground master mode. This configures the aircraft systems and displays for the selected attack mode in one easy step. Pressing the same button a second time returns to the previous mode.



The A-29 Super Tucano comes equipped with two 6in x 8in colour liquid crystal multi-function displays. The pages can be divided into two categories *Navigation* and *Aircraft Status*. Some of these pages are not fully developed or functional. The 3 Most common pages used are the ADHSI, EICAS and Stores Management. We will go over the Stores Management Page in a later section.

Navigation Pages


Airfield Database


UFC Repeater


Menu


FYT-Nav Point Info


Nav Route

Aircraft Status Pages


Aircraft Info


ADHSI


EICAS


Stores Management

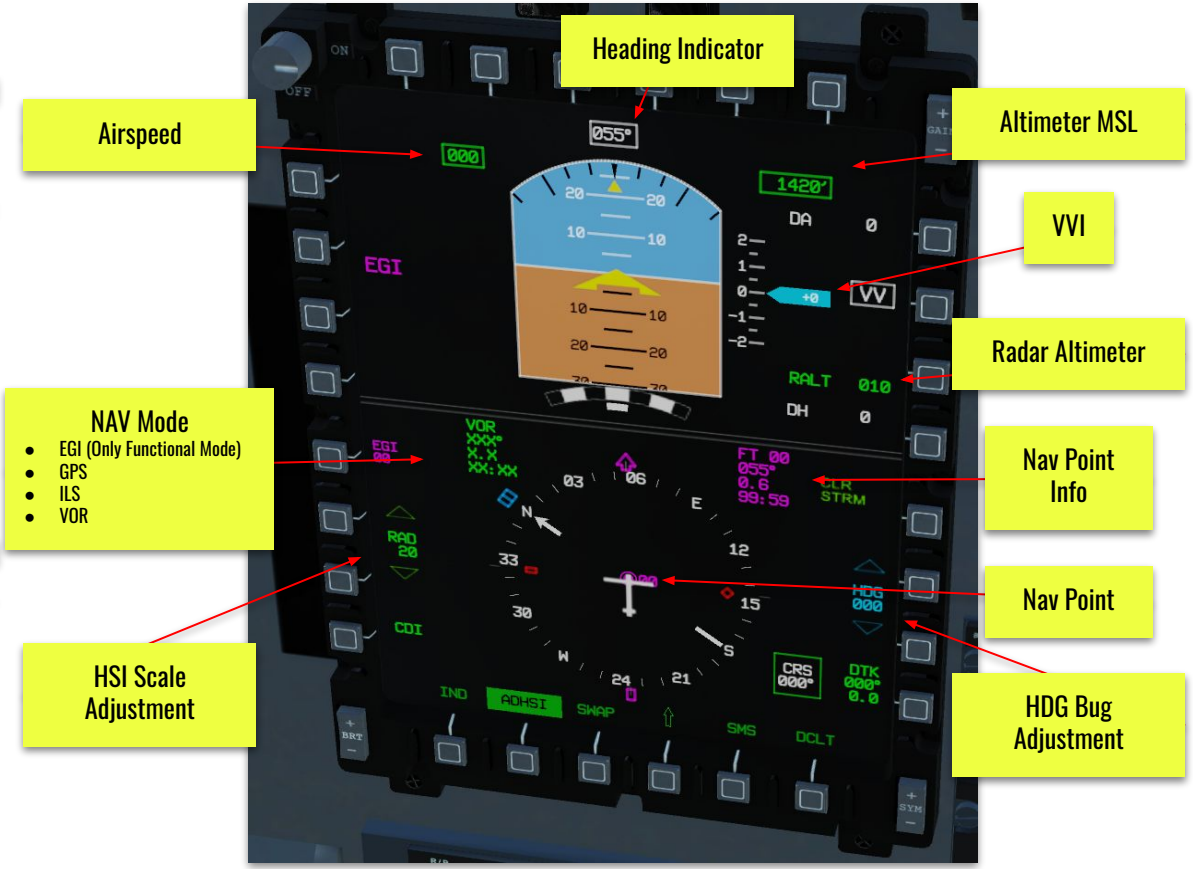
The ADHSI Page is a split page that displays a digital Attitude Direction Indicator (ADI) on the top of the screen and a Horizontal Situation Indicator (HSI) on the bottom half.

