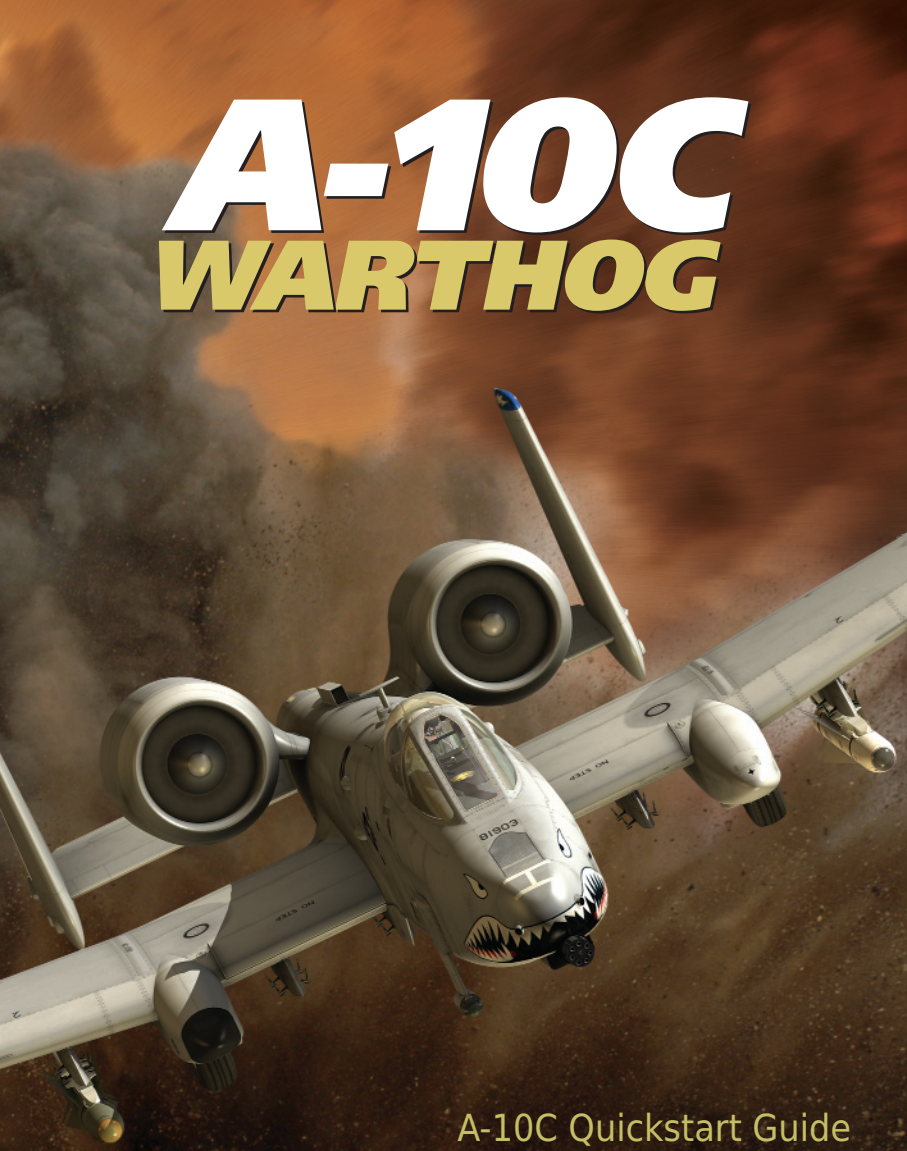
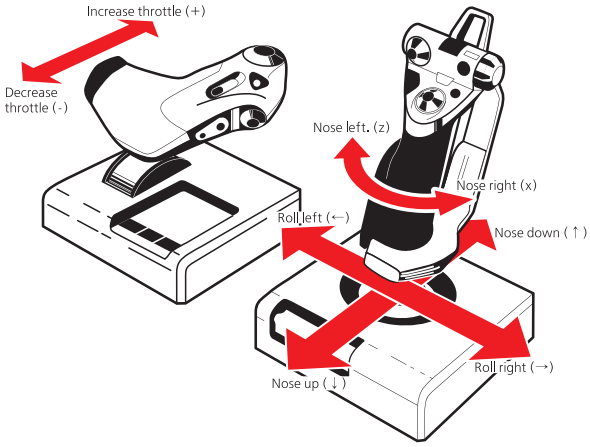
A-10C WARTHOG



