VERLINDEN PUBLICATIONS

GULF WAR WARRIOR

LOCK ON N°4

Mc DONNELL DOUGLAS

F 15 C/D EAGLE

F-15C/D Eagle
Introduction

As far back as 1967, when the United States Air Force was confronted with a new generation of Soviet fighters and while it was fighting a different war over Vietnam, it was obvious something had to be done to regain air superiority and this for many years to come. This meant a fighter had to be developed which could overcome all adverseries in every field of aerial combat using "state-of-the -art" technology which at that time had not even been invented.

Development contracts were awarded to most of the leading aircraft manufacturers who were confronted with a list of grueling requirements that any sensible human being would have turned his back on.

Not so McDonnell Douglas, who finally, after thousands of hours of elaborate computer studies and endless hours of nerve-racking tests, came up with the answer to many air force questions. They named it the F-15 "Eagle", a name well-chosen for it resembles it's feathered counterpart in every way: agile, powerful, with a vision capability beyond compare and fangs which can be deadly accurate.

Anyone who has ever had the chance (and who hasn't nowadays) to take a close look at the McDonnell Douglas F-15 Eagle can only be impressed by the magnitude of this jet, which claims to be a "fighter pilots dream".
Every fighter jock, privileged to fly this bird, will convince you that's exactly what it is. Beware the layman that even trys to convince him of the opposite.

On this book

Instead of repeating all data on the F-15, extensively covered in every other publication, we want to take you on a tour and show you, in full color, a profound study of a magnificent aircraft : the F-15 Eagle.

(Paul Van Herck)

About the Lock On-series

Ever since the first Lock On book was published, it's main purpose was to serve the modeler, who, in order to build an accurate replica of his favorite airplane, would find enough information in just one, reasonably priced book to do so.

In fact, this series was born out of frustration, the day we discovered that, with a huge pile of books, worth over 200 US$ we still could not find the picture that showed us the exact color of the little oval valve inside the port wheel well.
All joking apart, the extensive use of large, clear color pictures in combination with some useful information on the subject, proved to be successful.

It is true that the first two Lock On's nearly showed every part of the airplane in detail and that half of these photos were of little value to the average modeler or even to the more demanding aircraft builder, unless they were planning a career as an aircraft engineer.

Upon receiving comments from you, modelers as well as aircraft enthusiasts, we reconsidered the total set-up of the series of which Lock On N°3 "The C-130 Hercules" was the first example. You are now looking at it's successor: Lock On N°4 "The F-15C Eagle", a book full of color, showing enough detail to build an accurate model, providing some general information on it's systems and it's performance which we feel are of some interest to most modelers and all this for a reasonable price.
If you feel this to be true or if you have any comments, we will be glad to hear from you.

Enjoy reading this book.

The author.

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Dedication

I would like to dedicate this book to all USAFE personnel in general and to the pilots and crew of the 36th Tactical Fighter Wing / Bitburg Air Base for their commitment in keeping the peace.

Acknowledgements

A book like this can not be published without the help of so many. First you need the authorization of top ranked USAF Staff members; the commitment of Base Commanders, the dedication of Public Affairs Officers and their civilian employees and then there is the helpful assistance of pilots, groundcrew, escort people, MP's and even gate guards to get you where you have to be and to prevent you from going to places you are not authorized to visit.
Once again, all these people went beyond the call of duty and it would be impossible to list them all, but I would like them to know I am very grateful for their cooperation.

A very special thanks is due to the following persons: first to my friend Col. Donald L. VERHEES, USAF Air Attache in Brussels for introducing me to the Pentagon PA and for backing my request; to LtCol. Edward N. NEUNHERZ, USAFE Chief Media Relations Division /Ramstein Air Base and his assistant Mr Moore for authorizing my visits; to Mrs. Tina CORCHRAN and Capt. Phil MILLS, USAFE Bitburg Public Affairs Office for their patience in answering my endless phone-calls and for arranging the visits on base, which were without doubt prepared in a very professional way. Furthermore I would like to thank the following persons for their assistance in taking the photographs: Capt. Ronald KLATT, Msgt Steven BAIR, AIC Douglas A. WASKAN, SRA Stephanie A. JOYCE, Tsgt Dana ROZELLE, Sgt Eric DAHLSTROM, SrA Dominic PAMPA and Maj. Mike MALONEY, Maintenance Supervisor.

I would also like to thank McDONNELL DOUGLAS for providing me with first-class photographs which were of great interest and which are published somewhere in this book.
Last but not least a special thanks to another friend, Paul VAN HERCK, for letting me have some of his preciously-kept slides for publication.
To all who I forgot to mention, my sincere apologies.

The author.

All photographs were taken by the author unless otherwise indicated.
They were taken using Minolta7000 Autofocus, Canon FTB and Mamiya ZM cameras with 35-105 mm lenses. Kodachrome 64 K-135 color slide film and Fuji 100D Professional color slide film were used throughout.

Front cover: Two F-15 's of the 18th TFW/KADENA AB, Okinawa /Japan heading for "home". The 18th TFW had the honor of receiving the first F-15 C's in September 1979.

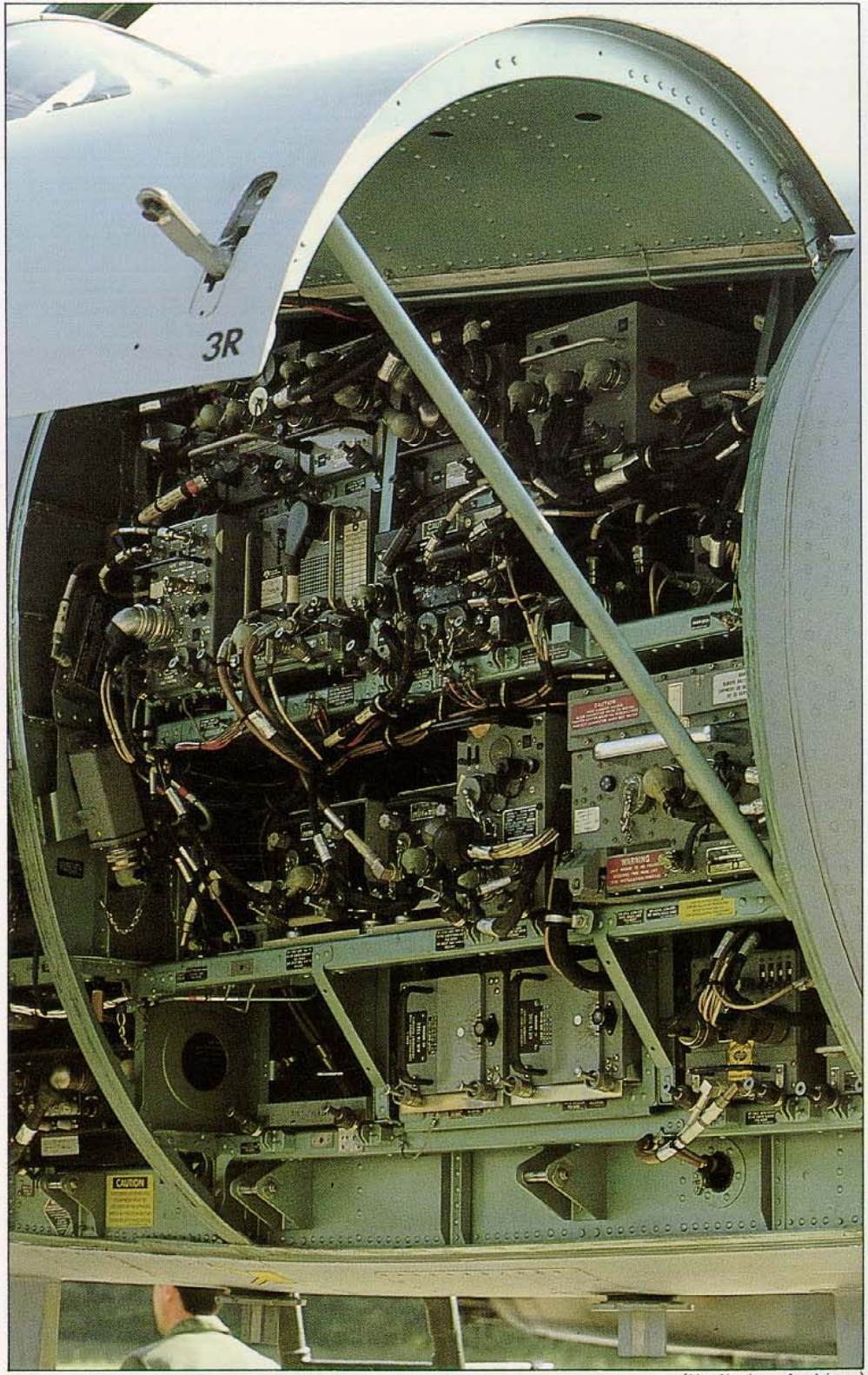
Airframe

A Bitburg F-15 jock, fully strapped in his ACESII ejection seat, is running through his flight info while he is awaiting the "Scramble" call during a NATO excercise. Within minutes he will be "Heaven-bound", engaging yet another hostile threat.
This side view gives a good impression of the overall shape of the F-15's nose section.
The extremely large canopy, providing an excellent all-round view to the pilot is fully opened. The typical shape was designed by computer to keep the airflow over the fuselage as smooth as possible because turbulence in this area is the last thing an aircraft designer is looking for.
You can tell the immense size of this single seat jet fighter from the mechanic, leaning on the centerline fuel tank trying to hide from a rare spot of mid-August sunlight. USAFE personnel living in this area know what we are talking about.

(Bottom left)
Generally the same view on the F-15D. All paneling is the same on the C and D model, except for the area behind the cockpit.
Note the difference in markings. The top picture shows the older type Red, White & Blue national insignia while the bottom picture reveals the more recent low visibility paint scheme.

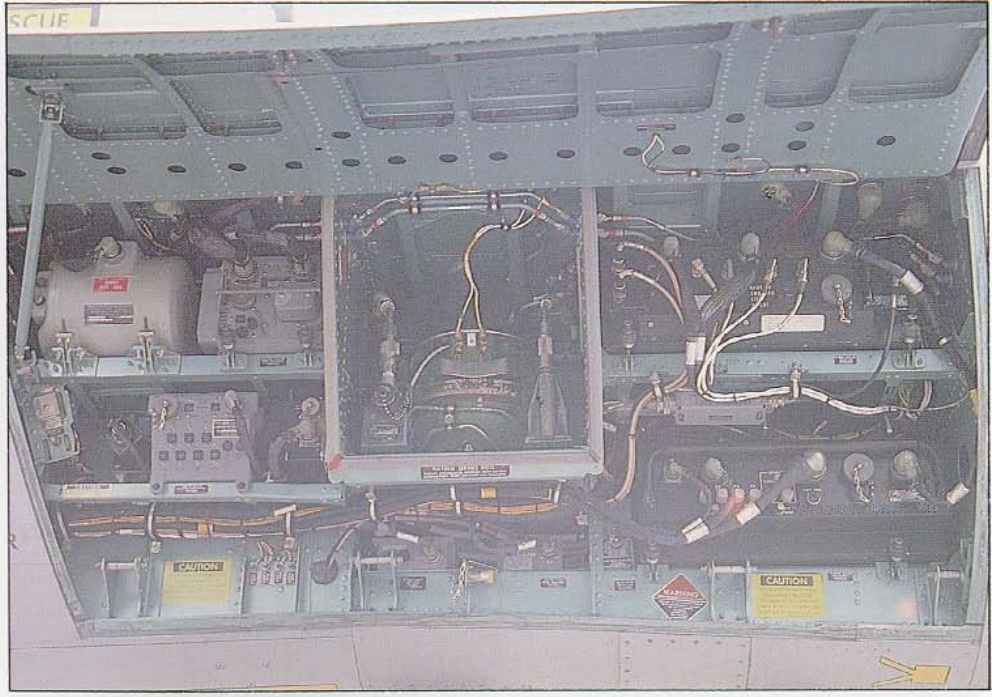
The two open hatches behind the radome revealing the radio and the electronic equipment bay of the starboard side. Note the position of the pitot tube on the front hatch and the "Angle-of-attack" probe just aft of the forward electronics bay.

(Verlinden Archives)



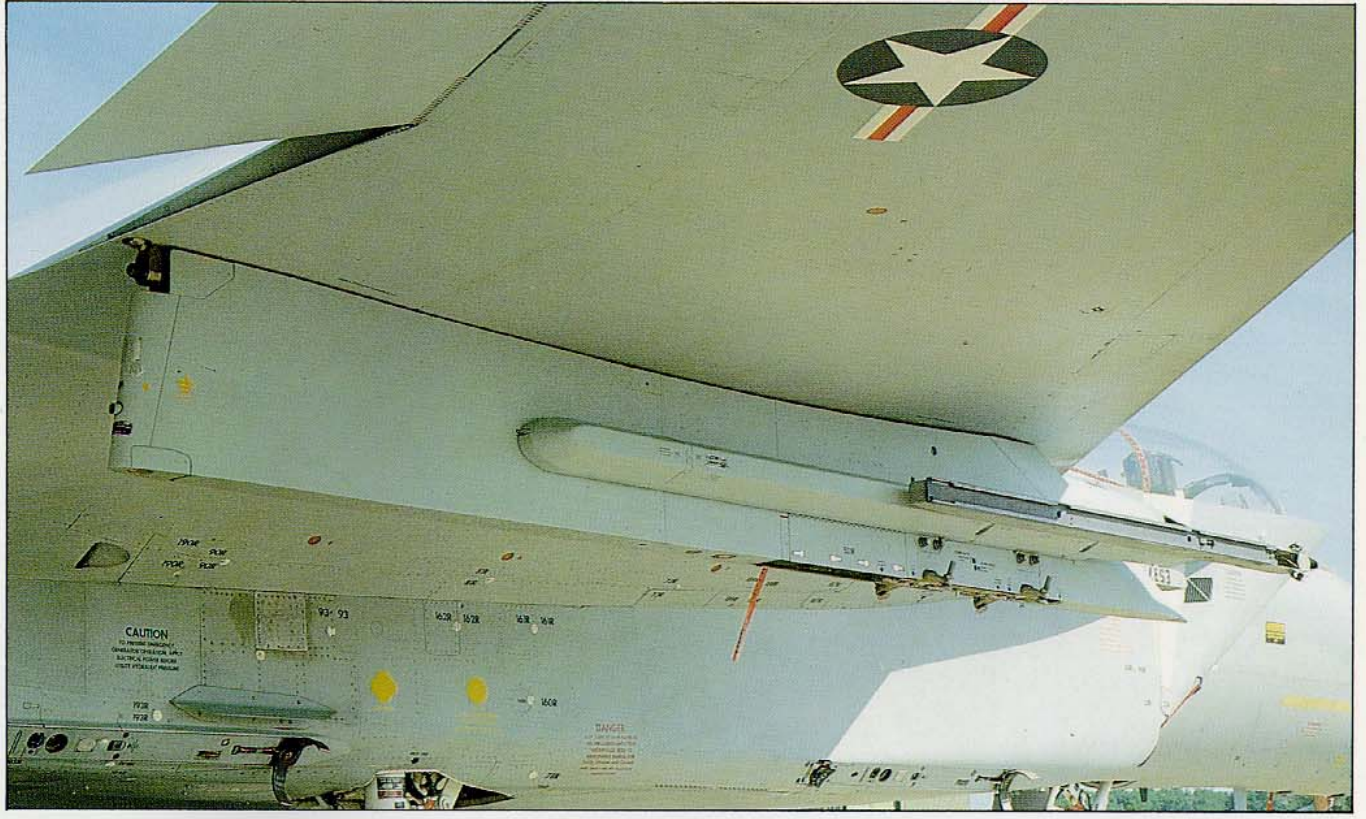
(Verlinden Archives)

The front bay in detail or part of the brain of the F-15. Highly sophisticated avionics accommodates the pilot with the necessary information to attack any target or to warn him of any threat.
Ease of maintenance has become one of the major concerns in developing modern day jets. Any failure can be corrected within a few minutes by replacing one of these boxes. The disadvantage of this system however is you need a large back-up stock of these boxes to serve several aircraft.



