F·86F
SABRE

*for **DCS** World*

Quickstart manual

belsimtek

THE FIGHTER COLLECTION

Eagle Dynamics

DCS
SERIES

HEALTH WARNING!

Please read before using this computer game or allowing your children to use it.

A very small proportion of people may experience a seizure or loss of consciousness when exposed to certain visual images, including flashing lights or light patterns that can occur in computer games. This may happen even with people who have no medical history of seizures, epilepsy, or "photosensitive epileptic seizures" while playing computer games.

These seizures have a variety of symptoms, including light-headedness, dizziness, disorientation, blurred vision, eye or face twitching, loss of consciousness or awareness even if momentarily.

Immediately stop playing and consult your doctor if you or your children experience any of the above symptoms.

The risk of seizures can be reduced if the following precautions are taken, (as well as a general health advice for playing computer games):

- Do not play when you are drowsy or tired.

- Play in a well-lit room.

- Rest for at least 10 minutes per hour when playing the computer game.

INSTALLATION AND LAUNCH

Place the Setup.exe file and all .bin files in the same folder and double click on the Setup.exe file to begin installation. Then follow the on-screen instructions.

Note: You will need to be logged into Windows with Administrator rights in order to install the game.

Launching DCS: F-86F

After installation, you will have two icons on your desktop, DCS World and DCS World Multiplayer.

DCS World is the PC simulation environment that the F-86F simulation operates within. When you run DCS World, you in turn launch DCS: F-86F.

The DCS World icon starts the game in single-player mode, and the DCS World Multiplayer starts the DCS multiplayer interface.

As part of DCS World, the Su-25T Frogfoot attack aircraft and TF-51 training aircraft is also included for free.

After executing the DCS World icon on your desktop, the DCS World Main Menu page is opened. From the Main Menu, you can read DCS news, change your wallpaper by selecting either the F-86F or Su-25T Frogfoot icons at the bottom of the page, or select any of the options along the right side of the page. To get started quickly, you can select Instant Action and play any of the missions listed in the F-86F tab.

Game Problems

If you encounter a problem, particularly with controls, we suggest you back up and then delete your *Saved Games\User Name\DCS\Config* folder, which is created by DCS on your operating system drive at first launch. Restart the game and this folder will be rebuilt automatically with default settings, including all of the controller input profiles.

If problems persist, we suggest consulting our online technical support forums at http://forums.eagle.ru/forumdisplay.php?f=251

Game Manuals

The **Activation Guide** describing **serial key activation/deactivation** is available in the /*Doc* folder of the game's root installation directory.

Additional documentation for DCS: F-86F Sabre, including the complete **Flight Manual** and a **key commands guide** can be found in the *\Mods\aircrafts\F-86F\Doc* folder of the game installation directory.

Useful Links

DCS Homepage:

http://www.digitalcombatsimulator.com/

DCS: F-86F forum:

http://forums.eagle.ru/forumdisplay.php?f=332

DCS Wiki:

http://en.wiki.eagle.ru/wiki/Main_Page

FLIGHT CONTROL

Primary aircraft flight controls include the **flight control stick**, **throttle**, and **rudder pedals**. The stick is used to **roll** the aircraft left and right to perform turns and **pitch** the nose up and down to climb or descend. The throttle is used to control engine power and resulting airspeed. The pedals are used to **yaw** the airplane left and right using the rudder (like a boat). Pedal use in flight is limited to eliminating sideslip and helping to coordinate smooth turns, but they are also used on the ground to **turn the nose wheel** when taxiing.
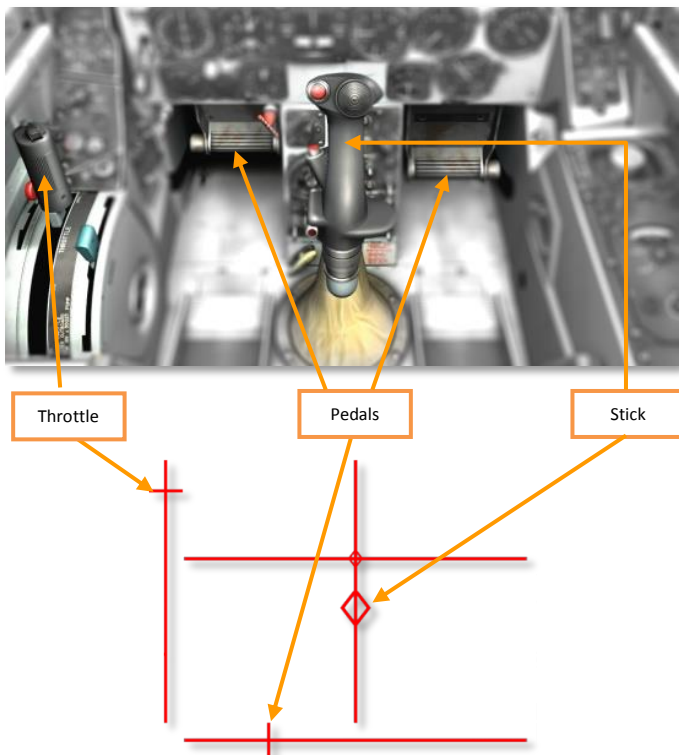
ROLL   *PITCH*

When flying from the cockpit, you can toggle the Controls Indicator display by pressing **RCTRL** + **ENTER** to see a visual reference of the positions of your flight controls.
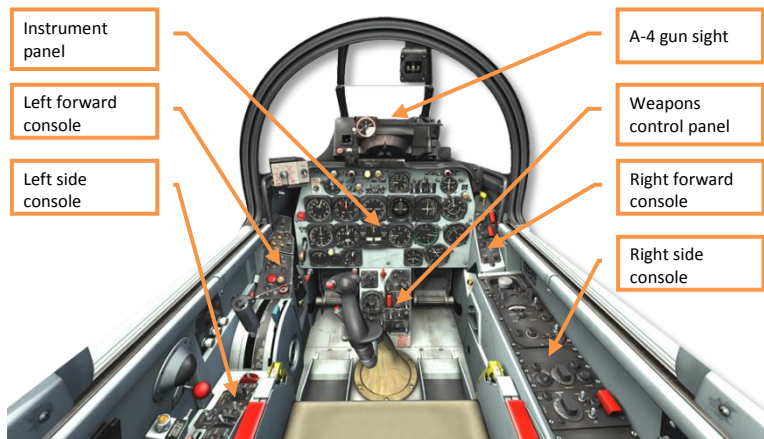
Throttle | Pedals | Stick

If you are flying on keyboard only, the primary flight control keys will be: **arrow keys** to control roll and pitch, **Numpad+** and **Numpad-** to control throttle, and **Z** / **X** to control pedals. If you do have a joystick, it may be equipped with a throttle handle and/or a twist grip, which will allow you to control the pedals.

Nose up | Nose down | Roll right
Roll left | | Throttle up
Yaw right | | Throttle down
Yaw left

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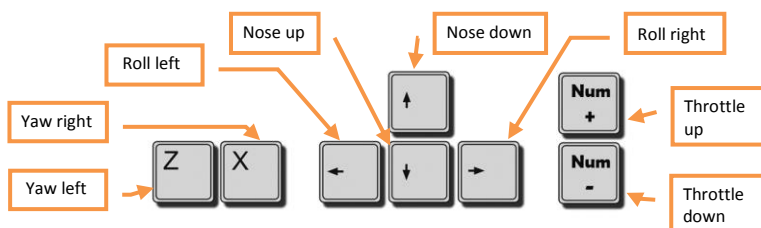
COCKPIT

The F-86F features a conventional cockpit layout. The flight controls are conventional, with a centrally mounted control stick, left-handed throttle handle, and foot-operated rudder pedals. The forward cockpit is dominated by the instrument panel and the A-4 gun sight positioned above it. The side panels house various aircraft systems controls and indicators.