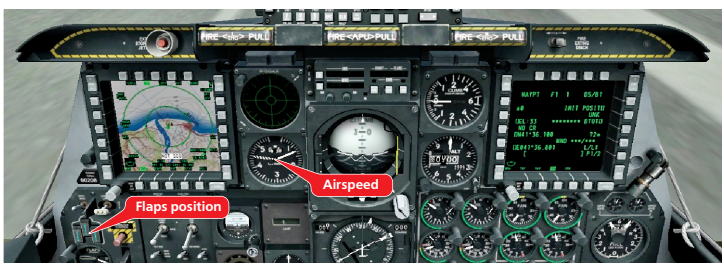
A-10C Quickstart Guide

DCS SERIES

Takeoff

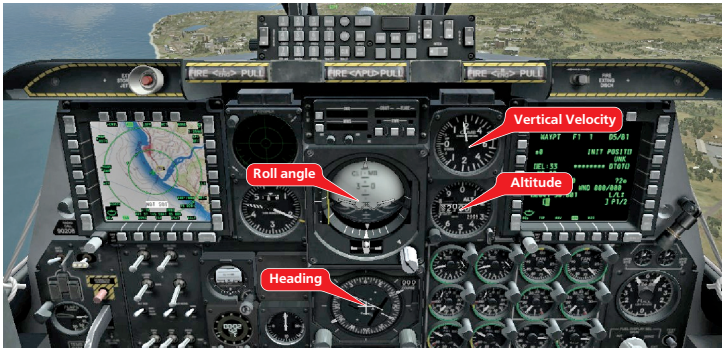


To perform a takeoff, move the throttle all the way forward for maximum engine power. Use the nose left/right commands to keep the aircraft running down the center of the runway. When airspeed reaches 80 knots, disable Nosewheel Steering by pressing INSERT. When airspeed reaches 125 knots, gently pull the control stick back. The nosewheel will lift off the runway around 135 knots. Keep the nose approximately 10-degrees up to avoid striking the tail of the aircraft against the runway. The aircraft will become airborne within a few moments.

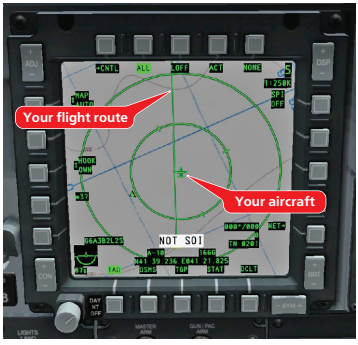


As soon as the aircraft is airborne and climbing steadily, raise the gear by pressing G. Reduce the climb angle to accelerate to 150 knots. Raise the flaps by pressing LCtrl+F on the keyboard. Maintain 175 knots as you climb to altitude.

Airspeed is a critical factor throughout the flight envelope. Pay careful attention to it and avoid dropping below 150 knots as this may cause a loss of control, called a stall, which can lead to a crash to the ground. To turn left or right, increase roll in the desired direction. Avoid roll angles of greater than 60 degrees until you are comfortable with aircraft control. Push the stick to the side to roll to approximately 60-degrees and monitor the aircraft's behavior in the turn. Use the control stick to maintain altitude in the turn by gently pulling back or pushing forward on the stick. Roll back to wings level to return the aircraft to level flight.



The flight route is usually displayed on one of the two Multi-Function Color Displays (MFCD) in the cockpit. Fly along the green line toward your navigation or target waypoints.

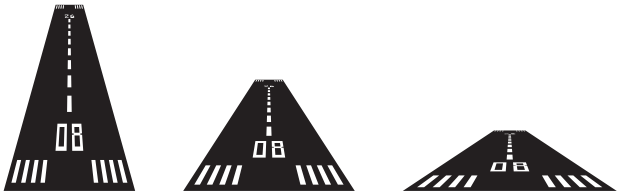


The A-10C is equipped with a trimmer mechanism. This device allows you to maintain the position of the control stick without having to hold it by hand. Once you are stabilized in level flight, trim the aircraft using the "," "." "/" ";" keys on the keyboard to maintain the current position. When properly trimmed, the aircraft should maintain level flight without your input on the control stick.

Landing

When landing, aircraft descend toward the runway along a slant trajectory, called a glideslope. Flaps are used to lower the approach speed. When extended, flaps lower the stall threshold, but also increase drag. This means more engine thrust is required to maintain a safe approach speed.

Maneuver the aircraft to line up your flight path along the length of the runway. Try to do this about 8-10 miles out at an altitude of 2,000 ft. Maintain a steady descent toward the runway. The position of the runway in your view can be used to help maintain the correct approach angle as demonstrated below:



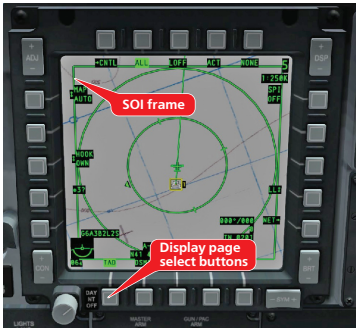
approach too high | correct approach | approach too low

Reduce your airspeed to 180 knots. Lower the landing gear by pressing G on the keyboard and extend the flaps to landing configuration by pressing LSHIFT+F twice. Continue to reduce airspeed to 150 knots. Try to calculate the approach so that you pass over the runway threshold at approximately 30-50 feet and 150-135 knots, depending on your payload and weight (the heaver the aircraft, the higher the approach speed required to avoid a stall). Approximately 10-15 feet above the runway, begin to gently pull the stick back to flare the aircraft. This will reduce your vertical velocity and airspeed for a gentle and controlled touchdown by the main landing gears.

Begin to apply the brakes carefully by pressing the W key and allow the nose to drop for nose gear touchdown. Once your speed drops below 80 knots, engage Nosewheel Steering by pressing the INSERT key. Use the nose left/right commands (rudder pedals, joystick twist or the Z and X keys on the keyboard) to keep the aircraft running down the center of the runway.

Landing is one of the more challenging elements of any flight. Practice until you are able to perform landings proficiently.

Multi-Function Color Displays (MFCD)



The A-10C is designed around the concept of "HOTAS" (Hands On Throttle and Stick), which means most of the common cockpit commands can be performed without taking the pilot's hands off the stick and throttle. Because the number of buttons on the controls is limited, the pilot selects which display he wants to command and this becomes the Sensor of Interest or SOI. When an MFCD is set as SOI, the display indication is framed in green.