This is the primary Flight Instrumentation display as well and navigational display used for the Aircraft.

ADI - The ADI depicts the Aircraft's current:

- Pitch,
- Heading,
- Bank Angle,
- Airspeed,
- Altitude (MSL & AGL)

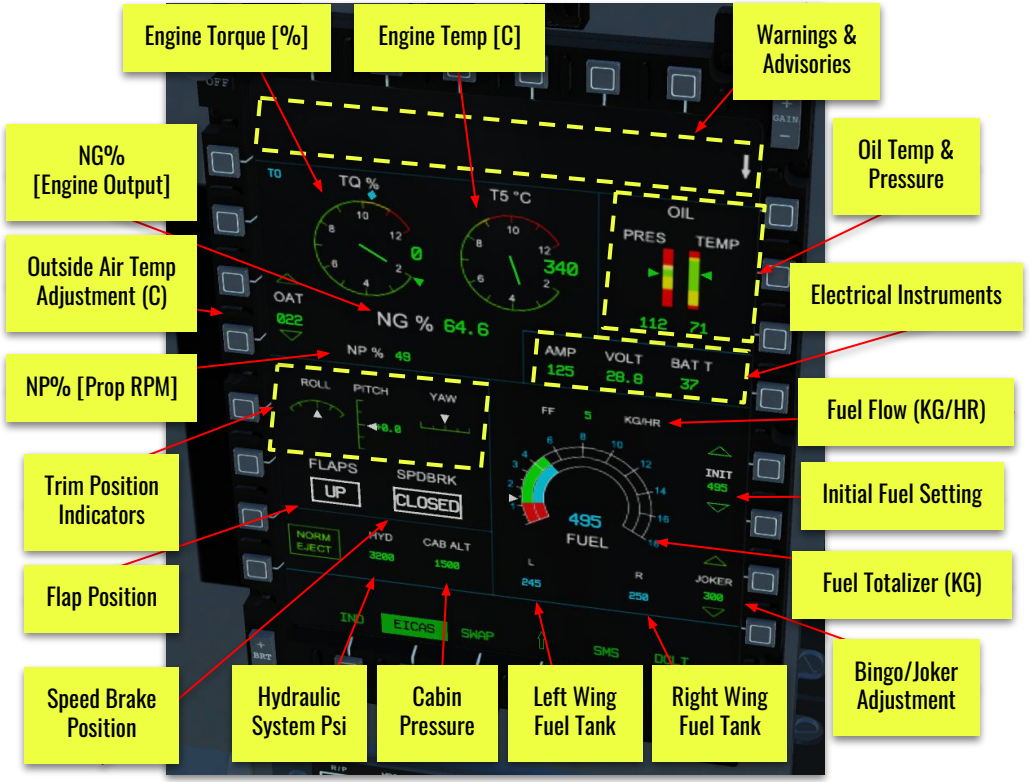
HSI - The HSI represents a Top-down view of the aircrafts current position as well it's intended route, stored navigation points, and the aircraft relative position to those points. It also displays the current bearing and distance to and ETE, to the selected nav point.



EICAS (Engine Indicating & Crew Alert System)

EICAS or Engine Indicating & Crew Alert System is an integrated system used in modern aircraft to provide aircraft crew with aircraft engines and other systems instrumentation and crew annunciations.