The aft bay with the liquid oxygen container in the middle. As usual the latter is painted bright forest green. It is placed inside some kind of box to protect it from damage which would spill a lot of the freezing liquid and could be extremely dangerous to the maintenance crew.
Note the typical structure of the inside of the hatch and the various "Caution" and "Warning" markings.

Part of the right side air intake. A lot of cooling air intakes can be found all over the aircraft but especially in this area. The two closest to the camera on top of the wing root serve to cool the M61 Vulcan cannon.
Note the typical shape of the gun muzzle outlet.

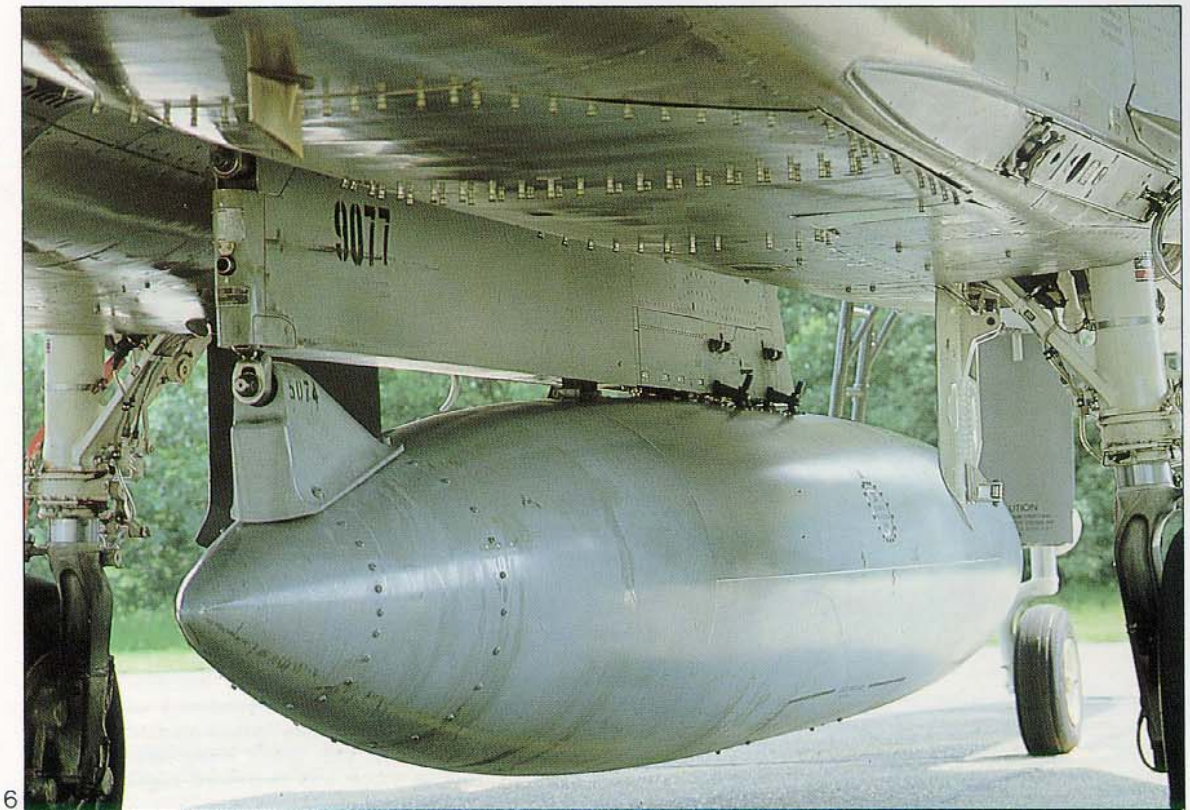


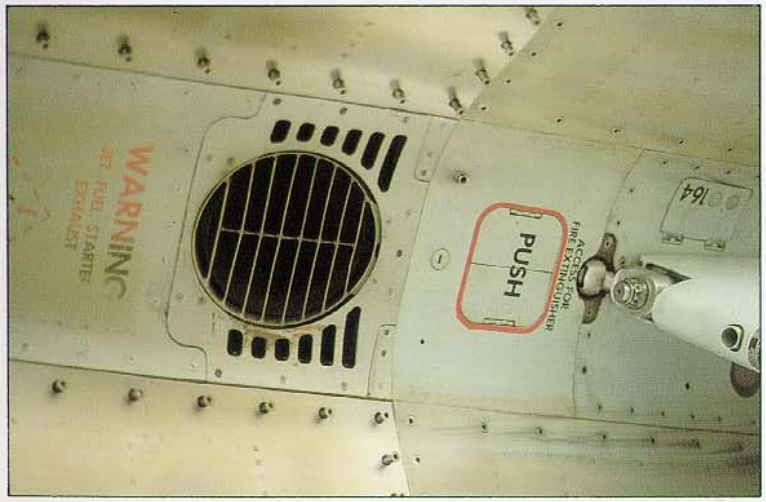
Part of the starboard underwing section with a view on the main inboard pylon.
The sloped inboard section of the wing is clearly visible. Nearly 25 per cent of the Eagles' airframe is made of titanium, including this section.
This lightweight material was used here to cover the integral fuel tanks which are filled with sealant foam injected through channels in the joint between the wing spars and the aluminum upper skin.
Even with any one wing spar totally severed, the titanium is so strong it allows the aircraft to keep flying on the remaining wing spar.

This shot also gives a clear view at the underwing pylon. The Sidewinder launching rail (virtually the same as on the F-16) is mounted some distance from the pylon to give clearance to the Sidewinder fins, inboard as well as outboard.

The air to air AIM-7F SPARROW missiles, if carried, are mounted at four stations aside the lower end of the fuselage.
Armorers must have loved the idea of locating the launch stations here for mounting or dismounting the Sparrows can easily be excecuted without the use of steps and ladders.

During early trial launches it was discovered that the aft Sparrow missile had the tendency of moving upward upon launching. This could result in the missile slamming into the lower wing area.
To prevent this, a vane was mounted right on top of the launch stations.



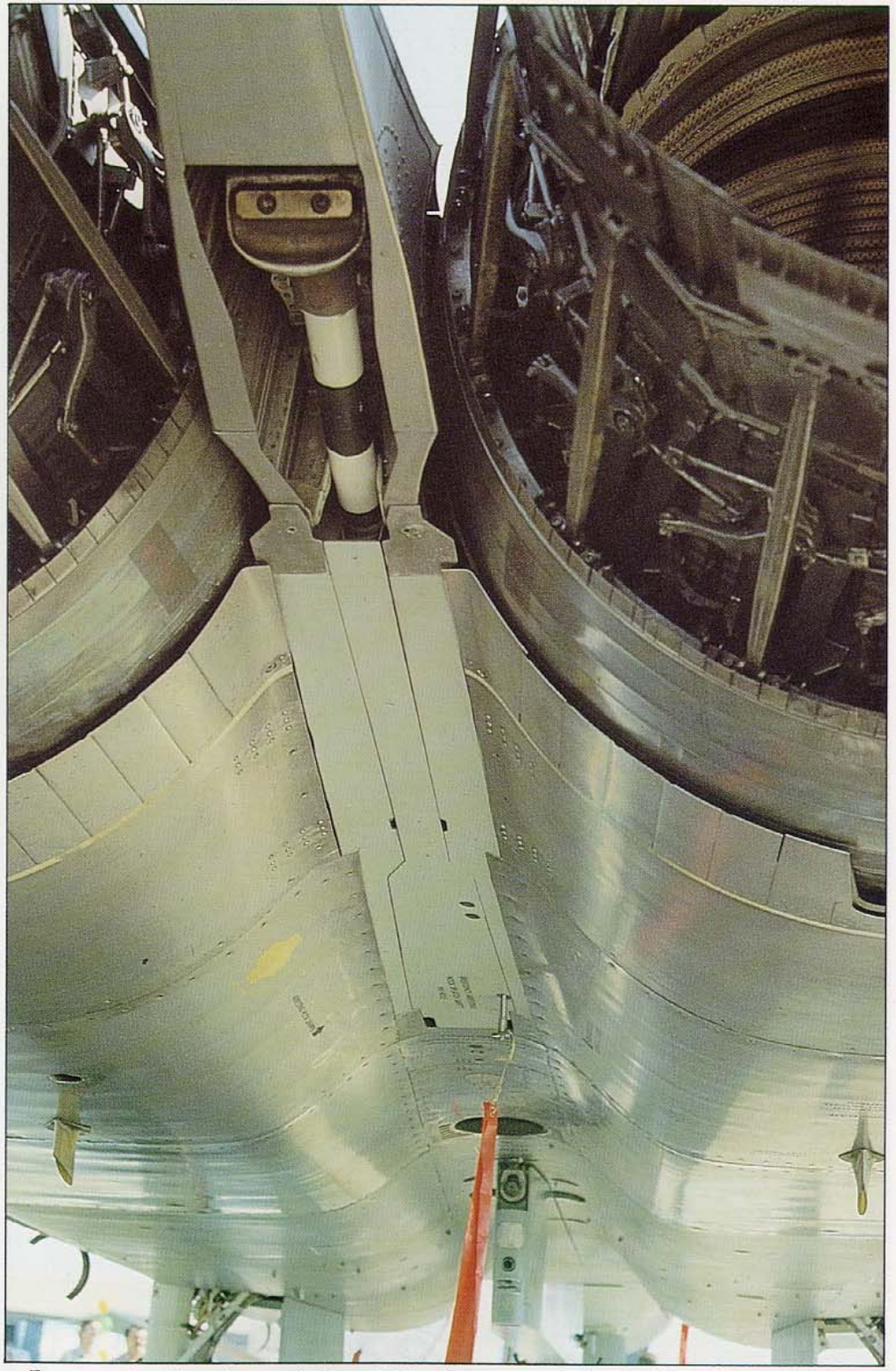


The aft fuselage section with part of the titanium covered engine bay.

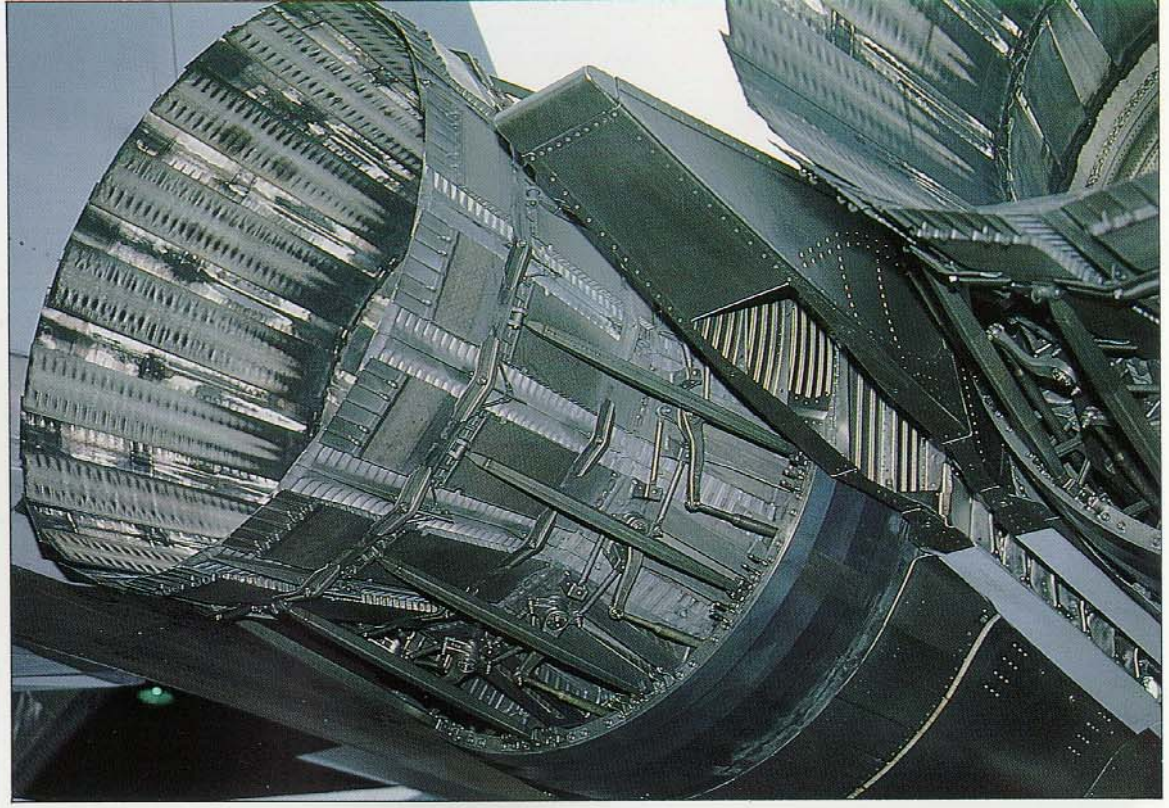
Depending on the amount of flying hours absorbed the shade of the titanium varies from light "buff" to a nearly black shade.