When the Heads Up Display (HUD) is selected as SOI, the asterisk cue appears on the left side of the display.

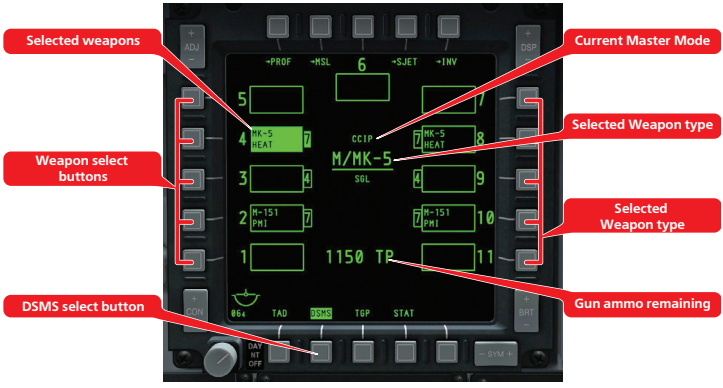
To set the HUD as SOI, press U on the keyboard. To set the left MFCD as SOI, press and hold H. To set the right MFCD as SOI, press and hold K.

The row of buttons along the bottom of the MFCD is used to select the display page. For example, the TAD (Tactical Awareness Display) page is being indicated on the MFCD screenshot above. This page indicates the map and flight route. The remaining pages will be described in later sections of the manual.

Combat preparation

Below the left MFCD, the Armament HUD Control Panel (AHCP) is used to turn on combat systems. When preparing for combat, turn on (set to the UP position) the following switches: Master Arm, Laser Arm, GUNPAC cannon stabilization system if you intend to use the gun, TGP if carrying a targeting pod.

To see the weapons loaded on the jet, open the DSMS (Digital Stores Management System) page on the MFCD by pressing the "DSMS" page button.

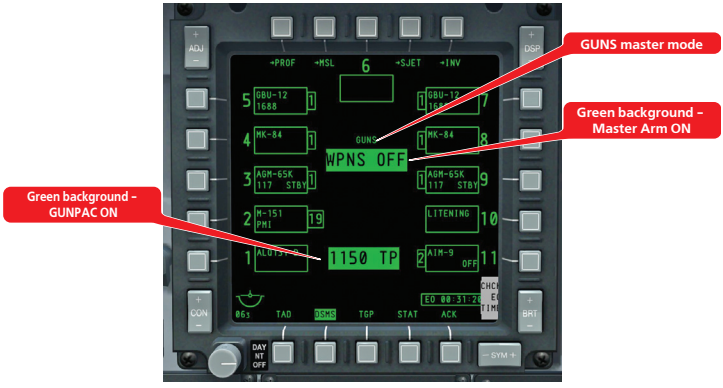


The DSMS page indicates the current master mode and selected weapons. Select weapons by pressing the weapon select buttons of the desired weapon stations.

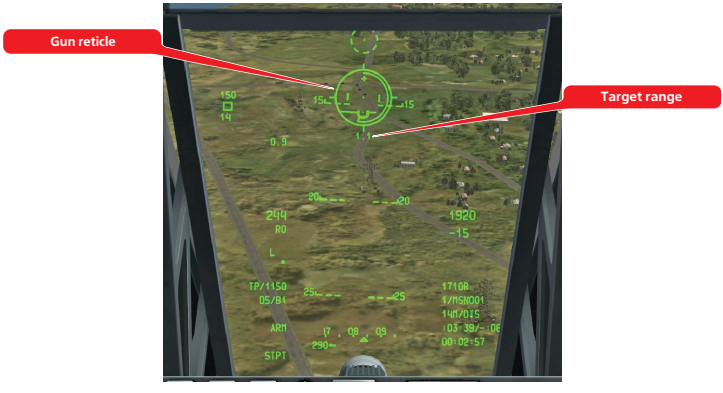
To quickly cycle through available weapons instead of selecting individual weapon stations, first make the HUD SOI by pressing U and then press the DMS left (DELETE) or DMS right (PAGE DOWN) commands.

Master modes are cycled by pressing the Master Mode Button (M) command.

Make sure the Master Arm and GUNPAC switches are set to ON as described above. Open the DSMS page on the MFCD and select GUNS master mode by pressing the Master Mode Button (M).

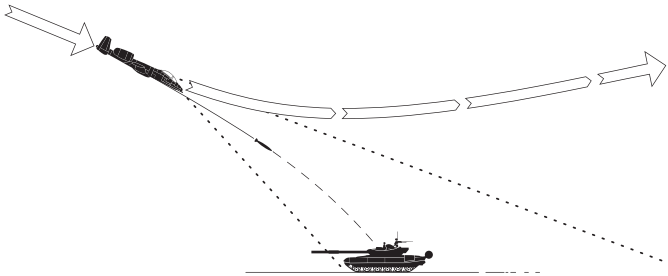


When GUNS master mode is selected, the gun aiming reticle will appear on the HUD. Once the target is within firing range, a range bar inside the reticle will begin to unwind counter-clockwise to indicate target range. Target range is also displayed as a value directly below the gun reticle.