The EICAS page displays engine parameters, fuel quantity, cabin pressure flight control status like trim, flap and speed brake position. It will also alert the crew to aircraft configuration issues such as open passenger or cargo doors and will, in conjunction with a Master Warning or Master Caution light



= Foxtrot = "AGA"

Engine Start

1.	Parking Brake		- SET
2.	Throttle		- CUTOFF
3.	Battery		- ON
4.	GEN		- ON
5.	Avionics Master		- ON
6.	MDP 1 & 2 Switch	- Both ON	
7.	Fuel Panel		
	a.	XFR Switch	- AUTO
	b.	Main Pump	- AUTO
8.	LEFT MFD		- ON
9.	RIGHT MFD		- ON (EICAS PAGE)
10.	IGN Switch		- AUTO
11.	Start Switch		- START
12.	Throttle		- IDLE (15%+ NG)
	a.	NG	- 64.6%
	b.	Engine Temp	- 340C
	c.	Oil Pressure	- 112 psi
	d.	Oil Temp	- 71C

After Engine Start

1.	Rotating Beacon		- ON
2.	Strobe Light		- ON
3.	EGI Knob	- ALNG	
4.	EICAS Page		
	a.	OAT	- SET
	b.	INIT	- SET
	c.	JOKER	- SET
5.	PITOT / STAT Panel		
	a.	PRI/TAT Switch	- ON
	b.	SEC Switch	- ON