At left is a picture of the 600 US gallon droptank mounted on the centerline pylon, the aft part of which can be seen in the top picture. Note the various fire extinguisher doors located all over the airplanes' engine section, outlined in red for ease of detection.

(McDonnell Douglas)



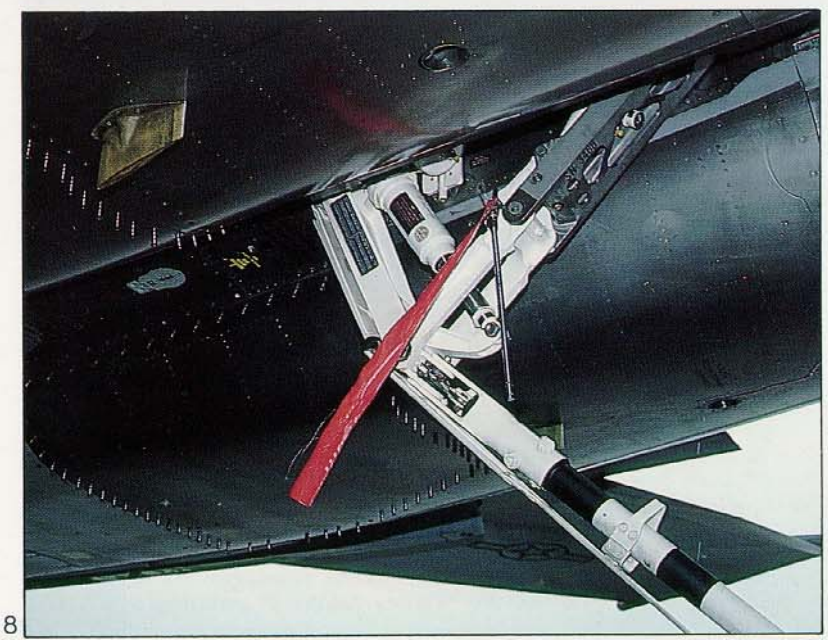
These underside views of the F-15 give a good impression of the relative complexity of the Eagle's fuselage and tail configuration.
It is the final result of countless hours of computer studies and wind-tunnel tests. Titanium was used to cover the area where the engines are installed because of it's tremendous heat-resisting capability. When you compare these pictures with the ones on the previous and the following pages you will note a remarkable difference in color of this material. The longer it is exposed to heat the darker it gets.
The arresting hook fairing is located between the two exhaust nozzles. Note the cover is painted the same color as the rest of the fuselage.
The aircraft in the left picture still has the "Turkey-feathers" installed over the nozzle actuators.

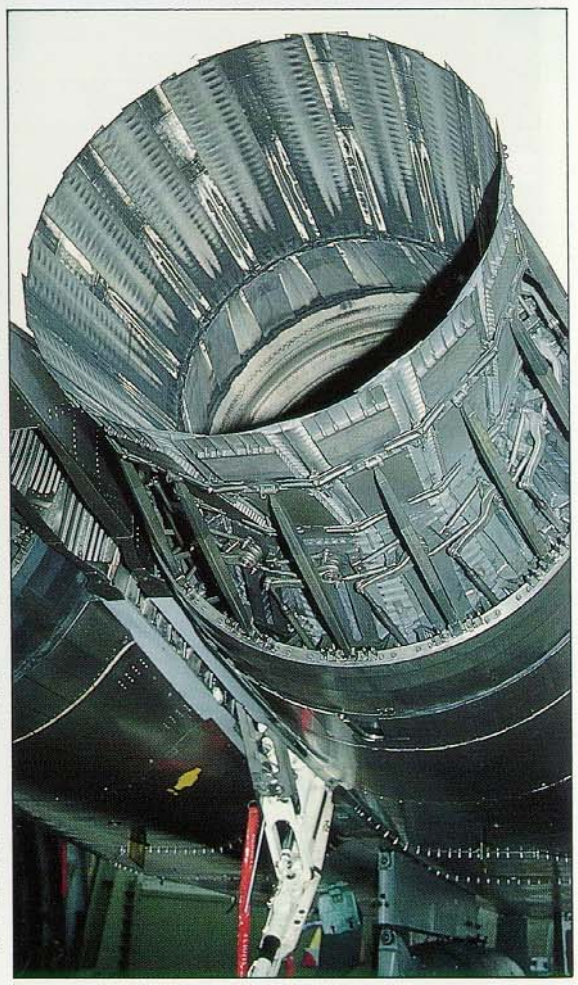


A more profound look at the exhaust nozzles and the arresting hook assembly.
The arrestor hook installed on the F-15 is for emergency landing purposes only, unlike it's Navy counterparts.

The Pratt & Whitney F-100 powerplant (which also powers the F-16) has had it's share of problems. When development started in August 1968, Pratt & Whitney engineers had the task of developing an engine way ahead of it's time. In an era where the F-105 and the F-106 were the top jet fighters of the day, Pratt & Whitney had to build an engine which could produce 25 per cent more thrust per unit of weight than the current turbofan engines. After a grueling series of tests they were able to deliver an engine which weighed about 3,100 lb (1400 kg) and had a thrust-to-weight ratio of almost 8:1 at full afterburner.
The engine is capable of providing 15,000 lb (about 6800kg) of thrust in military and 25,000 lb (11340 kg) in full afterburner mode.
The pictures on this page show the convergent / divergent nozzles in the fully open or afterburner position.
Part of the early problems encountered by the engine (i.e. stalling of the engine) were solved by removing the "Turkey-Feathers" covering the nozzle actuators. They have since been omitted.
Note the color of the ceramic inside of the tailpipe.

(Bottom left)
Minor engine repair can be excecuted from below where most of the panels are hinged. When opened the entire lower side of the engine can be reached where most of the engine components are located. The fasteners of one of these panels can be seen here in the unlocked position.





(McDonnell Douglas)

Engines can be changed within the 30-minute minimum required by the air force. Only ten disconnections are called for and the engine will slide out of it's bay on integral rails and onto an engine support cart. All this can be done "in the field" without the use of ladders and/or stands. The engines are interchangeable.

The lower fuselage viewed from the rear port side.
This photograph will help a lot of modelers to paint the lower side of the aircraft correctly. Note the peculiar way the titanium part of the fuselage matches the rest of the aircraft skin.
The complex curvature of the fuselage/wing root fairing can clearly be seen at left. Further parts of interest are the ventral fuel dump and the heat exchanger exhaust duct beneath the arresting hook warning sign.

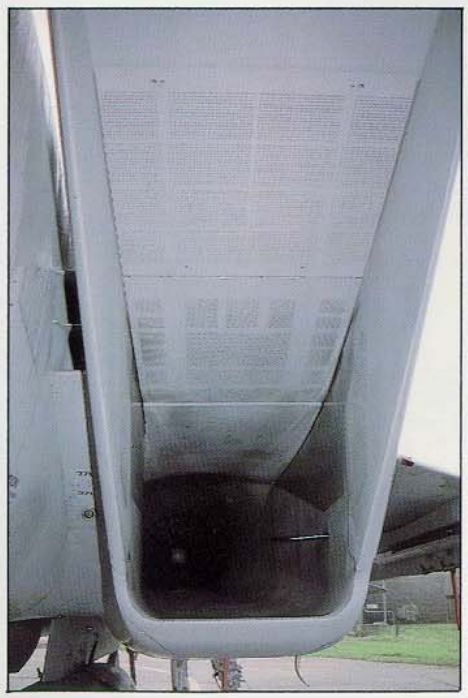
The same area looking aft, this time with the AIM-7F Sparrow launch station in detail. Note the inside of the small exhaust panel is painted red.
The small panel, marked 96L aside of the centerline pylon gives access to the port side engine's oil sight gage and servicing connections.

Moving toward the front of the airplane.
Note the forward AIM-7F Sparrow launching rail is lacking the strake on top of it. The yellow cable running up into the port wheel well is the static ground line, a prominent feature on parked aircraft.

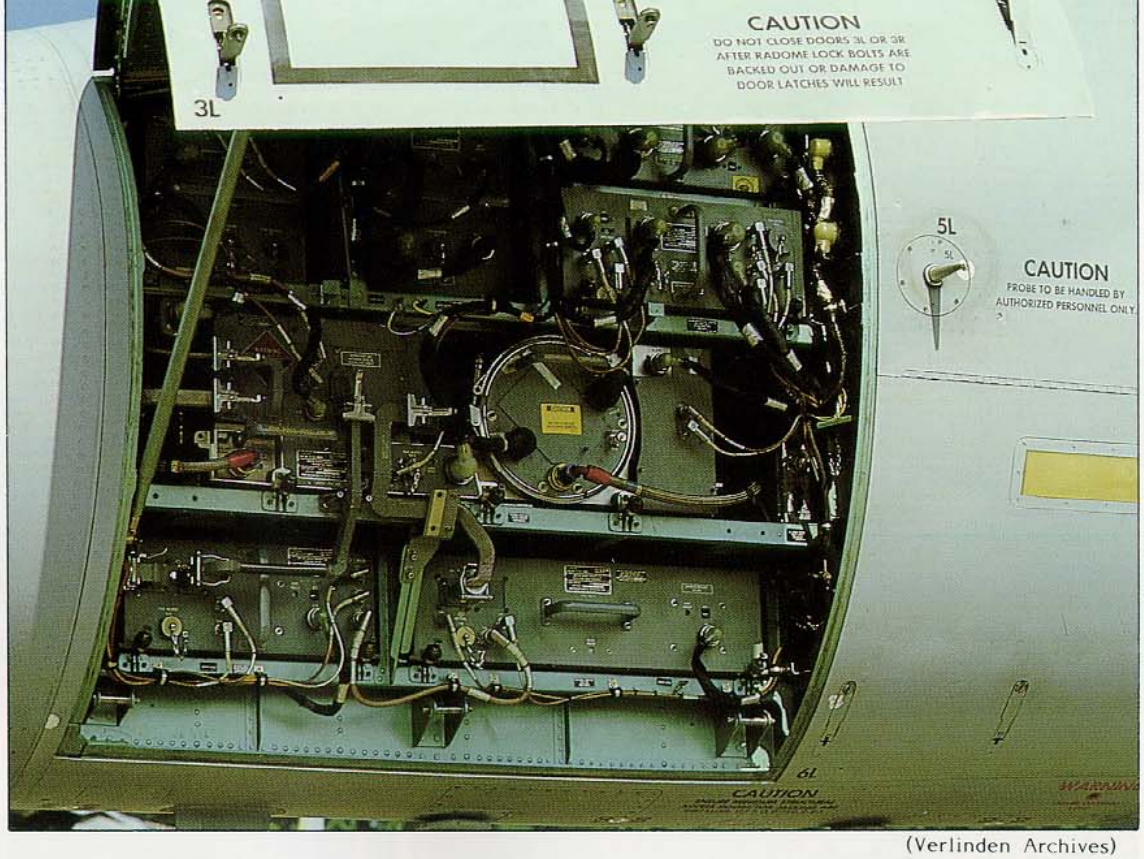
The left underwing pylon with the two LAU-114/A launch rails on each side. Both the AIM-9J and the AIM-9L missiles can be carried and fired from these stations. These LAU-114/A launch rails are an example of cost effective thinking by the air force people for they can be used on both the F-15 and the F-16.

Detail shots of the port air intake and boarding side.
The forward part of the air intake is pivoted at the lower end and can rotate from 4 degrees above to 11 degrees below the horizontal.
This unique feature enables the intakes to "look down" into the airflow to maintain an adequate supply of air being forwarded to the engines. In the roof of the intake duct variable ramps are installed to control this airflow.
The system is operated by hydraulic actuators and is linked to the onboard air data computer. Every change in angle-of-attack, airspeed or density/altitude ratio is automatically fed into the computer which then controls the system accordingly. This enables the pilot to handle the airplane at much lower airspeeds during air combat and landing without causing a compressor stall in doing so.
Note the sensing probe inside the intake duct.
Door 29 in the bottom right picture is the ground refueling receptacle. The panel just aft of the nose wheel well is for liquid coolant servicing.

(Bottom left)
The F-15 can be boarded by means of an extended ladder stowed in the left fuselage side. A useful feature when one cannot wait for a ladder being hooked up to the side after long, extensive hours of non-stop flying.
Right beneath it is the external power hook up marked with a yellow symbol.



As soon as the aircraft is parked, protective covers are installed over parts which are likely to be damaged by unauthorized personnel. Note the low voltage formation light strip just in front of the boarding ladder housing.
When the aircraft is armed, the armament data panel contains a handwritten list of the specific armament carried. Obviously, this one is unarmed.



(Verlinden Archives)

The top right picture shows hatch 3L which covers the most forward nose bay holding the nine major components to operate the Hughes APG-63 radar which houses inside the glass-fibre radome.
Note the difference in color of latter in the picture at left.