Instrument panel

Left forward console

Left side console

A-4 gun sight

Weapons control panel

Right forward console

Right side console

Instrument Panel

The instrument panel includes a variety of flight instruments and indicators. The primary flight indicators are grouped together in the center of the console and include the **airspeed indicator** (1), **heading indicator** (2), **attitude indicator** (3), **altitude indicator** (4), and **vertical velocity indicator** (5). In addition, you should note the **engine RPM indicator** (6) on the right side of the panel and the **landing gear control handle** (7) on the left side.

1. The **airspeed indicator** shows airspeed in knots. The yellow index on the dial indicates maximum gear/flap extension airspeed. The red arrow and red index show maximum allowable airspeeds (true and indicated). In this example, the airspeed shown is 328 knots

2. The **heading indicator** is a navigation device and shows current aircraft heading from 0 to 360 degrees. In this example, the heading shown is approximately 226 degrees.

3. The **attitude indicator** shows the aircraft's pitch and roll position relative to the horizon.

4. The **altitude indicator** uses a short needle to point to thousands of feet of altitude and the long needle to point to hundreds of feet. In this example, the altitude shown is 2,840 feet. The altimeter reads air pressure altitude and may not indicate altitude above actual terrain beneath the aircraft.

5. The **vertical velocity indicator** shows rate of climb/descent in thousands of feet per minute. This indicator is especially useful to help maintain level flight and safe descent rates when landing (no more than 1,500 ft/min).

6. The **engine RPM indicator** also uses two needles: the short inner dial indicating 0 – 50% RPM, the larger outer dial indicating from 50% upward.

7. The **landing gear control handle** is used to raise and lower the landing gear. This can be done either by mouse-clicking over the handle or pressing G.

PROCEDURES

Cold Start

The automatic start-up procedure can be activated by pressing **L.WIN** + **HOME** *.*
Automatic shut down can be activated by pressing **L.WIN** + **END** *.*

1. Contact the ground crew for electrical power:
   - Open radio menu - ****.
   - Select ground crew - **F8**.
   - Select electrical power - **F2**.
   - Request electrical power ON - **F1**.

2. Start the engine:
   - Throttle position - OFF **END**.
   - Engine master switch – ON.
   - Battery – starter switch – STARTER (momentarily); then BATTERY.

ENGINE MASTER - ON

BATTERY-STARTER – STARTER (momentarily); then - BATTERY

STOP STARTER

   - 3% RPM - throttle outboard – **HOME** (1st press)
   - At 6% – throttle to IDLE – **HOME** (2nd press)
     - Check rising fuel flow and exhaust gas temperature

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- If 23% RPM not reached within 1 minute, press STOP STARTER to abort the start

3. Contact the ground crew to disengage electrical power:
   - Return to the main menu – **F11**.
   - Select ground crew - **F8**.
   - Select electrical power – **F2**.
   - Request electrical power OFF – **F2**.

4. Close the canopy **L.CTRL** + **C**.

Taxi

1. Press **F** to lower the flaps. If necessary, lower the flaps partially by pressing **L.SHIFT** + **F**. The flaps will then stop at the position at which the keys were released.

2. Press **Numpad+** / **Numpad-** to manage engine power. Increase engine power to approximately 65% RPM to begin moving forward, then reduce RPM back down to maintain a slow taxi speed.


THROTTLE handle

FLAPS handle
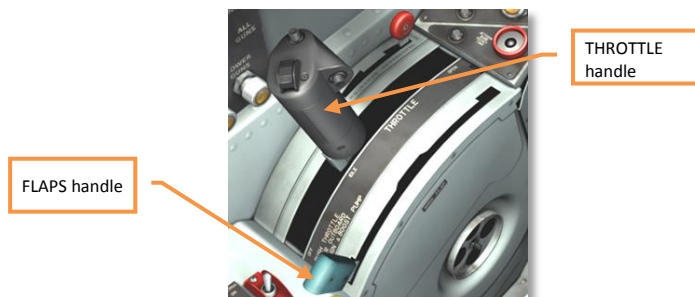
3. Test and apply the wheel brakes as needed **W**.

4. To turn while taxing on the ground, engage nose wheel steering. To do so, **press and HOLD** the nose wheel steering button **S**. While holding down the nose wheel steering button, use the pedals **Z** / **X** to turn the nose wheel. When nose wheel steering is not engaged (button released), the nose wheel is self-orienting and cannot be controlled by the pilot.