Wait for EGI Alignment completes.
Signaled with blinking ALIGN in UFC Screen

6.	EGI Knob	- NAV

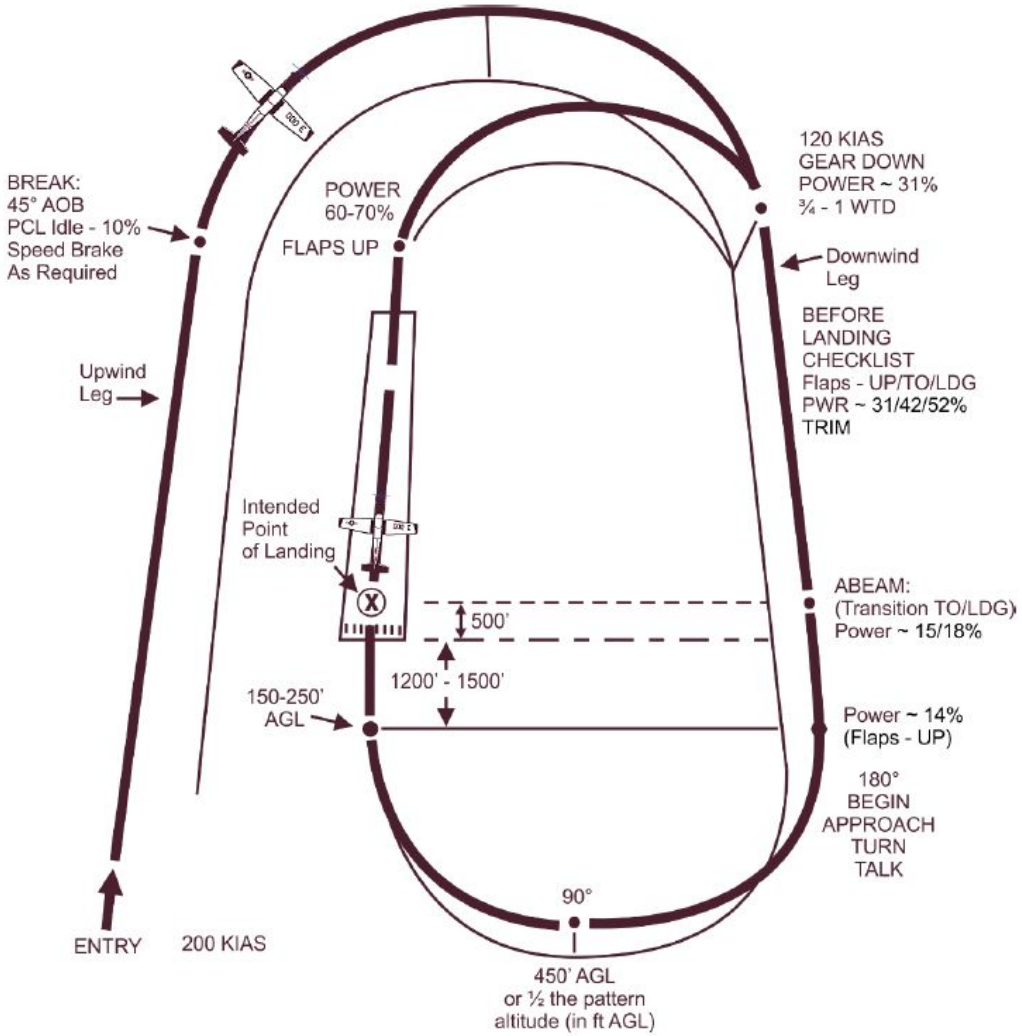
Taxi

1.	Parking Brakes	- RELEASE
2.	Throttle	- AS NEEDED
3.	Warnings & Cautions	- NONE
4.	Brakes	- TEST
5.	Speed	- 15-20kts

Takeoff

1.	Wheel Brakes	- HOLD
2.	Throttle	- 100% NG
3.	Warnings & Cautions	- NONE
4.	Brakes	- RELEASE
5.	Rotate Speed	- 100 kts
6.	Take-off Speed	- 110 kts
7.	Gear Retract	- 120 kts
8.	Flaps Retract	- 130 kts
9.	Cruise Climb	- 180 kts

- Break
  - 1,500ft AGL
  - 200 KIAS
  - 45-60° AOB
  - PCL - Idle
  - Speed Brakes OUT
- Downwind
  - 1,500ft AGL
  - 140 KIAS
  - GEAR Down
  - FLAPS Down
  - Speed Brakes as needed
- Base
  - 120 KIAS
  - Confirm Gear, Flaps Down
- Final
  - 115 KIAS
  - Confirm Gear, Flaps Down
- Touchdown
  - 105 KIAS
  - Aero Brake

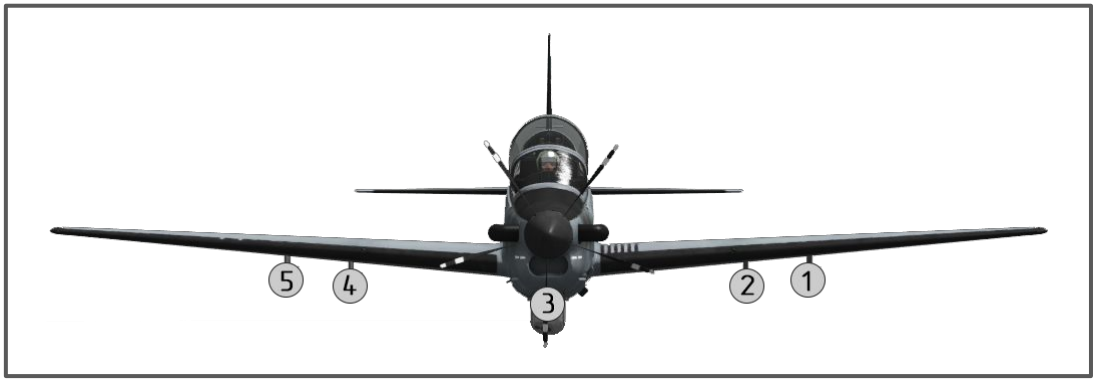


Part 5 - Weapon Systems

The Embraer EMB 314 Super Tucano is designed as a Light Attack Aircraft, as such it has the ability to carry a wide variety of Ground Attack Munitions as well as Weapons for Self Defence.

The aircraft is armed with two wing-mounted .50 Cal machine guns with a rate of fire of 1,100 rounds a minute and there are five hardpoints capable of carrying general-purpose bombs and guided air-to-air and air-to-ground missiles for a maximum external load of 1,500kg.