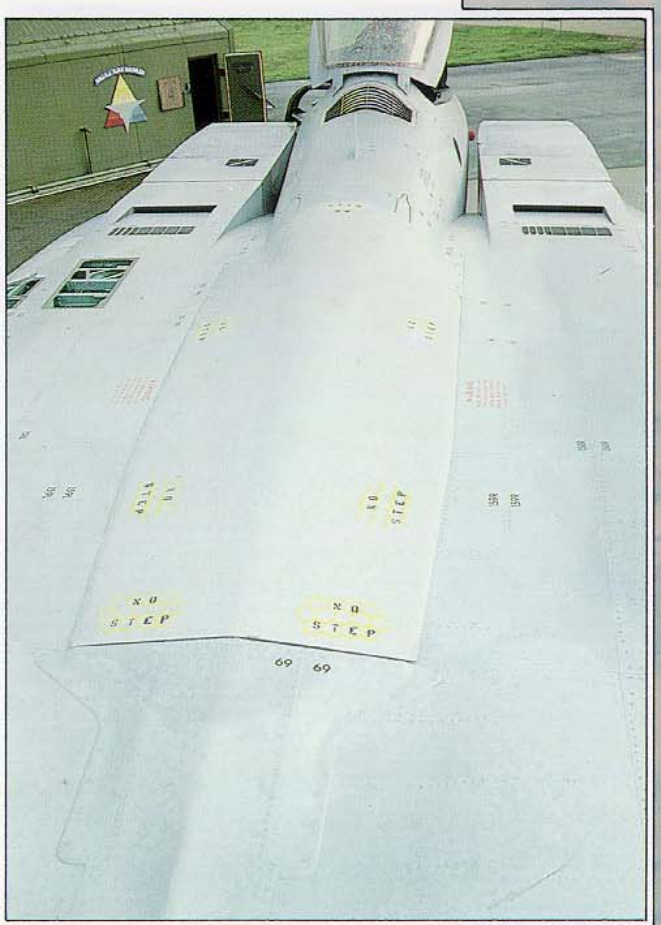
The bottom row houses the exciter on the right and the receiver on the left. The transmitter is located on the second row whereas the data processor sits on top of the digital processor on the right side of the top rack.
In front of it is the power supply unit. The most forward space on the top row has been reserved for the analog processor.

(Left)
While the mechanic in the background is protecting his ears from the roaring jet noise it looks like the pilot is backing-up his fighter.
The air intake is at maximum downward elevation. Note the clear-glass canopy is slightly tinted.

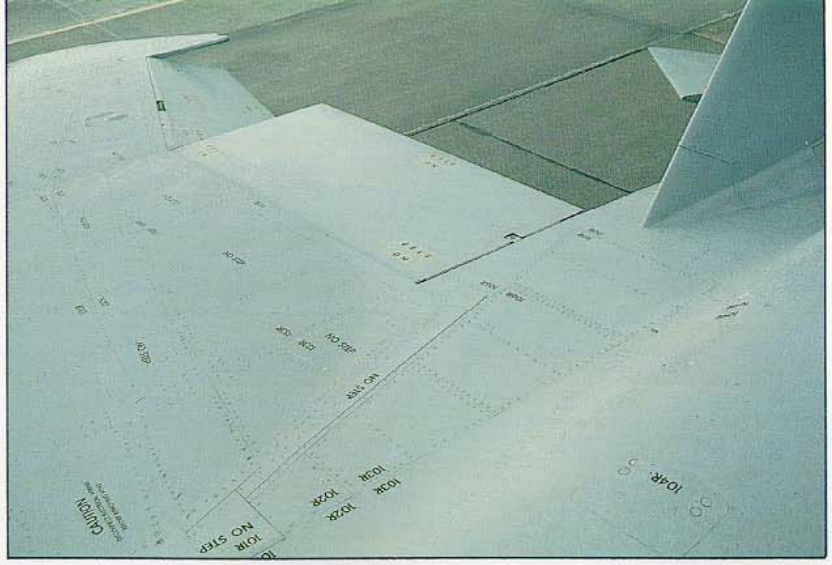
(McDonnell Douglas)

An excellent picture from an early F-15D joining up for an in-flight refueling test. It clearly shows what an immense fighter the F-15 really is, with it's gross wing area of 608 sq feet.
Sweepback of the wings is 45° at the leading edge and 32°42' at the quarter-chord with an aspect ratio of 3.01 . Anhedral is 1° with zero incidence.

(Bottom)
A closer look at the speed brake which excists of an aluminum honeycomb core covered with a graphite composite skin. Note the reinforcements at the trailing edge of the airbrake and the extensive use of "No Step"-markings.

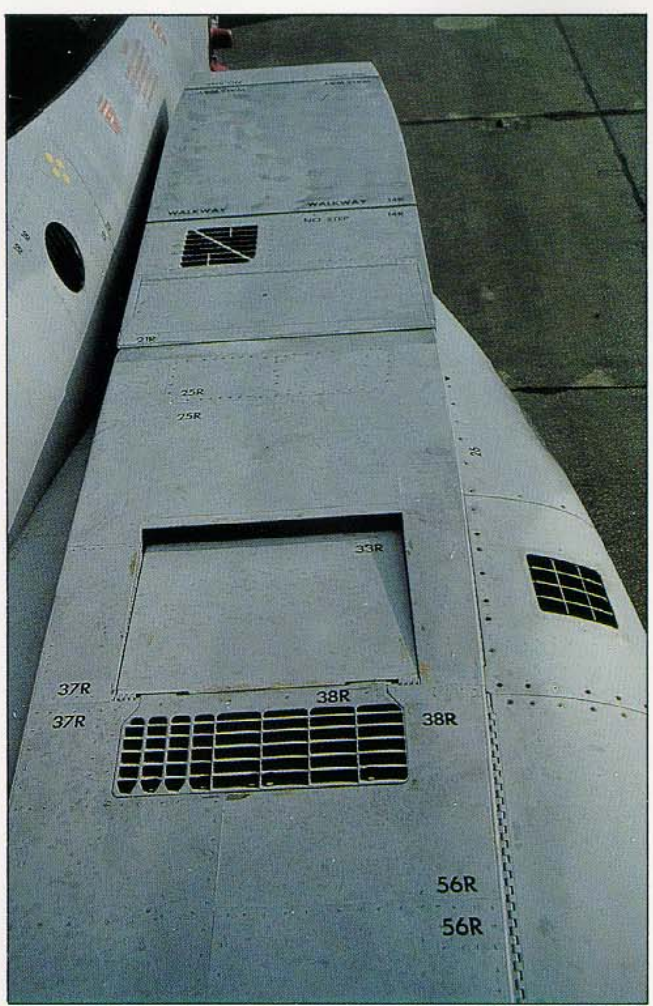


The cooling air exhaust duct of the air conditioning system on the F-15D.

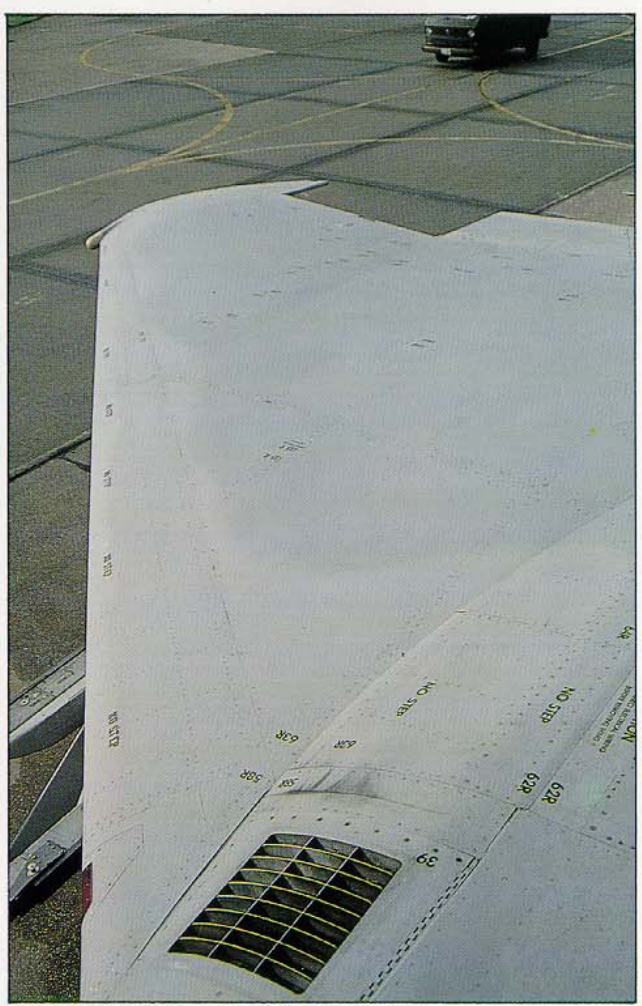


The starboard upper wing looking aft. The plain flap of honeycomb panel construction is in the fully-up position unlike the outboard aileron which drops upon power-loss.

The port and starboard intake from above.
The panels marked 33L and 33R are the intake bypass doors, 38L and 38R are the intake bleed air vents. Note the shape of the in-flight refueling receptacle in the lower corner of the left picture. Modelers should pay attention to the way the tankers' refueling boom has scratched the covering doors.



A view along the leading edge of the starboard wing. In the bottom of the picture is the gun gas bleed vent.
Also note the red anti-collision light next to it.



The twin vertical tail consists of boron composite skins on honeycomb cores. All these materials are used to save as much weight as possible without losing the necessary strength a top-class fighter needs to pull more than 10G.
They have 36°34' of sweepback on their leading edge.

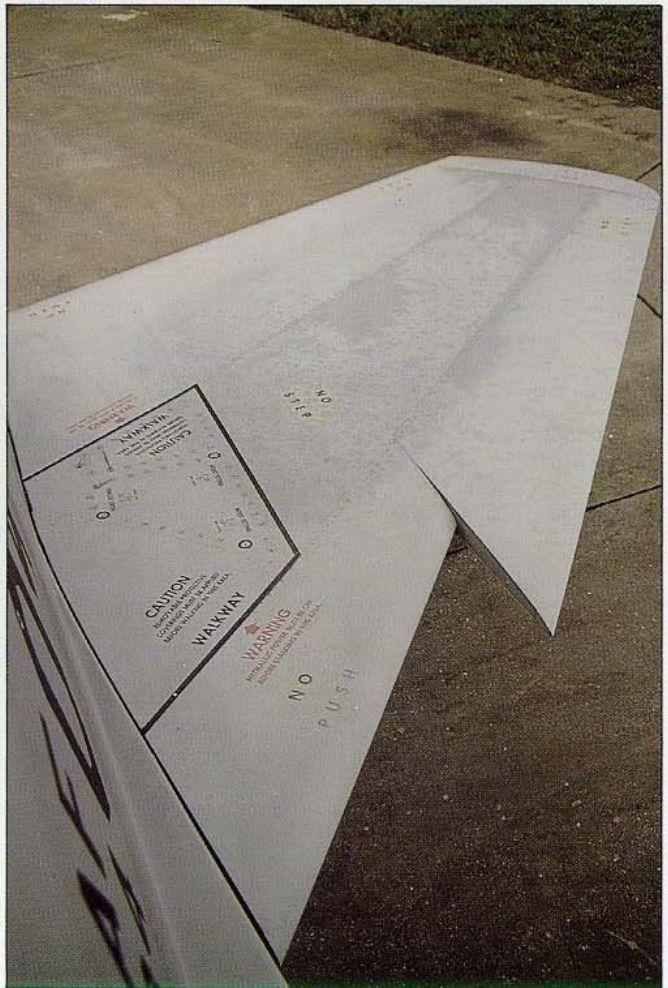
The tails are also interchangeable between port and starboard side. The large cylinder on top of the left fin houses the radar warning equipment whereas the smaller cylinder on the right fin is the ECM electronic countermeasures aerial.
The aft part of the left tailboom fairing also houses some ECM equipment.

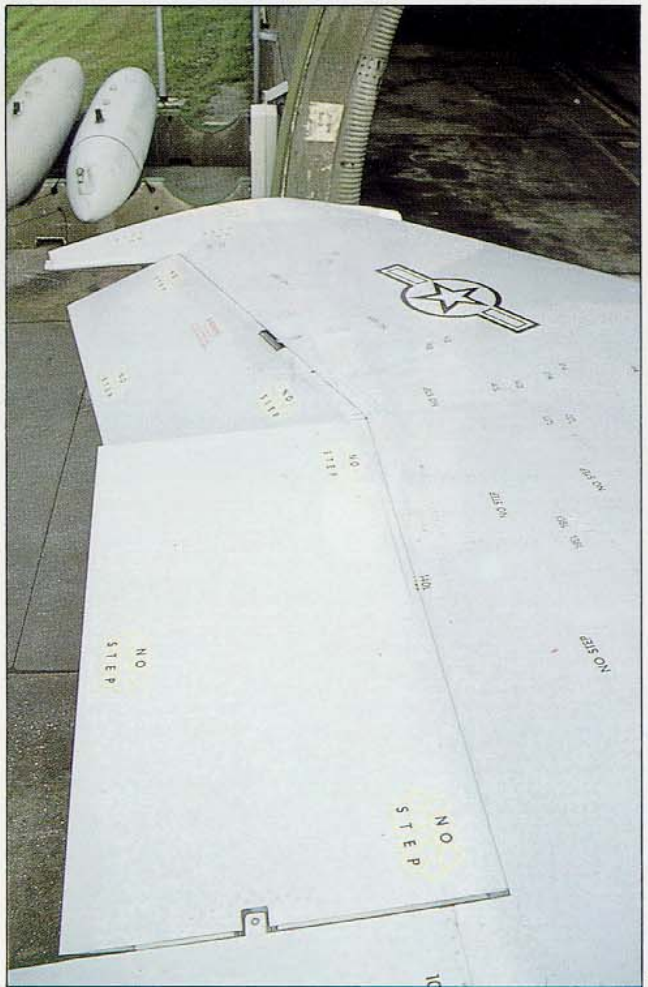
The two upper teardrop shaped aerials on each fin are for ECM purposes too.
Below these aerials are located a tail navigation light (left side) and an anti-collision light (right side).

Note the all-moving horizontal tail surfaces drop back when all power is shut off. An interesting point for the modeler.

The all-moving tail viewed from above. Again, the honeycomb construction was used here to save weight and to retain strength.
The tail surfaces, one of the main control units, have a total area of nearly 112 square feet.
The leading edge, with the so called "dog-tooth", increasing the outboard chord has a 50-deg. sweepback.
Note the "No Step/ No Push" markings.