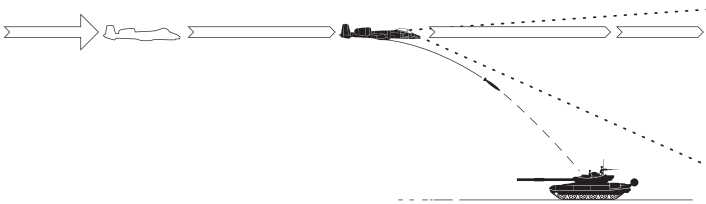


Fire at the target when within range as indicated by the unwinding range bar. If the range bar is completely closed, the target is too far for effective fire.

Weapons employment modes



CCIP mode is fairly simple. The pilot maintains the target in sight by diving toward it and releases the weapons when the aiming pipper passes over the target. The disadvantage of this method is that diving toward the target makes the attack difficult to execute and potentially dangerous.



To overcome these limitations, the A-10C can release weapons in CCRP mode. In CCRP, the pilot first designates a target point. He can then continue to fly level or even climb as the target disappears out of view below the nose of the aircraft. However, the computer will continue to provide aiming cues to the pilot by indicating a release point cue on the HUD. The pilot has to fly the aircraft to align the aiming reticle and the release point. Weapons are then released when the release point passes through the aiming reticle.

The disadvantage of CCRP mode is reduced accuracy.

The majority of A-10C weapons can be employed in either mode.

We'll review target designation procedures next. Then, we'll take a look through the steps required to employ various types of bombs and missiles.

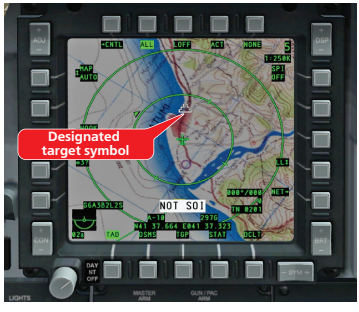
Target designation using the HUD

Some of the weapons carried by the A-10C require a target to be designated. This can be done in a number of ways: the targeting box on the HUD, the Targeting Pod or the Maverick missile seeker. Let's consider HUD designation first.

To begin, make sure the HUD is SOI by pressing U. The HUD targeting box will appear on the display.

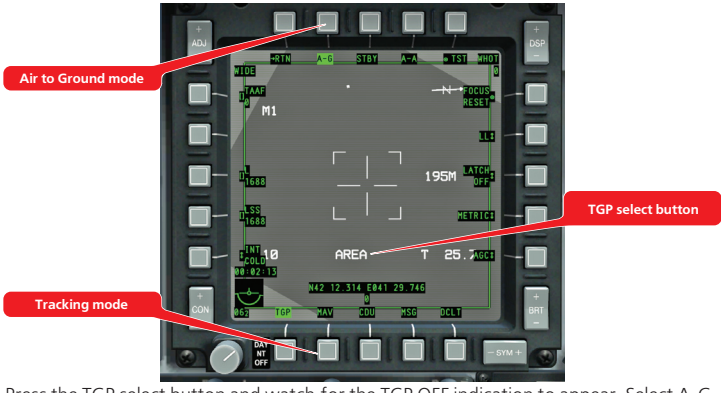
The HUD targeting box can be moved using the SLEW CONTROL switch or "," "." "/" ";" keys on the keyboard. To designate a target, position the targeting box over the target and press and hold the TMS UP command or LCTRL+UP on the keyboard. Once the target is designated, a short line will extend from the targeting box toward the top of the HUD.

On the TAD page of the MFCD, the target point is indicated as a "wedding cake" symbol.

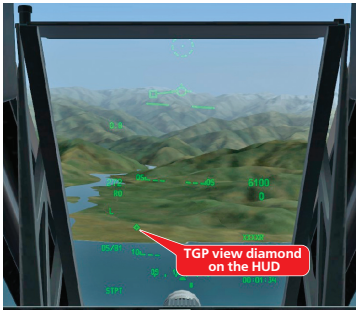


Target Designation Using the Targeting Pod

The Targeting Pod (TGP) is an external container carried on one of the weapon stations. It is equipped with powerful cameras, which allow the pilot to see a close-up video picture of the target area on the MFCD in the cockpit in daytime and night-time conditions. The TGP is designated AAQ-28 LITENING and needs to be included in the aircraft payload when preparing missions in the mission editor. Prior to using the TGP, it needs to be turned on as described earlier in the Combat Preparation section. When first turned on, the TGP will need a couple of minutes to set-up for operation. If the mission starts in mid-air, the TGP will already be turned on and ready for operation.



Press the TGP select button and watch for the TGP OFF indication to appear. Select A-G (Air to Ground) mode by pressing the A-G select button. The display will now show a video picture from the TGP camera. Make the TGP display SOI by pressing the TGP select button at the bottom of the MFCD once more. A diamond will appear on the HUD to indicate the location of the TGP view.



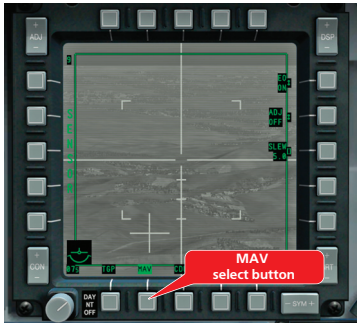
The TGP diamond can be moved using the SLEW CONTROL switch or "," "." "/" ";" keys on the keyboard. You can select between wide field of view (further from the target) and narrow field of view (closer to the target) by pressing the CHINA HAT forward command or V on the keyboard. You can also zoom the camera by pressing the DMS UP/DOWN commands or HOME/END on the keyboard. The camera has two stabilization modes: AREA track and POINT track. POINT track can be used to track a specific object, such as a moving vehicle. Press TMS UP (LCTRL+UP) to select tracking modes. Once you are tracking your desired target, press and hold TMS UP (LCTRL+UP) to designate the target.