To perform turns while taxiing, press and HOLD the nose wheel steering button $\boxed{S}$ *while using the pedals to turn the nose wheel* $\boxed{Z}$ / $\boxed{X}$.

Takeoff

1. Enter the runway and line up along the centerline.

2. Increase engine power to full **Numpad+**.

3. Maintain directional control with slight adjustments in pedal control $\boxed{Z}$ / $\boxed{X}$. In the initial roll prior to reaching **50** knots, use nose wheel steering for directional control by **holding down** the nose wheel steering key $\boxed{S}$. Once above **50** knots, release nose wheel steering to use the rudder and avoid sudden changes in direction.

4. When passing **100** knots, pull the stick approximately **halfway** back using the joystick or by pressing $\boxed{\downarrow}$ to lift the nose. As the nose begins to rise, **reduce stick pull** to prevent pulling the nose too high, striking the tail, and crashing. *The horizon should be approximately level along the bottom of the gunsight glass.*
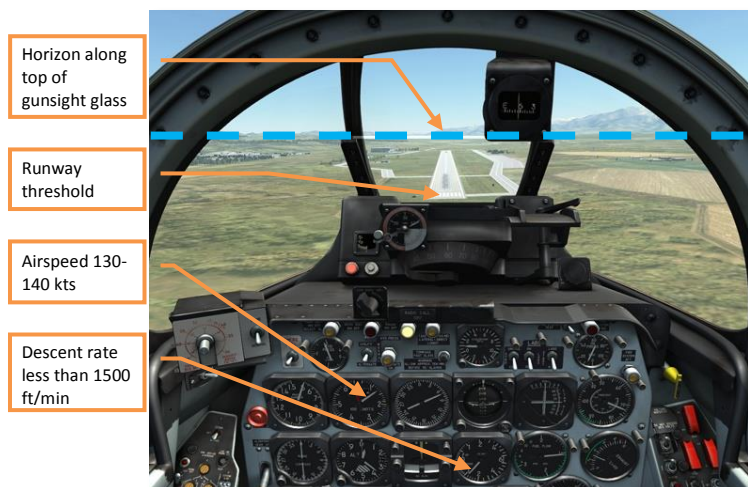

Stick position half back

Horizon along bottom of gunsight glass
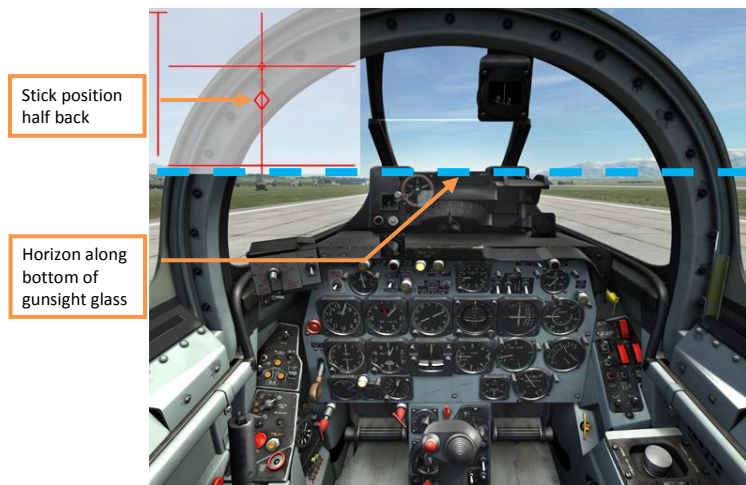
Cockpit picture as the nose lifts off the ground during takeoff. Note the position of the horizon and the control stick.

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5. Once safely off the ground and climbing, raise the landing gear $\boxed{\text{G}}$.

6. Once above 100-150 feet of altitude and **140** knots, raise the flaps $\boxed{\text{F}}$.

7. Maintain a climb angle such that both airspeed and altitude continue to increase.

Landing

1. Decrease engine power $\boxed{\textbf{Numpad-}}$ and use the airbrake $\boxed{\text{B}}$ to reduce airspeed to **185** knots or less.