The port wing showing the markings to good advantage. The pilot has another 35.84 sq. feet of plain flap and some 26.84 sq. feet of aileron to help him control his jet during dogfight maneuvers.
Modelers may have problems getting the correct shades of color on their models.
The actual paint serves it's purposes well in that the color seems to change every time you look at it from a different angle.
The Federal Standard colors used to paint the F-15 are listed in the back of this book.
Note the low visibility national insignia and the various "No Step"-markings.

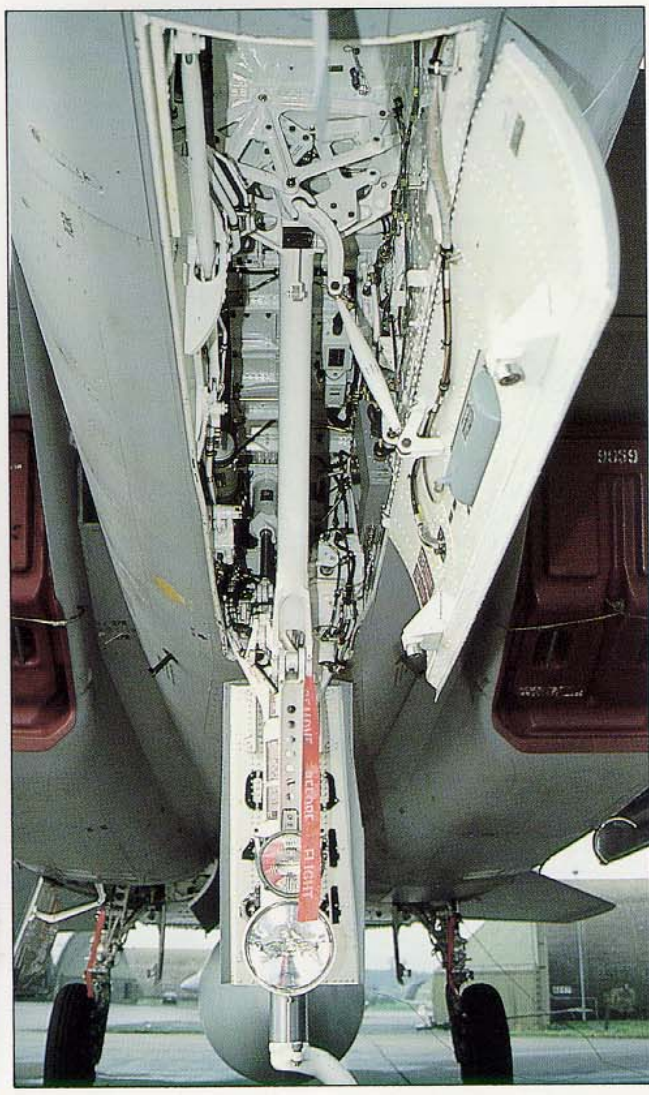


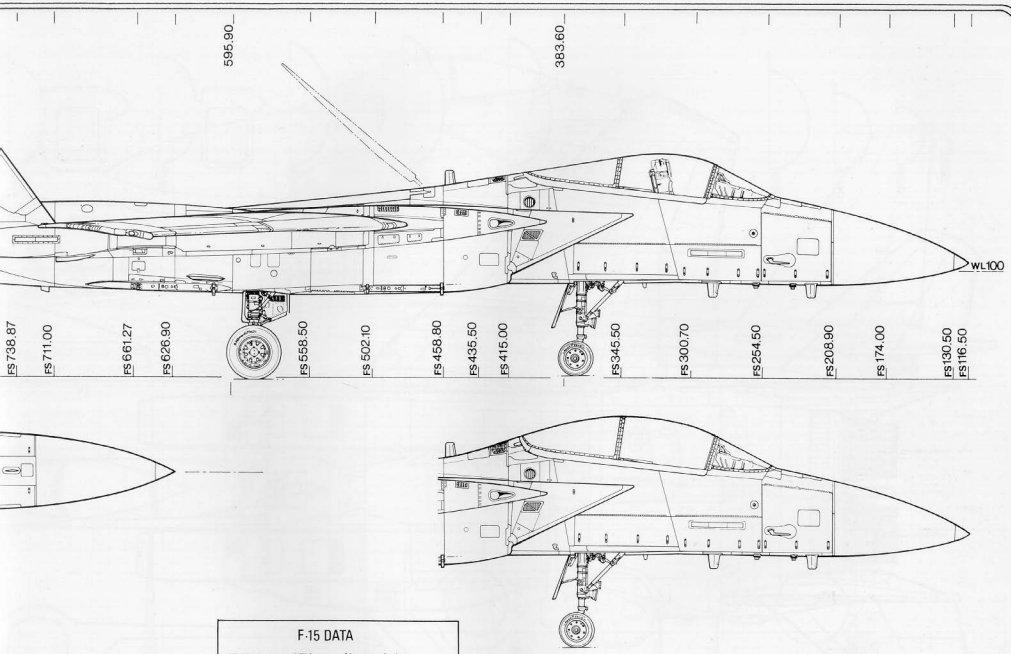


Nose landing gear

Both the nose and the main landing gear retract forward into their respective housings.
Due to the additional fuel tanks in the F-15 C's wing leading and trailing edge (for an extra 1.855lb or 880kg of internal fuel), the landing gear, including tyres, wheel hubs and brakes, needed to be strenghtened to cope with the increased weight.
Prominent features on the steerable nose gear assembly are the nose gear retraction strut (note the safety pin) and the landing and taxi lights.
Halfway up the nose gear strut are two tie down rings , one on each side.
The hinges and the retracting rod of the aft nose gear door can clearly be seen at the left side of the picture.

Three pictures showing the nose gear well inside and the main gear door retraction mechanism.
The forward door normally closes once the gear is locked, it can, however, be opened manually to do some repair or, as in this case, to take a picture of the inside.





F-15 DATA

PRIMARY FUNCTION	Air superiority
PRIMARY CONTRACTOR	McDonnell Douglas Aircraft Corporation
POWERPLANT	Two Pratt & Whitney F-100/PW100 Turbofans
THRUST	50,000 pounds
LENGTH	63ft 9in /19,44m
WINGSPAN	42ft 9.7in /13,047m
HEIGHT	18ft 5.4in /5,63m
WEIGHTS Empty	28,000lb/12,700kg
Takeoff	44,300lb/20,185kg
Max Takeoff	68,000lb/30,844kg
WING AREA	608sq ft/56,5sqm
LOAD FACTOR	+9g/-3g
COMBAT THRUST TO WEIGHT RATIO	1.3:1
SPEED	Mach 2.5
CEILING	Above 80,000ft
RANGE External tanks	Over 2,500nm/4.630km
FAST Packs	Over 3,000nm/5.556km
INTERNAL FUEL	13,435lb/6.103kg
HARDPOINTS	5
MAX ORDNANCE LOAD	16,000lb/7.250kg
USING COMMANDS	TAC, USAFE, PACAF, AAC

1:72nd scale drawings

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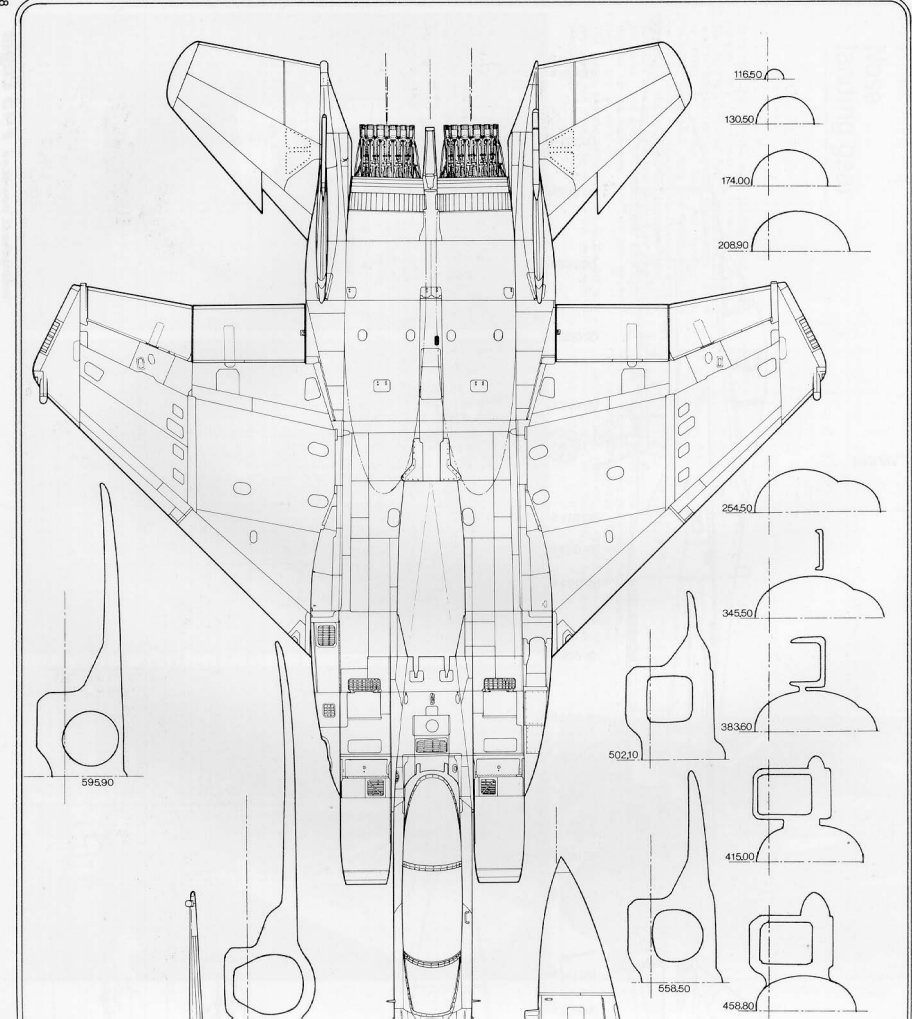
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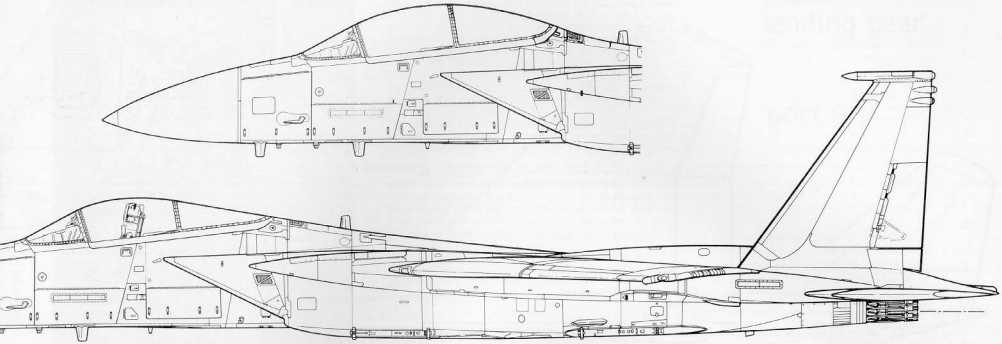

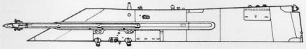

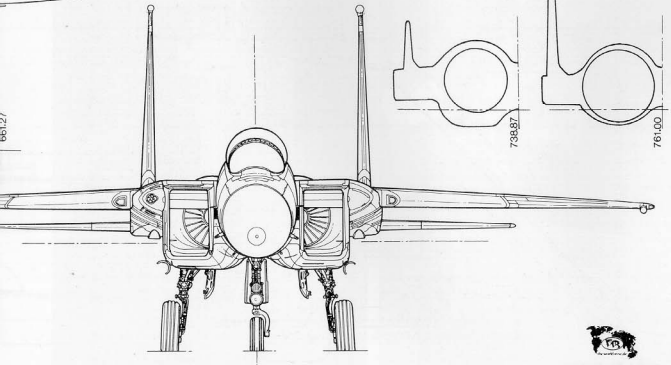

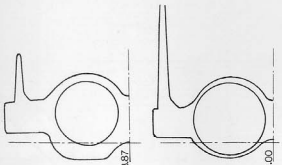

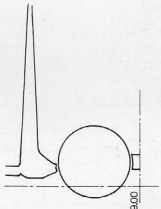

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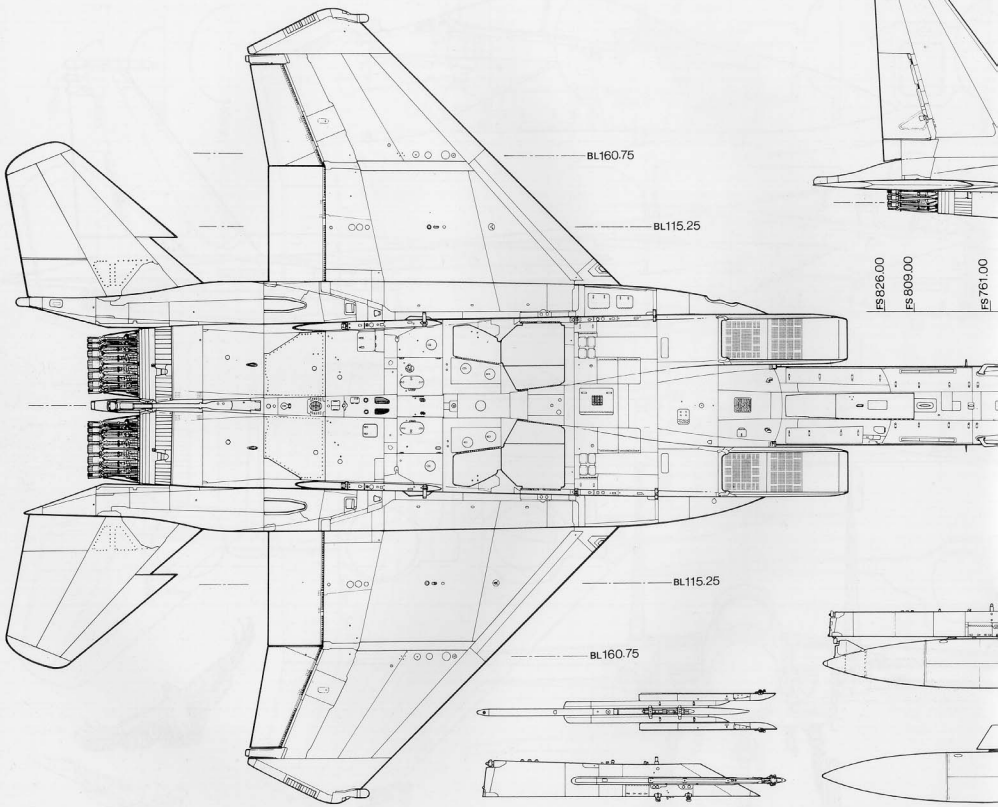
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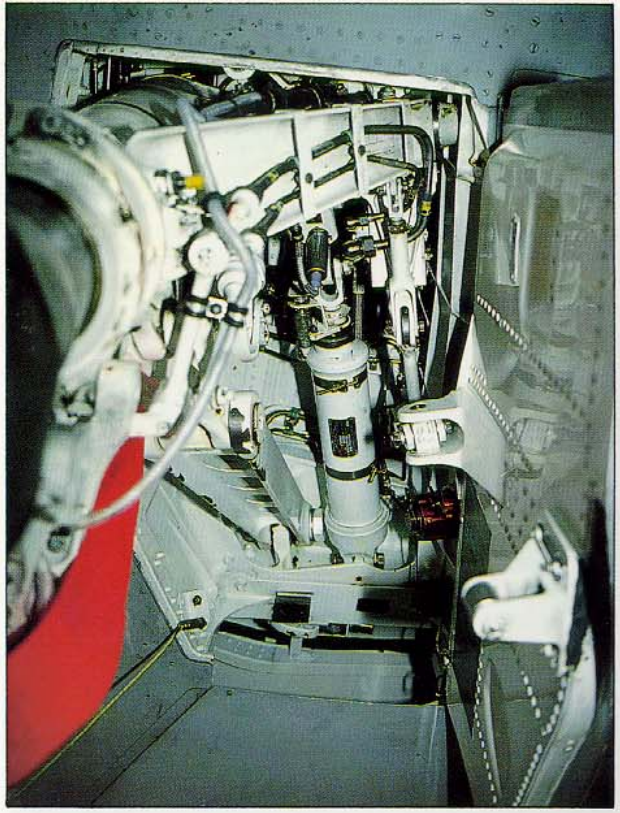