Once the target is designated, the target line will appear on the HUD and the "wedding cake" will appear over the target position on the TAD map as discussed previously in the HUD designation section.

To re-center the camera, press the CHINA HAT aft command or C on the keyboard.

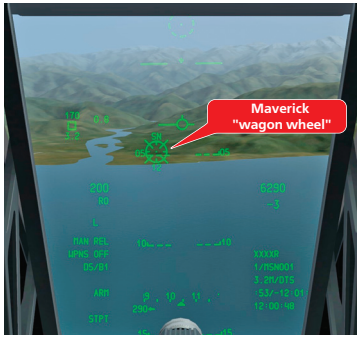
Target Designation using the Maverick

Maverick missiles are equipped with cameras as part of the seeker head. These can be used to lock onto and designate targets. First, select the Maverick MFCD page by pressing the MAV select button on the MFCD.



Press the MAV select button once more to set the Maverick display as SOI. Use the SLEW CONTROL switch or "," "." "/" ";" keys to position the center of the Maverick crosshairs over the target. You may want to select narrow field of view (close to the target) by pressing CHINA HAT forward (V). When the center of the crosshairs is over the target, release the slew switch to command the missile seeker to lock onto the target. This may not always work right away. The missile seeker works best against smaller-sized targets with high contrast against the background terrain.

The Maverick "wagon wheel" on the HUD indicates the location of the Maverick view.

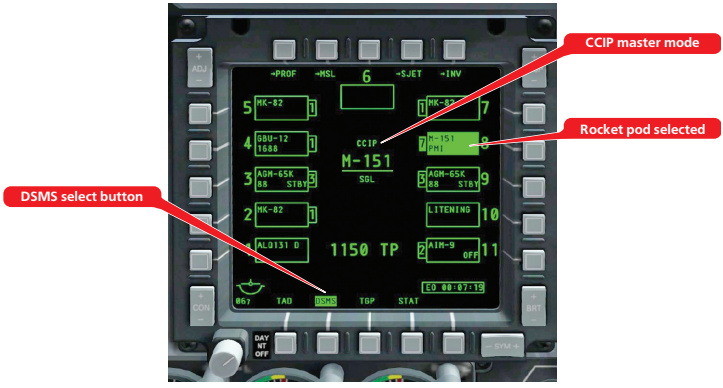


To designate a target, press and hold TMS UP (LCTRL+UP). Once the target is designated, the target line will appear on the HUD and the "wedding cake" will appear over the target position on the TAD map as discussed previously in the HUD and TGP designation sections.

Employment of Unguided Rockets

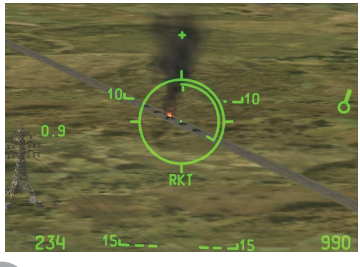
Unguided rockets are typically used against soft targets, such as enemy personnel and lightly armored vehicles.

Rockets are simple to use, but require some practice to successfully hit targets. All rockets carried by the A-10C are loaded in rocket pods starting with the designation LAU, which can be hung on a number of weapons stations of the aircraft.



Prepare the aircraft for rocket employment as described previously. Rockets don't require a target to be designated. Select the DSMS page on the MFCD. Select rockets as your weapon by pressing the corresponding weapon select button(s). Make sure CCIP master mode is selected or press the Master Mode Button (M) to select it.

The rocket aiming reticle will appear on the HUD.

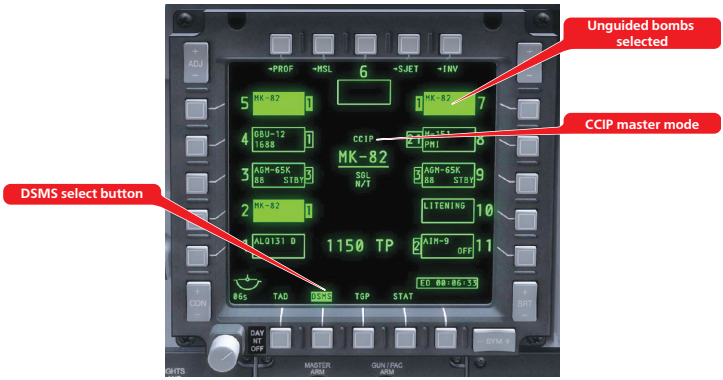


As with the Gun reticle, the unwinding range bar inside the reticle indicates target range. The pilot has to simply position the aiming pipper at the center of the reticle over the target and press the weapons release button (RALT+SPACE). Because rockets are unguided, your chances of hitting the target increase as the range decreases.

Employment of Bombs in CCIP Mode

Unguided bombs are used against stationary and slowly moving targets. Employment of unguided bombs in CCIP mode is very similar to the employment of rockets, except that you will generally need to use greater dive angles.