2. When at **185** knots or less, press $\boxed{\text{F}}$ to lower the flaps and $\boxed{\text{G}}$ to lower the landing gear.

3. Perform the final approach at approximately **140** knots. Be careful not to reduce engine power too low and lose too much airspeed. Speeds approaching **120** knots and less may lead to a stall, loss of control, and crash. *On final approach, the horizon should be approximately level along the top of the gunsight glass.*

Horizon along top of gunsight glass

Runway threshold

Airspeed 130-140 kts

Descent rate less than 1500 ft/min

Cockpit picture on final approach. Note the position of the horizon, the airspeed, and descent rate.

Airspeed below 120 knots may lead to a stall, loss of control, and crash!

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4. While passing the runway threshold, reduce the rate of descent by carefully **pulling back** on the stick $\boxed{↓}$ and reduce engine power to idle $\boxed{\textbf{Numpad-}}$.

5. Aim for a touchdown speed of approximately **115** knots.

6. After touchdown, use the rudder for directional control $\boxed{\textbf{Z}}$ / $\boxed{\textbf{X}}$. Once below **50** knots, use nose wheel steering by **pressing and HOLDING** the nose wheel steering key $\boxed{\textbf{S}}$ while carefully turning using the $\boxed{\textbf{Z}}$ / $\boxed{\textbf{X}}$ keys.

7. Use the wheel brakes $\boxed{\textbf{W}}$ as necessary to reduce the landing roll distance.

8. Taxi off the runway. Raise the flaps $\boxed{\textbf{F}}$ and retract the airbrake if necessary $\boxed{\textbf{B}}$.

Shut down

1. Set throttle to OFF $\boxed{\textbf{END}}$.

2. Once engine RPM is below 10%, set the ENGINE MASTER SWITCH to OFF.

WEAPONS EMPLOYMENT

F-86F armament consists of:

- 6 internal .50-caliber M4 machine guns mounted in the forward fuselage and loaded with 300 rounds each

- 10 underwing weapon stations, which can be loaded with two free-falling bombs or up to 16 unguided rockets

- 2 "Air-To-Air" GAR-8 guided-missiles

- 8 smoke generators

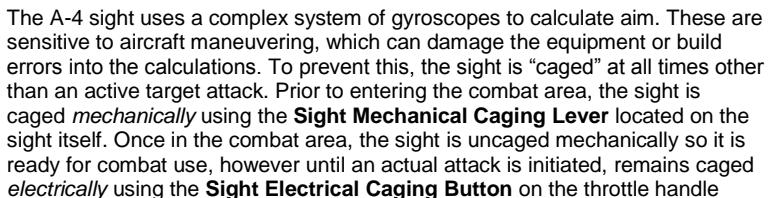Additionally, the aircraft can carry up to four external fuel tanks.

	10	9	8	7	6	5	4	3	2	1
Empty										
120gal Fuel*2				⊙			⊙			
120gal Fuel*2, 200gal Fuel*2	⊙			⊙			⊙			⊙
120gal Fuel*2, GAR-8*2				⊙	✕	✕	⊙			
200gal Fuel*2	⊙									⊙
200gal Fuel*2, AN-M64*2	⊙			⊚			⊚			⊙
200gal Fuel*2, HVAR.x2*4	⊙		⊠	⊠			⊠	⊠		⊙
AN-M64*2				⊚			⊚			
AN-M64*2, HVAR*8	⊠	⊠		⊚			⊚		⊠	⊠
GAR-8*2					✕	✕				
HVAR.x2*8	⊠	⊠	⊠	⊠			⊠	⊠	⊠	⊠

A-4 Gun-Bomb-Rocket Sight

Weapons aiming is accomplished using the **A-4 gun-bomb-rocket sight**. For air to air combat, accurate target range is automatically fed to the sight by the AN/APG-30 range-finding radar mounted in the nose. In case the radar malfunctions or provides poor results, aiming can be accomplished by manually entering target range and wingspan data. The A-4 sight also provides computed aiming against ground targets when employing bombs and rockets.