With A-A and A-G Master Mode's that will configure the HUD Symbology



Stores Management Screen

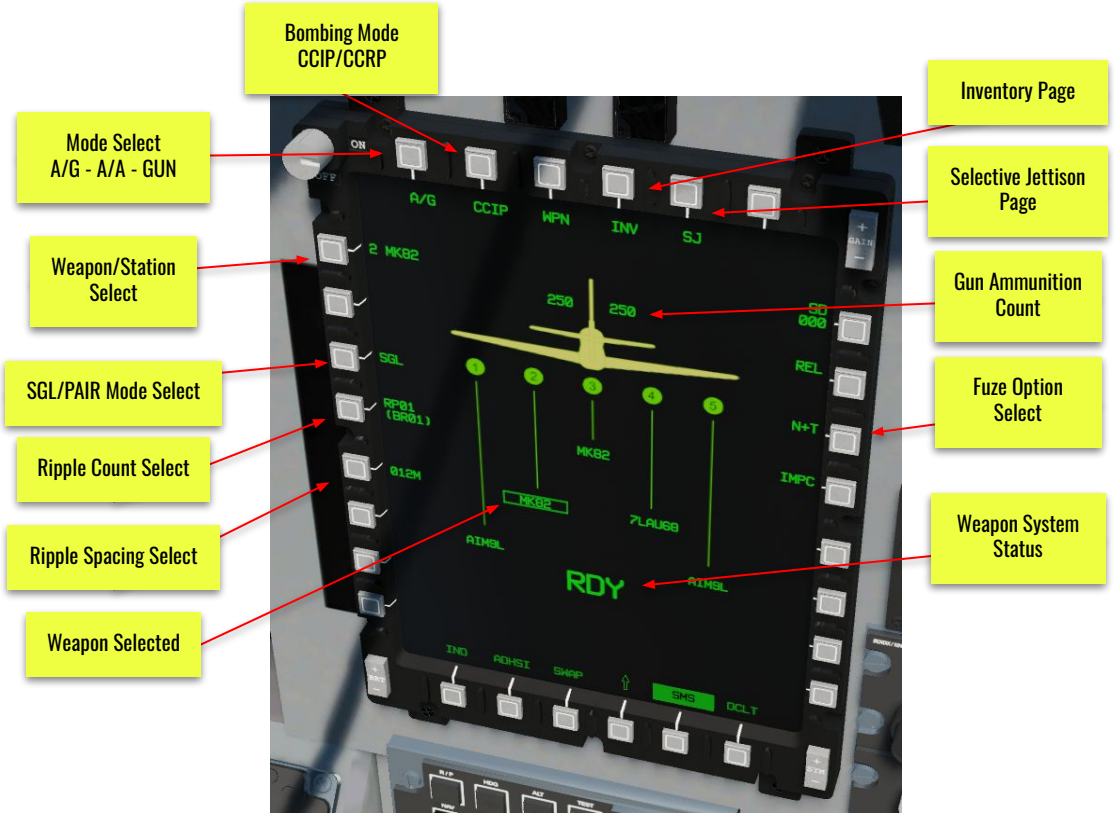
The Stores Management Set (SMS) MFD page and subpages allow for viewing, configuration and status monitoring of loaded stores. Different options are available depending on the type of weapons that are selected. An Inventory page is available that shows the stores loaded on each station and allows modification if required. A Selective Jettison page is also available that allows selected stores to be jettisoned in an unarmed state.

The SMS page can be accessed by clicking on the MENU OSB then selecting the STORES sub menu.

The nose-on display provides the number, type, and status of all stores loaded on the aircraft's weapon stations.

A weapons rack is indicated with the station number, and the number/name below indicates the number of and type of weapons loaded on the station

The status of the weapon system is displayed on the bottom of the SMS page.