Main landing gear

port

The next two pages give an in-depth study of the main landing gear. The pictures on this page show the port main gear strut. Note that in the down-locked position only the small door remains open. Retraction of the gear itself is quite complex, folding forward as well as inward at certain angles, hence the various retraction struts.

The small circular hatch located aft of the wheel strut on the left side of the aircraft gives way to the jet fuel starter.
The one on the right side of the aircraft provides access to the utility external connections and the utility reservoir.

The landing gear and wheel wells are all painted white and are kept immaculately clean for one obvious reason. When the pilot is executing his walkaround check-up even the smallest oil leak will show off immediately, preventing that a gear malfunction may occur when coming in for landing.

Note a lot of maintenance data placards are being attached to both the main gear strut and the inside of the small gear door.

Main landing gear, rear view looking forward.

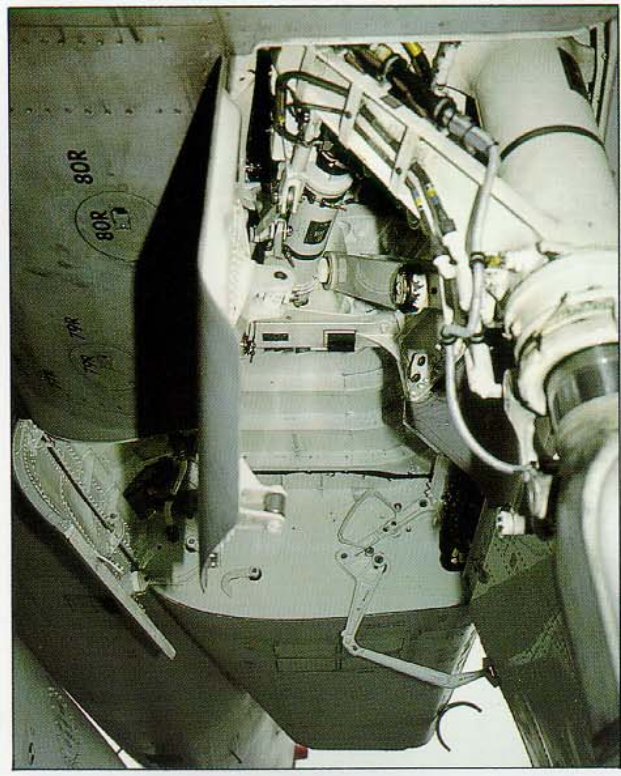
Main landing gear, frontal view looking aft.

starboard

The starboard side main gear.
These pictures should be of special interest to the modeler when checking the accuracy of the kit parts, because the inside of the wheel hub will need some updating.
The outside of the same is of the latest type used on the F-15 C.

The starboard main gear well houses the defueling receptacle of which the red cover can be seen in the bottom right picture.

The same data plates of the port side can be found on this side of the aircraft. The mandatory "Remove Before Flight" warning flag is installed as part of every shut-down routine job.



Armament

The F-15's primary armament exists of the General Electric M61-A1 Vulcan. A six-barreled, 20mm rotary cannon mounted inside the right wing root. The ammo drum, holding 940 rounds of ammo is mounted in the center fuselage, just in front of the airbrake housing.

In it's air superiority role it carries four AIM-7F Sparrow, radar guided, medium range, air-to-air missiles on the lower edge of the fuselage as shown on previous pages.

Four AIM-9J or AIM-9L Sidewinder, infrared-homing, short-range, air-to-air missiles are being carried on the LAU-114A launchers on inboard stations 2 and 8. The picture shows an early F-15A in this configuration with the exception that it carries the 600 gallon centerline fuel tank to extend it's ferry range.

This bird is bearing colorful markings for a special occasion because in normal squadron life these markings would be toned down to low visibility standards like the national insignia it is wearing. These F-15's belong to the 5th FIS operating from Minot AFB, North Dakota.

(McDonnell Douglas)

For it's secondary air-to-ground role, the F-15 has five hardpoints on which multiple stores of up to 9,000lbs can be carried, retaining it's air-to-air capability.
The MER-200 multiple ejector rack, mounted on either the inboard pylon (station 2 & 8) or on the centerline hardpoint allows the Eagle to carry an impressive variety of ordnance including 500 lb Mk-82 LDGP bombs, 550 lb Mk-82 Snakeye retarted bombs, 1,970 lb Mk-84 low drag general purpose bombs, 799 lb BLU-27B and 829 lb BLU-27B finned fire bombs.
Also CBU-52B, CBU-58B ,CBU-71B cluster bombs, 486lb Mk-20 Rockeye cluster bombs, Mk-84 electro optical or Mk-84 infra-red guided bombs can be loaded.

An SUU-20BA practice bomb dispenser can also be carried on the SUU-59/A pylon mounted on station 2 or 8. The picture at right shows this pylon carrying a travel pod.

The F-15E "Strike Eagle"-program, a McAir private venture, will prove the F-15 very well capable of performing a dual-role task, carrying every weapon in the USAF arsenal.

The Fast packs in the bottom picture, developed upon an Israeli request to extend the Eagles' maximum endurance, are conformal fuel pods holding an extra 1,698 US gallons of fuel.
They are mounted on the fuselage side retaining the ability to mount the four Sparrow missiles. Besides the fuel being carried, the Fast packs (which actually stands for Fuel And Sensor Tactical) can be equipped with cameras and IR sensors for reconnaisance, LLTV (Low Light Television), FLIR (Forward Looking Infra-red) and laser designators or Wild Weasel equipment.
It's amazing this bird still can fly.

(McDonnell Douglas)

At right is the AIM-9L Sidewinder missile in detail. The blue band aft of the fin indicates this is an inert missile, used for practice purposes only. The Sidewinder is an infra-red, heat seeking missile and is very effective in short-range air-to-air combat.
The AIM-9L(Lima) is the third in the generation of Sidewinders and is equipped with a more sensitive homing device and has a greater tracking stability.
Note the protective rubber cover.

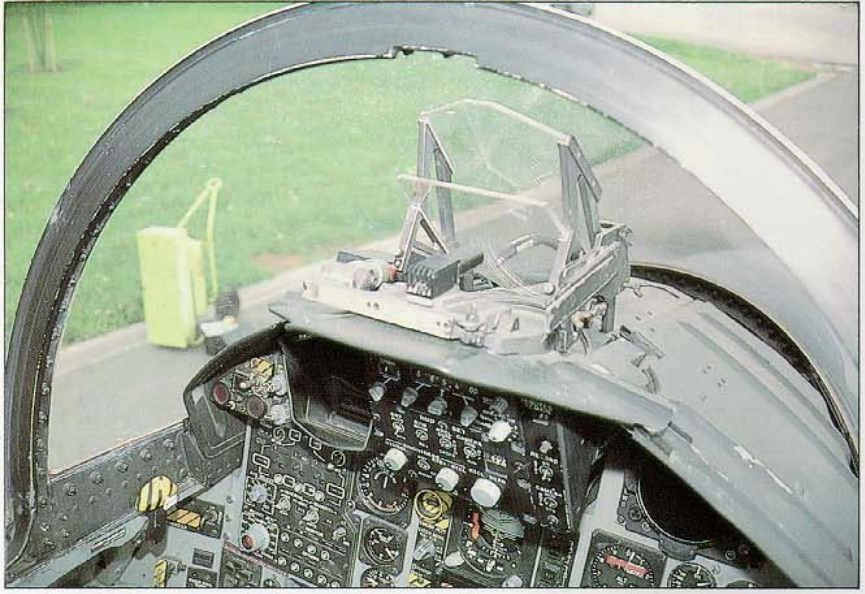
(Bottom)
Ground crew loading a Holloman Eagle prior to a mission.
Note the older type AIM-9J Sidewinder. This picture will be of special interest to the diorama building modelers.

(McDonnell Douglas)

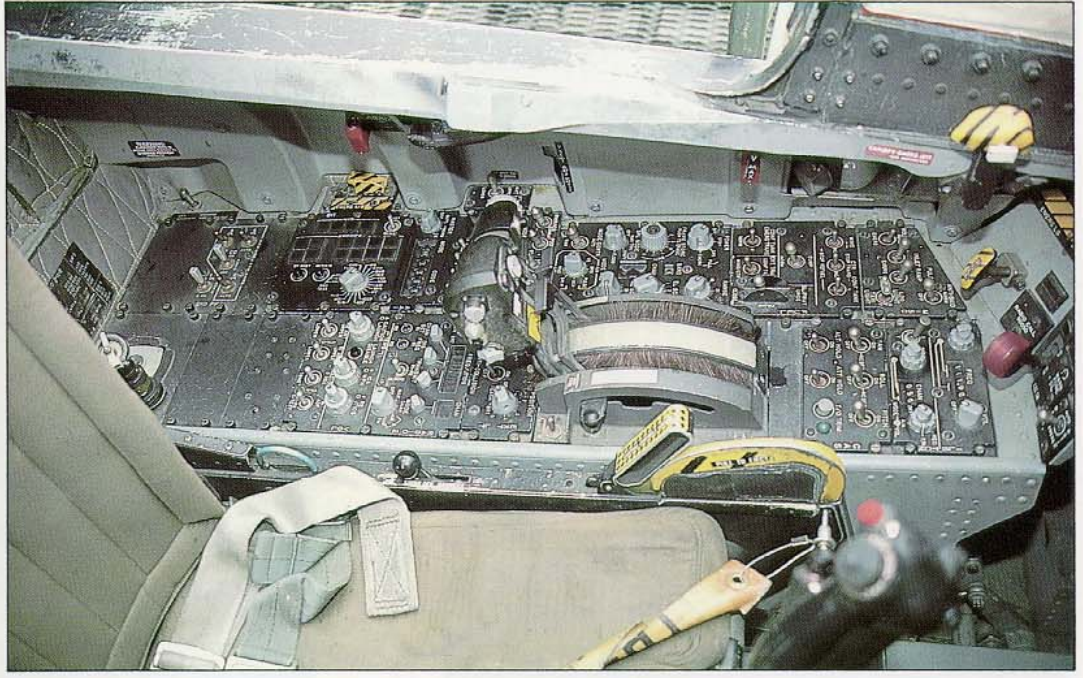
Cockpit F-15C

However good a fighter plane might be, however sophisticated it's avionics may be, it cannot function without that final piece of equipment: the pilot.
Someone who is able to operate it's systems, someone who can think almost as fast as the avionics aboard and someone who can sustain the high G-forces this jet is capable of pulling, especially during prolonged dogfighting maneuvers.
One may wonder how this combination of first class pilots and sophisticated computerized jets can ever be beaten. The F-15 fighter jock has at his disposal a number of systems, offensive as well as defensive, to engage several "bogey's" at once, deliver his ordnance with deadly accuracy and distract and confuse enemy attacks of any kind.
All control buttons and switches are located on the throttle quadrant and on the control stick.
All flight data is projected on the head up display (HUD) enabling the pilot to concentrate on the target and not on the flight instruments inside the cockpit.