Prepare the aircraft for combat employment as discussed previously. Select unguided bombs on the DSMS page by pressing the corresponding select buttons on the MFCD. Make sure CCIP mode is selected or press the Master Mode Button (M) to select it.

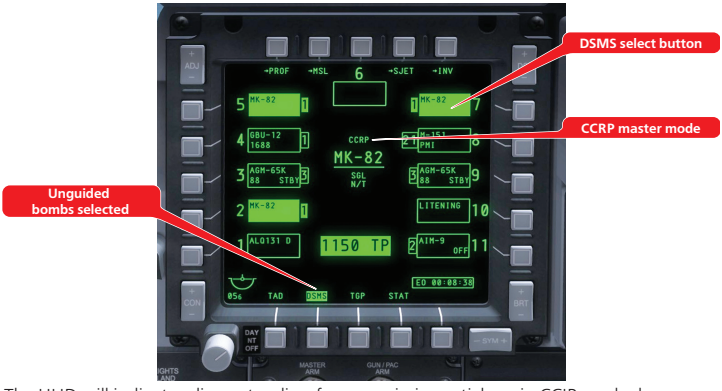


The HUD will indicate a line extending from an aiming reticle. At first, the indication will probably be dashed and the reticle will be latched to the button of the HUD. This means the aiming pipper is currently positions too low to be visible on the HUD. Increase your dive angle to bring the reticle into view. Be careful not to overspeed the aircraft in the dive. Reduce engine power and open the speedbrakes if necessary. Maintain the target on the aiming line as the reticle approaches the target. As with the Gun and Rocket reticles, the unwinding range bar inside the reticle will indicate target range.

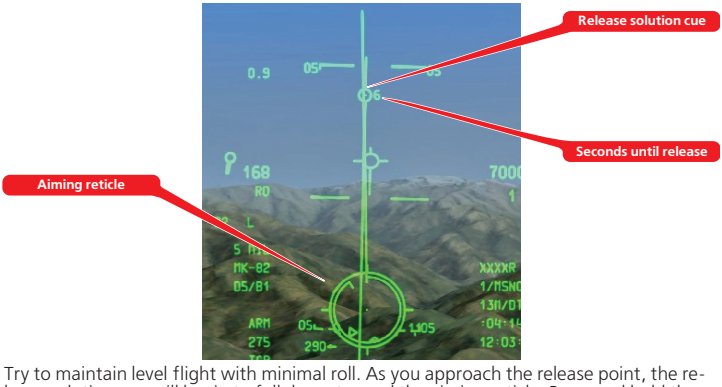
Press the weapons release button (RALT+SPACE) as the aiming pipper in the center of the reticle passes over the target. Pull out of the dive carefully so as not to lose control of the aircraft. Note that you do not need to designate a target in CCIP mode.

Employment of Bombs in CCRP Mode

Bombs employment in CCRP mode is similar to CCIP mode, except that you will be aiming at the release solution cue displayed on the HUD instead of directly at the target. Select unguided bombs on the DSMS page by pressing the corresponding select buttons on the MFCD. Designate a target using any of the methods described previously. Select CCRP master mode by pressing the Master Mode Button (M).



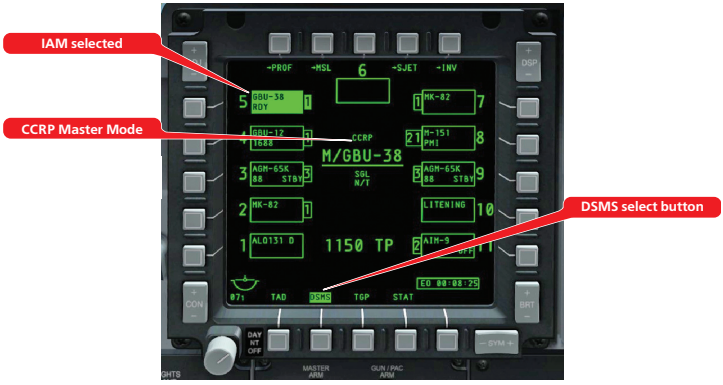
The HUD will indicate a line extending from an aiming reticle as in CCIP mode, however it will also indicate another steering line with the release solution cue displayed at the top. Fly the aircraft so that the two lines are aligned.



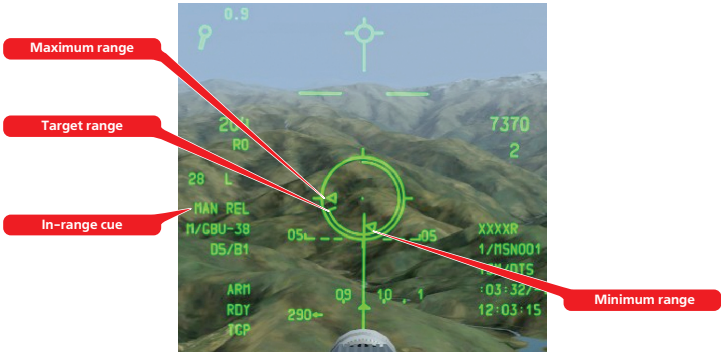
Try to maintain level flight with minimal roll. As you approach the release point, the release solution cue will begin to fall down toward the aiming reticle. Press and hold the weapons release button (RALT+SPACE). Your goal is to have the solution cue pass directly through the center of the aiming reticle. As the solution cue passes through the reticle, the bombs will be released automatically.