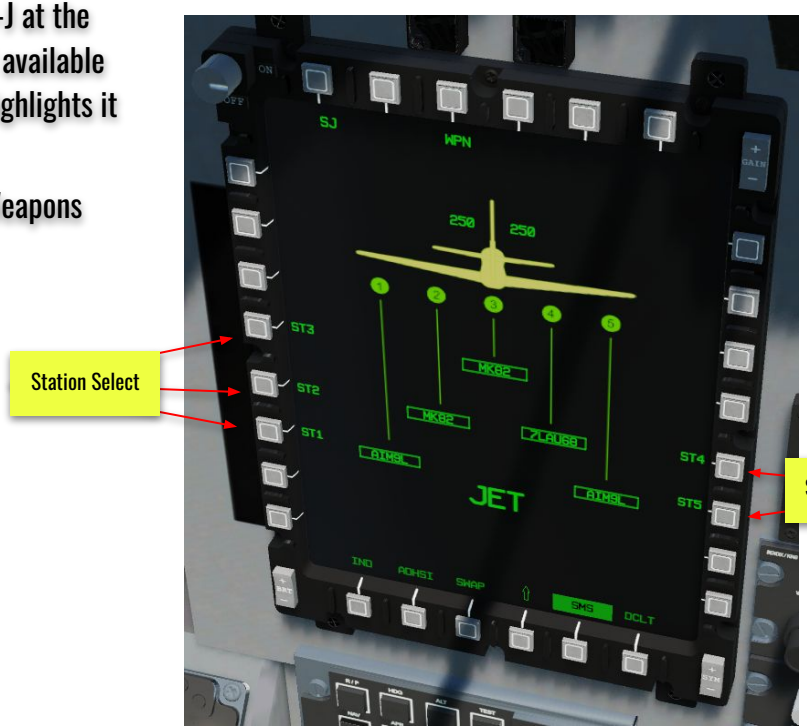


Selective Jettison (S-J) Page

This page allows jettison of selected stores in an unarmed state. This provides more flexibility in the stores that are jettisoned than is available with the Emergency Jettison button, that jettisons all jettisonable stores.

The S-J Page is accessed by selecting the OSB above the S-J at the top of the SMS Page. Jettisonable stores are displayed and available for selection. Pressing the OSB next to the store number highlights it for jettison.

Store can then be jettisoned by pressing and holding the Weapons Release Button on the Control Stick.



The Embraer A-29 Super Tucano is designed as a Light Attack Aircraft, as such it has the ability to carry a wide variety of Ground Attack Munitions as well as Weapons for Self Defence.

The A-29 has the ability to carry the Aim-9M Sidewinder Infrared Missile on stations 1 and 5.

Once selected the HUD Symbology for the Aim-9M is quite simple. The Aim-9M is defaulted into boresight mode, and the seeker head is represented as a diamond symbol on the HUD. You will hear the typical sidewinder growl in your headphones, which indicates that the IR seeker head is searching for a target. Once a target is found, the growl will change to a higher pitch whistle, press the Uncage/cage button and the seeker will now self track the target. Press the weapon release button to launch the missile.

The Embraer EMB 314 Super Tucano is equipped with two(2) internal .50 Cal Machine Guns with 250 rounds each. Which can be used for both Air-to-Ground Strafing, as well as self defense in Air-to-Air. The HUD Symbology is quite similar between both modes, with very slight differences.

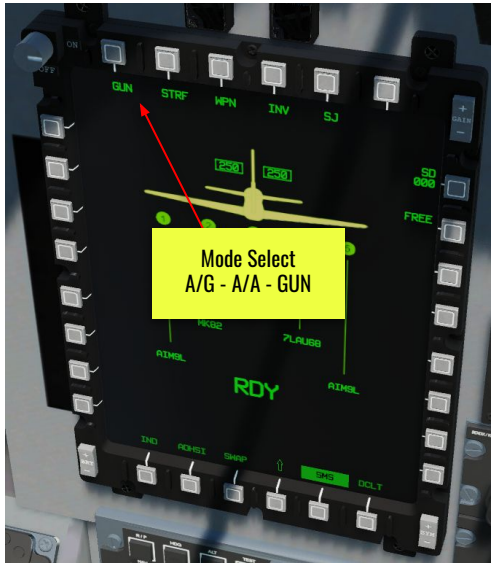
The gun can be selected in both A-A and A-G Master Modes.