Target wingspan adjustment knob

Sight range dial (feet)

Radar target ("lock") indicator light

Radar range sweep knob

Sight mechanical caging lever

Sight dimmer control knob

The A-4 sight uses a complex system of gyroscopes to calculate aim. These are sensitive to aircraft maneuvering, which can damage the equipment or build errors into the calculations. To prevent this, the sight is "caged" at all times other than an active target attack. Prior to entering the combat area, the sight is caged *mechanically* using the **Sight Mechanical Caging Lever** located on the sight itself. Once in the combat area, the sight is uncaged mechanically so it is ready for combat use, however until an actual attack is initiated, remains caged *electrically* using the **Sight Electrical Caging Button** on the throttle handle **TAB**.

Sight electrical caging button

Manual target ranging twist grip

Before opening fire on a target, first place the piper over the target and press **TAB**. This will keep the reticle at a fixed position on the gunsight reflector. After target detection by the range finder (red warning light is on at the gunsight) and having placed the pipper on the target release **TAB**, simultaneously, the pipper starts to "float" on the gunsight reflector reacting to aircraft maneuvering and displaying the computed position of the aimpoint.

Weapons Control Panel

The weapons control panel is located on the center console below the instrument panel. This panel includes a number of important controls for configuring weapons for fire.

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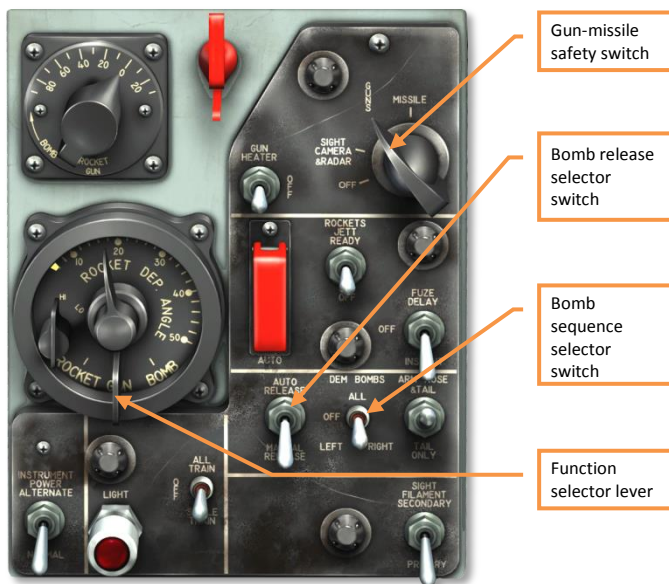
- **Gun-missile safety switch.** Must be set to GUNS for any weapons to fire.

- **Bomb release selector switch.** Sets bombs for AUTO or MANUAL RELEASE mode. In manual release mode, bombs are released when the pilot presses the **bomb-rocket release button** R.ALT + SPACE on the control stick. In automatic release mode, the A-4 sight automatically provides a release signal when the calculated release point is reached after the bomb-rocket release button is **pressed and HELD down** R.ALT + SPACE.

- **Bomb sequence selector switch**. Sets the release sequence of bombs between: LEFT, RIGHT, or ALL.

- **Function selector lever.** Sets the gunsight mode based on the selected weapon type L.CTRL + D (to the left), L.ALT + D (to the right).
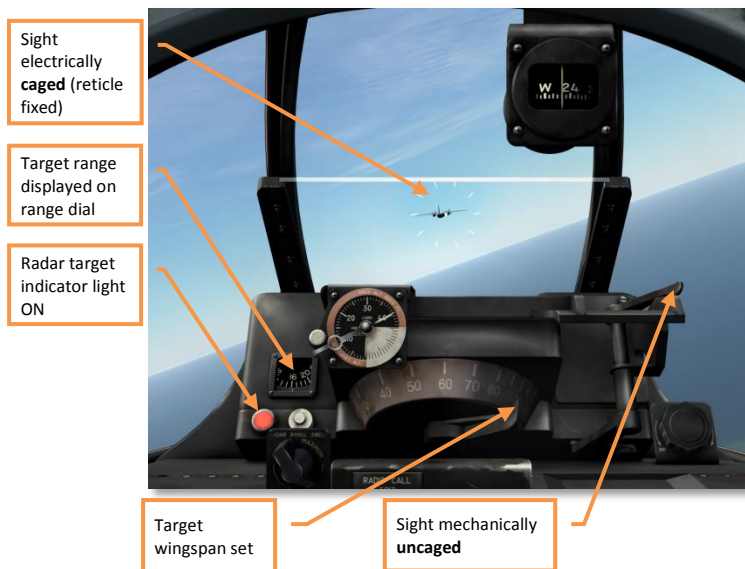
Air to Air