CCRP mode is less accurate than CCIP, but does not require a dive toward the target, making it a much safer method. Accuracy also depends on careful target designation.

Inertially-Guided Munitions (IAM) are designed to be used against stationary targets with high precision and autonomous navigation to the target. IAMs store target coordinates and use an inertial navigation system or GPS to guide toward the target without assistance from the launching aircraft. IAM can only be employed in CCRP mode.



Prepare the aircraft for combat as described previously. Designate a target using any of the methods described previously. Select an IAM weapon on the DSMS page.
The HUD will indicate an aiming reticle with two triangle indexes: the maximum and minimum employment range.



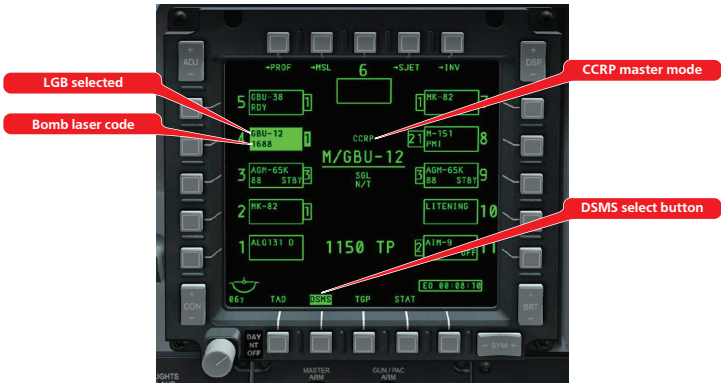
When the target is within firing range as indicated by the position of the range bar between the maximum and minimum range indexes, the MAN REL cue will appear on the HUD. Press and hold the weapons release button (RALT+SPACE) until the bomb comes off the station.

If you press and release the weapons release button too quickly, the bomb may get "hung" and will no longer be usable.

Employment of Laser-Guided Bombs

Laser-Guided Bombs (LGB) are used against targets "painted" by a laser designator. Laser designation can be performed by your own TGP or by another platform in the air or on the ground.

A laser designator will fire the laser onto the target with a specific laser code. The same code must be set for the weapon's laser seeker in order for it to detect the designated target. We'll consider employment of an LGB using own TGP designation. By default, both the bomb and the TGP will be set to the laser code 1688, so we will not need to alter these settings.

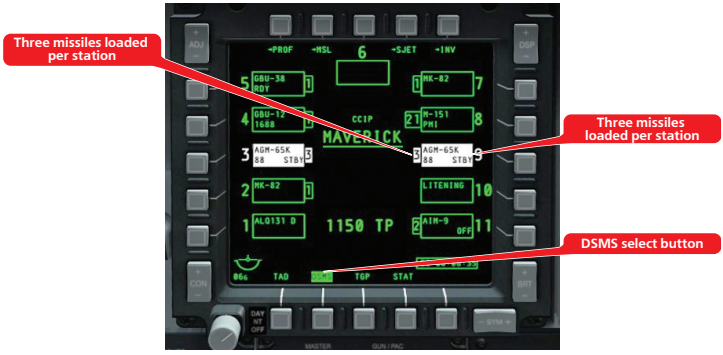


Prepare the aircraft for combat as described previously. Select an LGB (GBU-10 or GBU-12) on the DSMS. Select CCRP master mode by pressing the Master Mode Button (M).

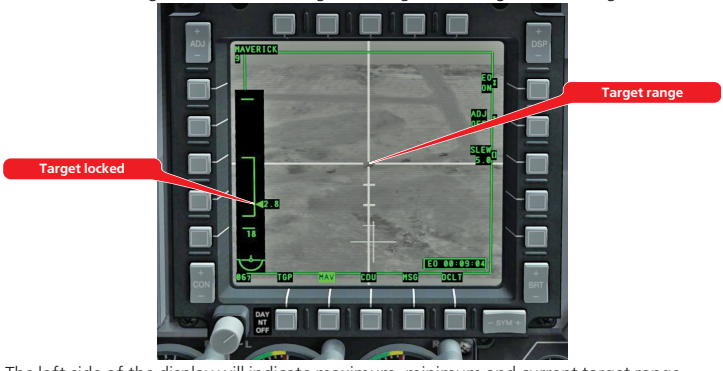
Designate a target using the TGP as described previously. Make sure the L cue is present on the TGP display to indicate the laser is ready for operation. Employing LGBs is similar to the employment of unguided bombs in CCRP modes. The HUD will indicate the a reticle and solution cue aiming lines. Fly the aircraft to keep these two lines aligned. As the solution cue begins to fall down toward the reticle, press and hold the Weapons Release Button (RLAT+SPACE). As the solution cue passes through the aiming reticle, the bomb will be released automatically. Make sure the target stays within the TGP field of view until the bomb impacts.

Employment of the Maverick Missile

Maverick precision guided air-to-surface missiles are used against small and medium-sized targets, such as stationary and moving vehicles and structures. Prepare the aircraft for combat as described previously. Select Maverick (AGM-65) missiles on the DSMS. Note the missile readiness indication in the bottom-right corner of the weapon display box on the DSMS. This should say "RDY" when the missiles are ready for use. When not starting a mission in mid-air, the Mavericks will need about 3 minutes to prepare for operation.