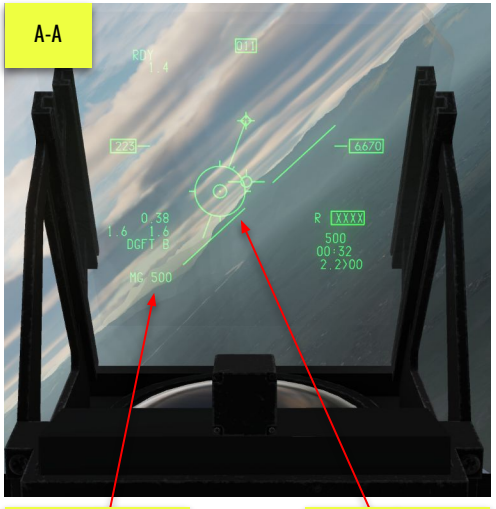
Both HUD Displays, show the rounds remaining on the HUD in the bottom right corner, as well as a Gun Sight Pipper showing rounds impact.

By default the gun sights are set for the following ranges, and can not be changed

A-A = 500 meters

A-G = 1,000 meters





The Embraer EMB 314 Super Tucano is designed as a Light Attack Aircraft, so its primary mission is Ground Attack in all it's tactical varieties, Close Air Support, Air Interdiction, ISAR, FAC(A), etc.

As such it has the ability to carry a wide variety of weapons, including M-81's, Mk-82's, GBU12's, AGM-114 Hellfire's, MK-151 2.75in rockets with HE or WP warheads, and Rockeye's, and CBU-87's Cluster munitions. As well as it's two(2) internal .50 Cal Machine Guns with 250 rounds each. As well as an Internal FLIR sensor suites.

NOTE

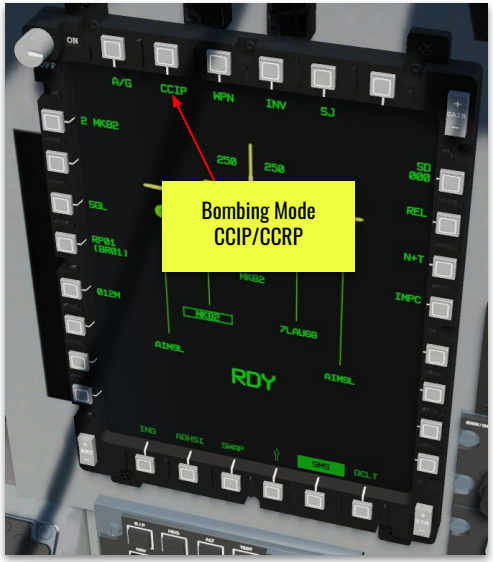
As it currently stands the A-29 mod does not have an Internal FLIR suite, due to DCS limitations, nor does it have access to the AGM-114 Hellfire missiles. When using the GBU-12, coordination with a JTAC or other lasing source is required.