1. Preparation for combat:

   • Gun-missile safety switch – GUNS.

   • Function selector lever – GUN. After pressing the **aim selection key** on the control stick ENTER the gunsight is automatically switched to machine gun mode).

   • Sight mechanical caging lever – UNCAGE (right)

   • Target wingspan adjustment knob – set to correspond to anticipated target / / , . *Note: the wingspan is set primarily as a precaution in case the ranging radar fails during combat.*

2. Engagement:

   • Before opening fire, press TAB **and hold it**. Make sure that the reticle is **fixed** on the reflector (the gunsight is caged). Maneuver the aircraft to place the reticle over the target.

Sight electrically **caged** (reticle fixed)

Target range displayed on range dial

Radar target indicator light ON

Target wingspan set

Sight mechanically **uncaged**

- After you see the target lock-on indication, release the caging button to track the target using the gunsight.

- With the reticle tracking over the target for at least one second, press **SPACE** to fire the guns.

- To reset the current target lock-on, press the **aim selection key** on the control stick **ENTER**. At the same time, the range finder will lock-on the next target, which is within detection range and angle.

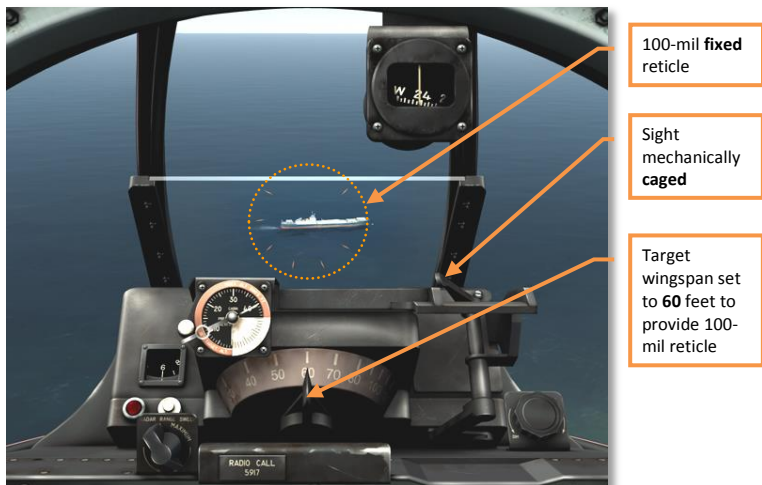Sight **uncaged** (reticle floating). Ready to fire!

The ranging radar may suffer from ground interference when operating at low altitudes (below 6,000 ft). If so, try turning down the radar range using the radar range sweep knob of the gunsight control box.

If the ranging radar is ineffective/inoperable, estimated target range must be continuously adjusted by the pilot using the throttle twist grip **.** / **;**. If the target wingspan is set correctly for the sight, accurate range setting occurs when the target's wingtips are just within the diamonds of the reticle when viewed from behind.

Air to Ground – Guns

When attacking ground targets with guns, the A-4 gunsight is **caged** and the reticle is used as a fixed 100-mil aiming reticle. To set the reticle to 100 mils, cage the sight and set the target wingspan to **60** feet `/` / `,`.

100-mil **fixed** reticle

Sight mechanically **caged**

Target wingspan set to **60** feet to provide 100-mil reticle

1. Preparation for combat:

    - Gun-missile safety switch – GUNS.

    - Function selector lever – GUN. Press the **aim selection key** on the control stick `ENTER` and the gunsight will automatically switch to machine gun mode.