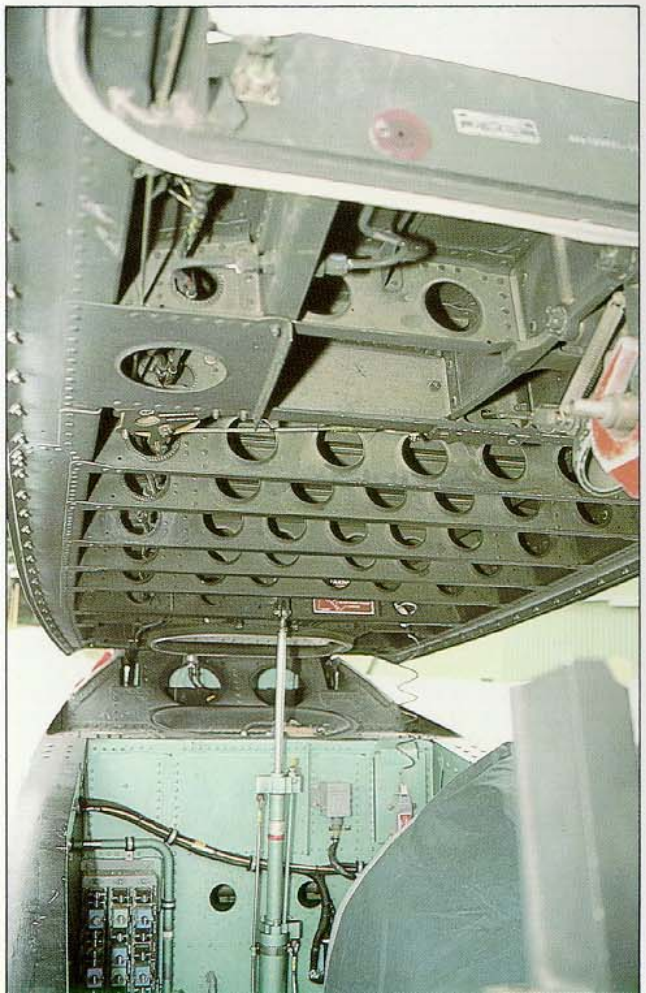
Some Bitburg fighter pilots debriefing upon arrival at Kleine Brogel AB/Belgium to attend another busy "Tiger Meet".
This annual meeting enables pilots of different NATO air forces to fly with and against each other in combat simulated situations over European countryside and in a typical European weather environment.

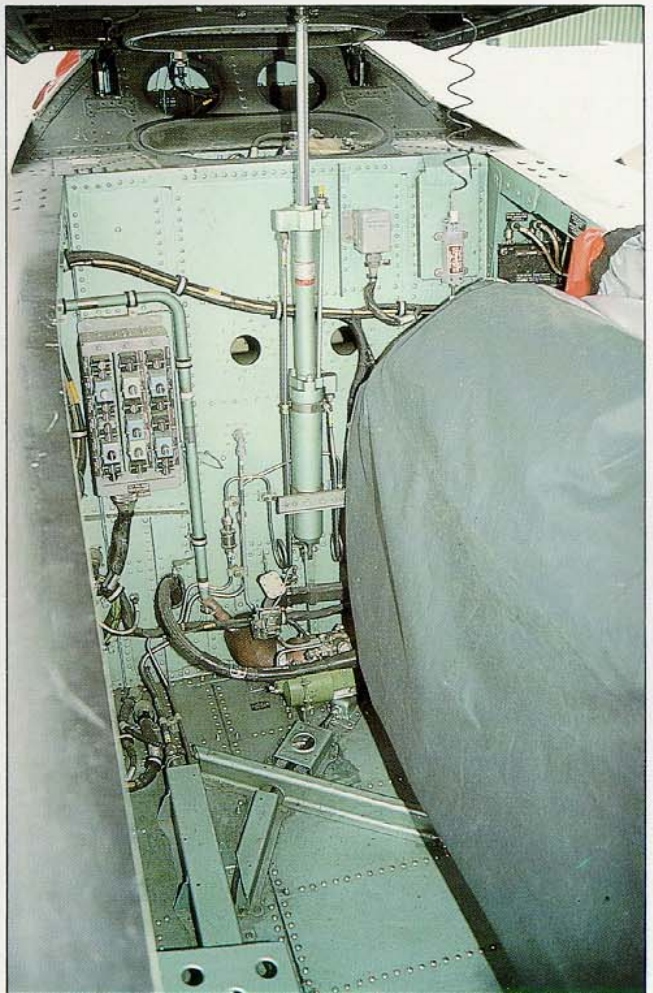


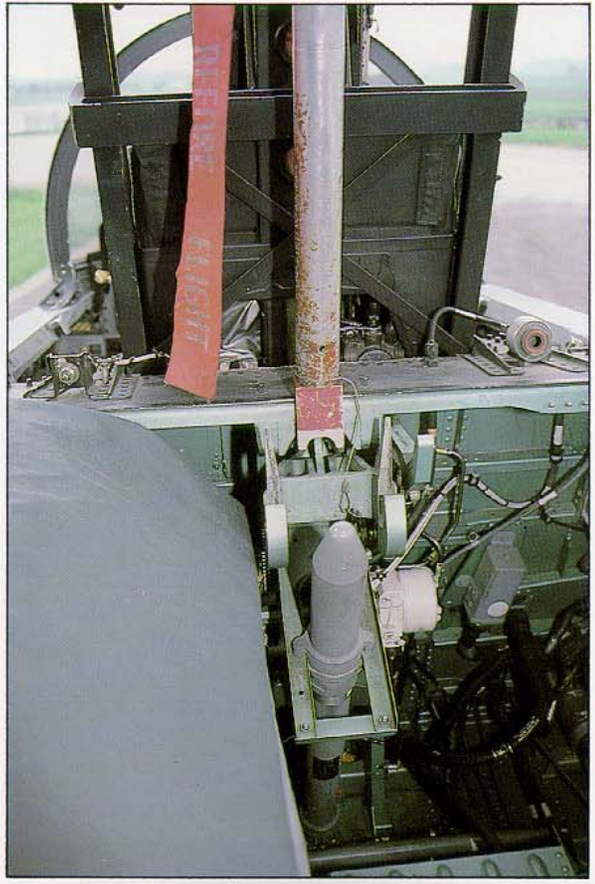
Wandering around the cockpit starting with another view on the head-up display.
The two bottom pictures give you a look behind the pilot's seat. Note the color inside of the electronics bay which is mainly empty. In future it will probably hold more electronics and avionics equipment. In the center can be seen the canopy raising and lowering mechanism.
The classified black boxes have been covered as a precautionary measure. This area is not pressurized unlike the rest of the cockpit.



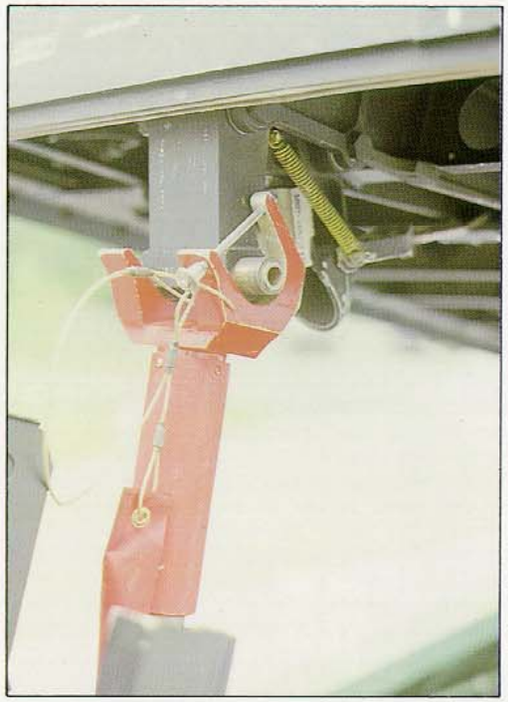
The left front cockpit console with the throttle quadrant in the center of the picture. The area to the left is shown in the bottom right picture. Note the red warning label and the green oxygen bottle attached to the seat.







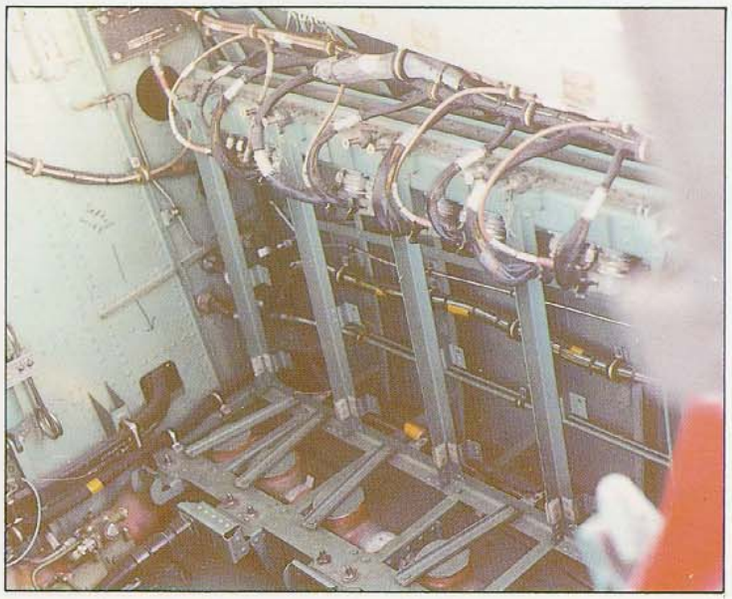
Detail shot of the cockpit electronics bay bulkhead looking forward. When the aircraft is on the ground a removable brace is holding the canopy in the open position.
The construction beneath the brace is the canopy locking mechanism.



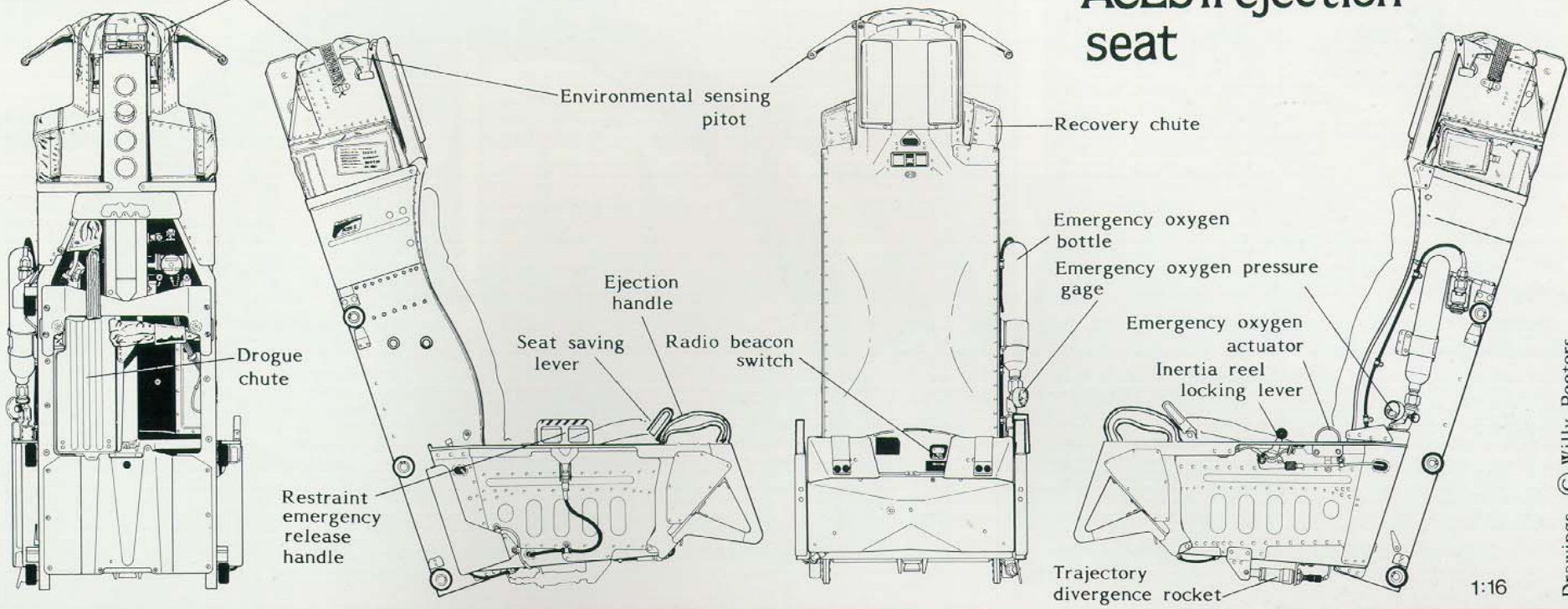
(Bottom left)
On the aft part of the right console, next to the seat is a stowage compartment, large enough to hold several maps and some personal belongings.

The picture below can again be of use to the modeler. It's the right side of the avionics bay, which was covered in the picture on the previous page. The black boxes are not installed here.
This bay holds most of the classified equipment. For one, it holds the Litton ASN-109 navigation system. This on-board system, largely automatic in operation can function without ground-based aiding devices.
However, this navigation system is backed-up by common Tacan, ADF and ILS systems to cope with any type of traffic pattern.

The main part of these boxes are associated with TAC electronic warfare (i.e. detecting radar and notify hostile threats), as well as with protective electronic counter measure systems.



ACES II ejection seat

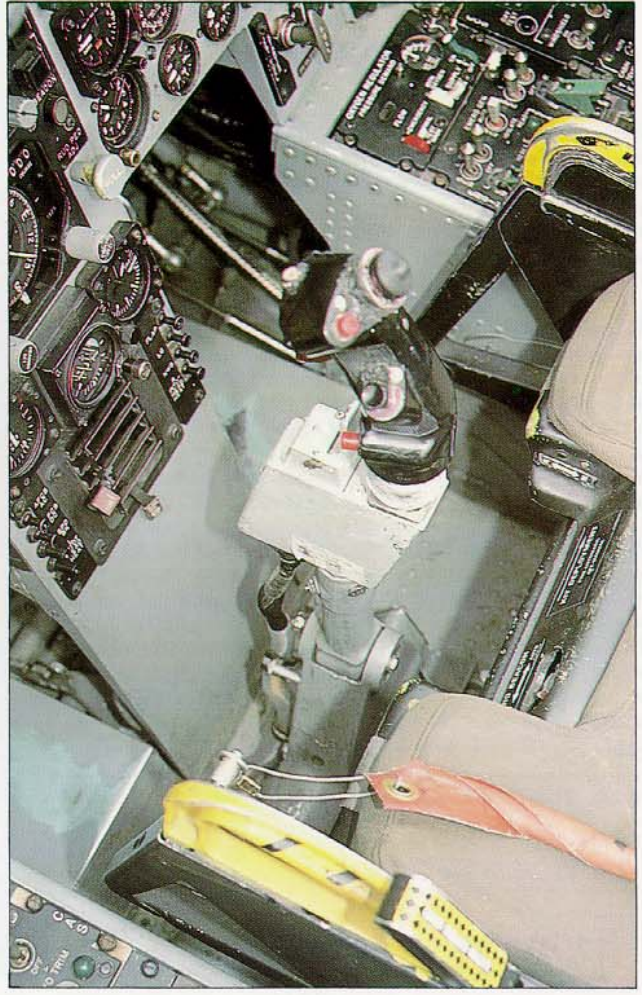


F-15 D front

(Top picture)
The HUD control panel is used to adjust all essential navigation and attack systems and to have this information visualized on the HUD glass.
Gun camera and video recorder switches are side-mounted.
The HUD, positioned where it can easily be spotted by the pilot, holds the instruments most frequently used such as UHF radio, Mode 3/A IFF and position identification.