Select the Maverick page on the MFCD by pressing the MAV select button. Press the MAV select button once more to set the MAV page as SOI. The display will indicate video from the missile seeker. Slew the crosshairs over the target using the SLEW CONTROL switch or the "," "." "/" ";" commands. When the center of the crosshairs is over the target, release the slew switch to command the missile seeker to lock onto the target. This may not always work right away. The missile seeker works best against smaller-sized targets with high contrast against the background terrain.

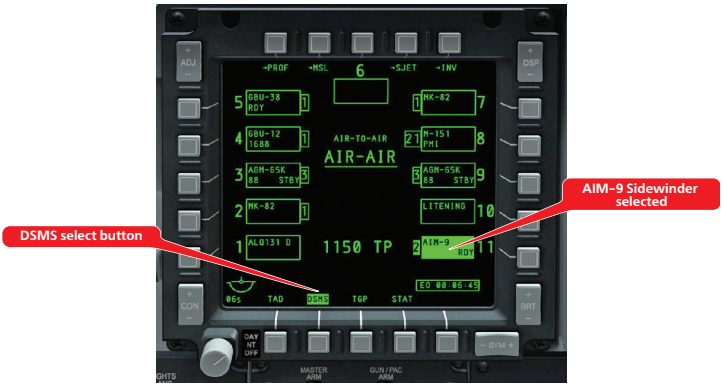


The left side of the display will indicate maximum, minimum and current target range. You may want to select narrow field of view (close to the target) by pressing CHINA HAT forward (V). Once a target is locked and is within firing range (current range between maximum and minimum), simply press the Weapons Release Button (RLAT+SPACE).

To re-center the Maverick seeker position, press the CHINA HAT aft command or C on the keyboard.

Air to Air

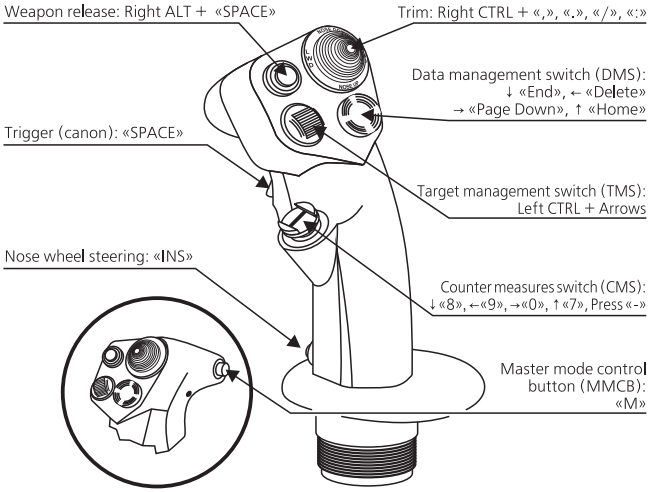
The A-10C has limited capabilities for air to air combat. If you are armed with AIM-9 Sidewinder missiles, select these on the DSMS.

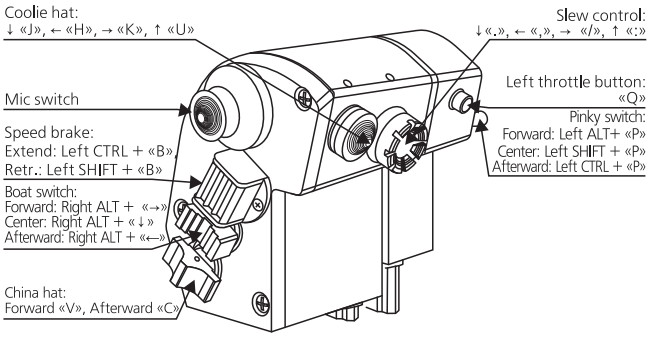


The HUD will indicate the AIM-9 aiming reticle. Targets can be locked under approximately 6-8 miles. Place the reticle over the target by either maneuvering the aircraft toward it or moving the reticle using the SLEW CONTROL switch or "," "." "/" ";" commands. When a target is locked, the Sidewinder "tone" will change to a higher pitch. You can uncage the seeker by pressing the CHINA HAT forward (V) command to make sure it's "stuck" to the target and has a good lock.

To re-center the seeker, press the CHINA HAT aft (C) command.

Once the target is locked, fire the missile by pressing the Weapons Release Button (RALT+SPACE) and watch to ensure a good kill.


Weapon release: Right ALT + «SPACE»
Trim: Right CTRL + «,», «.», «/», «:»
Data management switch (DMS):
↓ «End», ← «Delete»
→ «Page Down», ↑ «Home»
Trigger (canon): «SPACE»
Target management switch (TMS):
Left CTRL + Arrows
Nose wheel steering: «INS»
Counter measures switch (CMS):
↓«8», ←«9», →«0», ↑«7», Press «-»
Master mode control
button (MMCB):
«M»


Coolie hat:
↓ «J», ← «H», → «K», ↑ «U»
Slew control:
↓«.», ← «,», → «/», ↑ «:»
Mic switch
Left throttle button:
«Q»
Pinky switch:
Forward: Left ALT+ «P»
Center: Left SHIFT + «P»
Afterward: Left CTRL + «P»
Speed brake:
Extend: Left CTRL + «B»
Retr.: Left SHIFT + «B»
Boat switch:
Forward: Right ALT + «→»
Center: Right ALT + «↓»
Afterward: Right ALT + «←»
China hat:
Forward «V», Afterward «C»