The Embraer EMB 314 Super Tucano can be equipped with freefall weapons on any of the five weapon stations. The weapons can be dropped one of two modes:

CCIP: Continuously Computed *IMPACT* Point

CCRP: Continuously Computed *RELEASE* Point

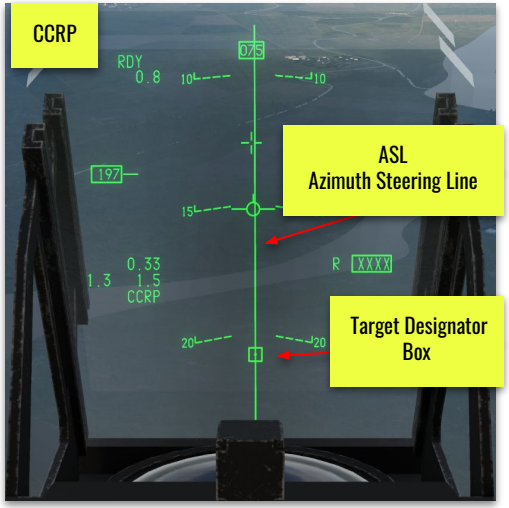
Which can be selected using the OSB Button above CCIP/CCRP on the MFCD.



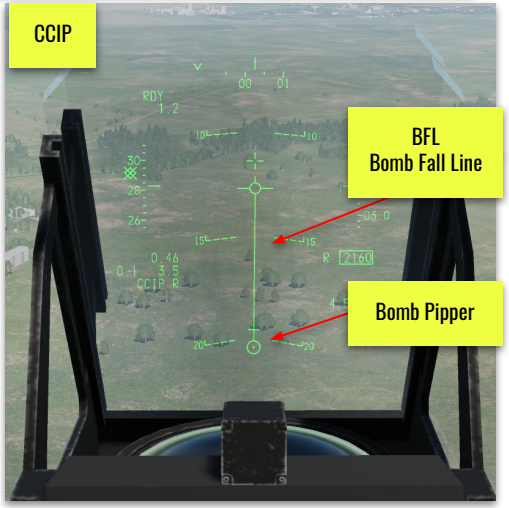
NOTE:

BARO / RALT Button on UFC needs to be Cycled for CCIP symbology to load properly

In *CCRP* mode the system continuously calculate's the *release* point for the weapon to be able to hit the selected target point. The selected point is depicted with the target designator box.

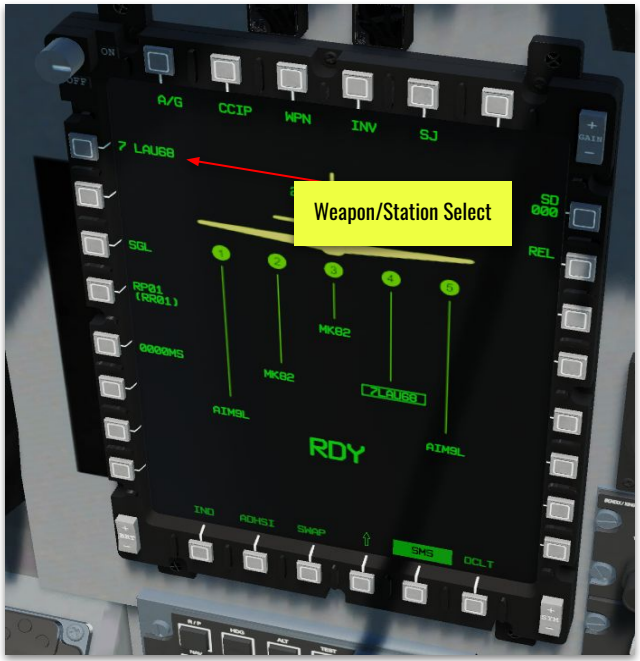


In *CCIP* mode the system continuously calculates the *impact* point, which is depicted with the Pipper at the bottom of the vertical Bomb Fall Line (BFL) running from the FPM to the bomb pipper.



The Embraer EMB 314 Super Tucano can also be equipped with Mk-151 2.75in rocket pods. Either the 7-rocket pod or the 14-rocket pod, with either High-Explosive or White Phosphorus warheads. They can be equipped on stations 1,2,4 or 5.

The HUD Symbology when rockets are selected has a Rocket Pipper displayed on HUD. The Sight Pipper is defaulted for 1,000m range, similar to the A-G Gun Strafe Sight.

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