    - Sight mechanical caging lever – CAGE (left). Check reticle to be **fixed** on the reflector glass (caged)

    - Target wingspan adjustment knob – set to **60** feet `/` / `,`. *Note: the wingspan is set to 60 feet in order to display a 100-mil reticle with the gun sight caged.*

2. Engagement:

    - The caged reticle does not provide a computed aiming solution. Estimate the impact point considering bullet fall. Fire a short burst to check the aiming error, readjust aim as needed, and fire the full burst for effect on target. The 50-caliber machine guns

have a limited maximum effective range of about **1,000** yards (~900 m).

Air to Ground - Rockets

Rockets are powerful, but unguided munitions. They are best used against area targets (in particular concentrated groups of lightly armored vehicles) at close range for maximum accuracy.

Rocket attacks are best performed in a dive of at least -30°. This requires the attack to be planned and executed well with sufficient altitude to perform the dive, aim, fire, and turn away from the target at a safe distance. For best results, begin the attack at an altitude of at least 3,000 feet above the target. Complete the attack and turn off the target at an altitude of no less than 1,500 feet.

Horizon position

Dive angle -30°

Altitude 2,000 ft.

Function selector lever set to ROCKET

1. Preparation for combat:

   - Gun-missile safety switch – GUNS.

   - Function selector lever – ROCKET.

   - Sight mechanical caging lever – UNCAGE (right)

   - The Rocket Intervalometer switch positioned 1 or 9 (having external fuel tanks).

2. Engagement:

- Before starting a diving attack, press and hold `TAB`. Make sure that the reticle is **fixed** on the reflector (gunsight is caged) and maneuver the aircraft to place the reticle on the target.

- While holding the reticle over the target, release `TAB`. The reticle will then "float" on the gunsight reflector in response to aircraft maneuvering.

- Fly to keep the reticle over the target for about three seconds then and then press `R.ALT` + `SPACE` to fire rockets.

Air to Ground – Bombs

Like rockets, bombs are unguided munitions. Using them effectively takes practice, especially given the Sabre's limited payload of only two bombs, which can be dropped simultaneously or individually.

Accurate bombing results are best achieved using steep dive angles of -45° or greater. This requires plenty of starting altitude to take time to set up the dive, take the required time to aim and release the bombs, and then pull out of the dive safely. For best results, begin the attack at an altitude of at least 10,000 feet above the target. Complete the attack and turn off the target at an altitude of no less than 4,000 feet.

Function selector lever set to BOMB

Dive angle -45°

Altitude 8,000 ft.

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1. Preparation for combat:

   - Gun-missile safety switch – GUNS

   - Function selector lever – BOMB. When the gunsight operation mode is BOMB, the reticle is automatically set to an angle of -10 degrees.

   - Bomb sequence selector switch set to LEFT, RIGHT or ALL as desired.

   - Sight mechanical caging lever – UNCAGE (right).

2. Engagement:

   - Approach the target in level flight from your starting altitude. Position the target at approximately your 3 or 9 o'clock position (directly to your right or left).

   - Open the speed brakes $\boxed{B}$ and roll in on the target to begin the dive.

   - Before starting a diving attack, press and hold $\boxed{TAB}$. Make sure that the reticle is **fixed** on the reflector (gunsight is caged) and maneuver the aircraft to place the reticle on the target.

   - While flying to hold the pipper on the target, release $\boxed{TAB}$. Simultaneously, the gunsight will start to calculate the release (bomb) point. Keep the position of the aimpoint over the target until the moment when the reticle is off (the release point) and press $\boxed{R.ALT}$+$\boxed{SPACE}$ to release the bomb(s).

     Note.: If the bomb release selector switch is set to AUTO RELEASE, **press and HOLD** the keys $\boxed{R.ALT}$+$\boxed{SPACE}$ from the moment the pipper is placed over the target and uncaging the reticle. Hold the pipper over the target until the signal is heard to release the bomb(s). Simultaneously, the bombs will be released automatically and the reticle will be switched off (the signal will cease).

   - Close the speed brakes $\boxed{B}$ while recovering from the dive.