(Right)
The front cockpit of the F-15D is generaly identical to that of the F-15C.
Cockpit layout was designed according to "HOTAS" rules. HOTAS stands for Hands On Throttle And Stick.
The main instrument panel is of the standard jet fighter design with the flight instruments in the center, the engine instruments on the right and the armament selector panel on the left side.
The left console, with the throttle quadrant as dominating feature, houses a radar control panel, the ILS/Tacan panel, a BIT(Built-in-test) control panel, an IFF panel and a communications panel.

The right console comprises engine control panel, navigation control panel, environmental control panel and interior lighting control panel.
Exterior lights switches can be found on the opposite console just aft of the throttle quadrant. Modelers should note the "chipped-off" paint on the lower canopy framing.



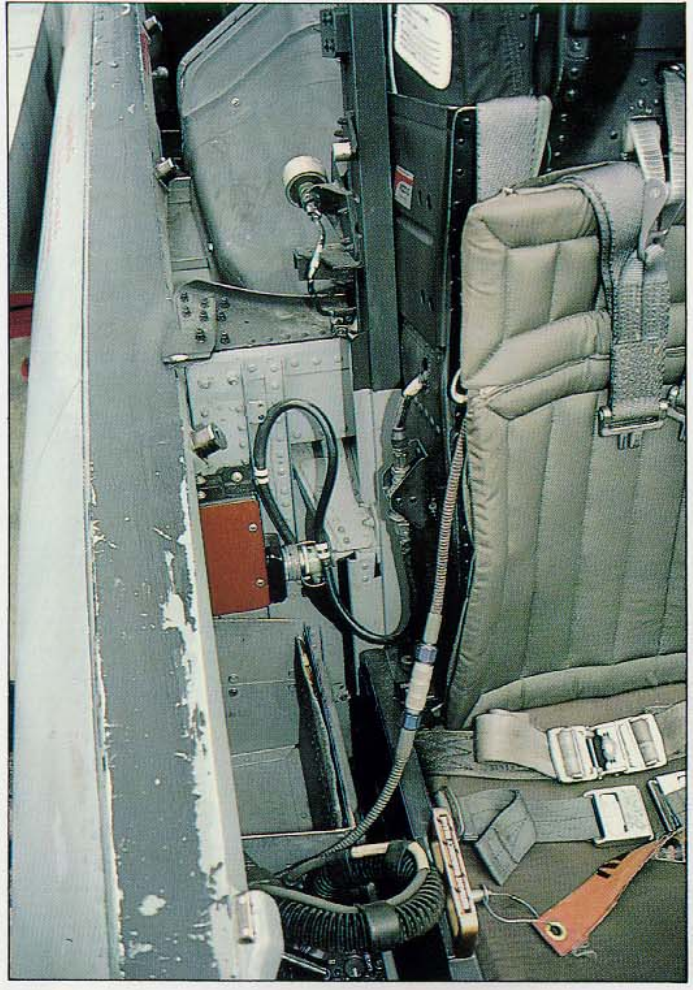
This page is devoted to the rest of the F-15D front seat area. The picture at right shows a close look at the stick assembly. Note that the small box from which the handgrip emerges is painted white. The pictures above were taken from the back seat with the hood closed. It clearly shows the framing of the large bulb canopy. Note the two handhold bars, the three back-view mirrors and the standby magnetic compass.
The two warning lights aside the left and right mirror are lock/shoot lights. The second indicator on the left is the air refueling ready light.
These pictures also give you a good idea of the unlimited view ahead of the aircraft.

The F-15D front seat side consoles which are, apart from the larger stowage box on the right, similar to the ones in the F-15C.

Very few pictures have shown this area in detail. Modelers will find these pictures of great interest, since this is the area where most of the kits, if not all, are wrong.
Note how much space there is between the ejection seat and the side canopy railing, another advantage the F-15 has over it's counterparts.

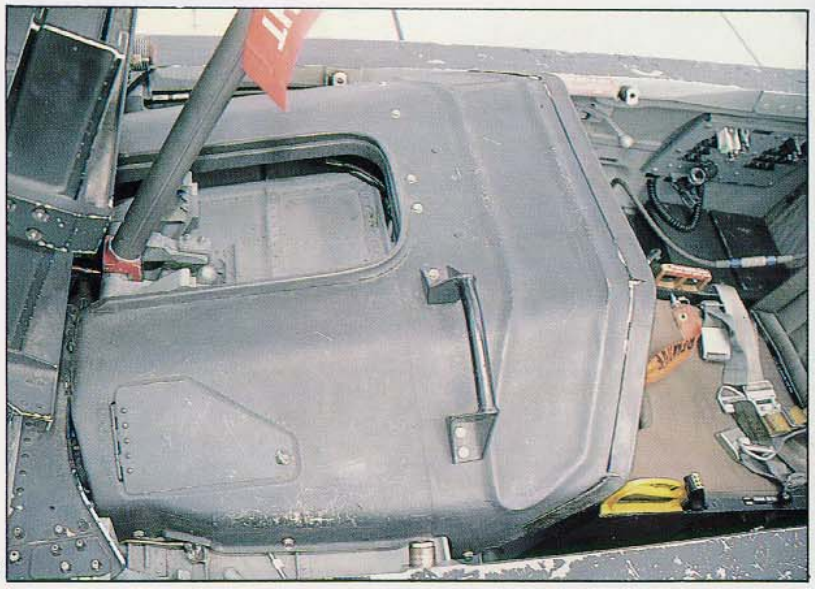
The advantage of a spacious cockpit will surely be appreciated during non-stop atlantic crossings when pilots have to spend more than 15 hours sitting on their "butt" to cover distances of over 7000 miles with no less than ten in-flight refuelings by a KC-10A Extender.
You still believe a pilot's job is the greatest one on earth?

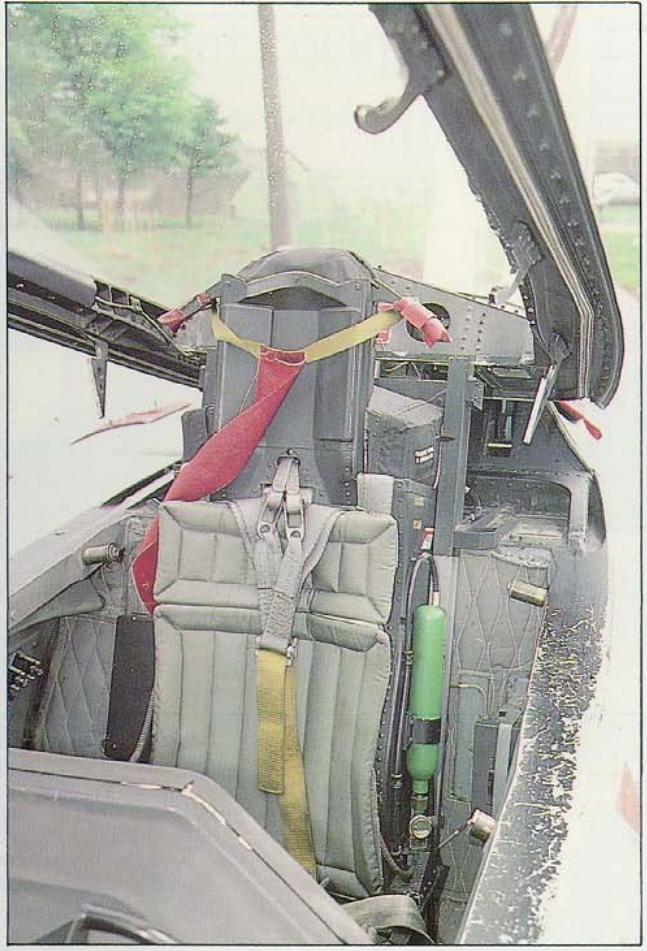
The aft main instrument panel of the F-15D has been kept as simple as possible. It only holds the necessary instruments to let the "back seater" know what is going on up front. In case of an emergency they will enable him (if he is an instructor) to safely land the plane. It should be said this is not encouraged for it takes an experienced pilot to do so, which is why "passengers" are told to leave the airplane as fast as possible.



F-15 D aft

The aft instrument panel cover.
The recessed part in the center was made to fit the canopy locking device which is located on the canopy's center spar of which a detailed picture can be found on one of the following pages.
As with the F-15C, a removable brace holds the hood in the "up" position.



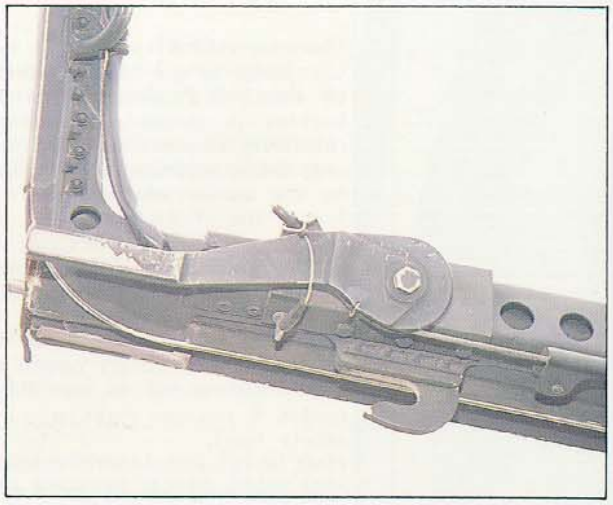


The rear ACESII seat.
Compared to the Martin Baker Mk7A ejection seat of the F-4 Phantom, the number of straps and buckles is limited. Strapping into the F-15 is relatively simple and it takes an experienced pilot only a few seconds to do so. This is highly esteemed by the airmen on Zulu alert duty.
Since the F-15 pilot is already wearing his parachute harness, the only thing left to do is snapping the survival kit buckles, parachute riser buckles and the final lap belt.

With the "Command selector valve handle", located on the right auxiliary panel, the "back-seater" can select either one of the three ejection sequence modes (bottom right picture, note the ground safety flag).
First there is the "Solo" mode. In this position the rear seat will not be fired when the eject handle is pulled.
"Aft initiate" will leave the instructor in the back seat in full control of the ejection of both pilots (i.e. in case of a birdstrike).
The third option which can be selected is "Normal". This leaves the aircraft commander in full control although in case of emergency the man in the back always is the first one to go out, eliminating the danger of him being burned by the front seat's rocket motor blast.

The F-15D's left console.
Eminent features are the throttle quadrant, the emergency landing gear handle and the arresting hook control handle on the auxilliary panel, the canopy jettison handle, a small instrument panel floodlight hidden in the sidewall. Further aft are the circuit breakers.

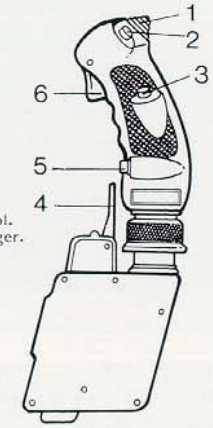
The F-15D's right console.
The canopy locking handle stands out very clear with the oxygen hose connection just underneath it. A cockpit utility light is attached to the aft circuit breaker panel. Console instrumentation is limited to an oxygen regulator panel, an ECS panel and the interior lighting panel.



The F-15D's canopy locking system in detail.
The left picture shows the handle to manually operate the locking system.
The middle left picture will give the modeler something to do because of the distinctive shape of the framing which is not accurately represented in the kits.
The right picture shows the canopy locking device as described on page 32, bottom left picture.
The two bottom pictures show both sides of the canopy's hydraulic opening actuator. Note the peculiar color which is a kind of metallic green.

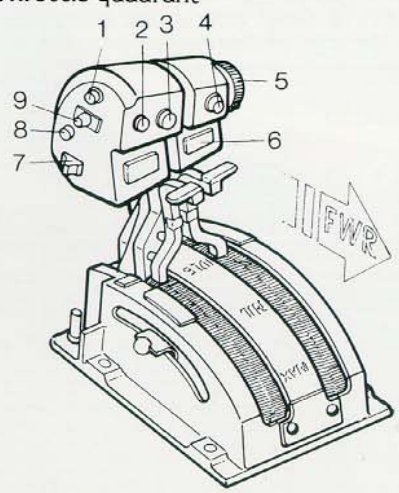
All pictures have shown the extensive use of "Remove Before Flight" warning flags. Wether you (being a modeler) like it or not, it's part of every F-15 being parked, even for a short period of time according to air force regulations. Remember this when building your dioramas.

Control stick



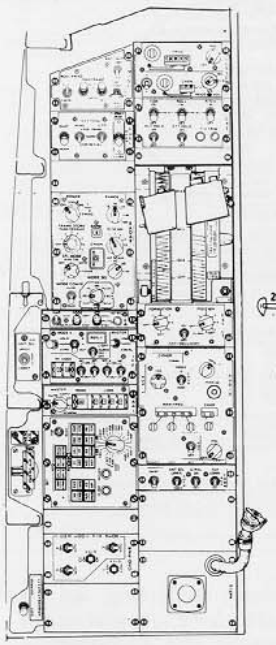
1. Trim button.
2. Weapon release button.
3. Radar auto-acquisition switch.
4. Autopilot-nose gear steering release switch.
5. SRM/EO weapon seeker head cage/uncage control.
6. HUD camera & gun trigger.

Throttle quadrant

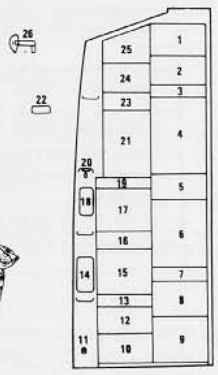


1. Microphone switch.
2. IFF interrogate button.
3. Target designate control.
4. Gunsight reticle stiffen/reject short-range missile.
5. Radar antenna elevation control.
6. ECM dispenser switch.
7. Weapon selector switch (gun, short-range missile or medium-range missile).
8. Spare.
9. Speed brake control.

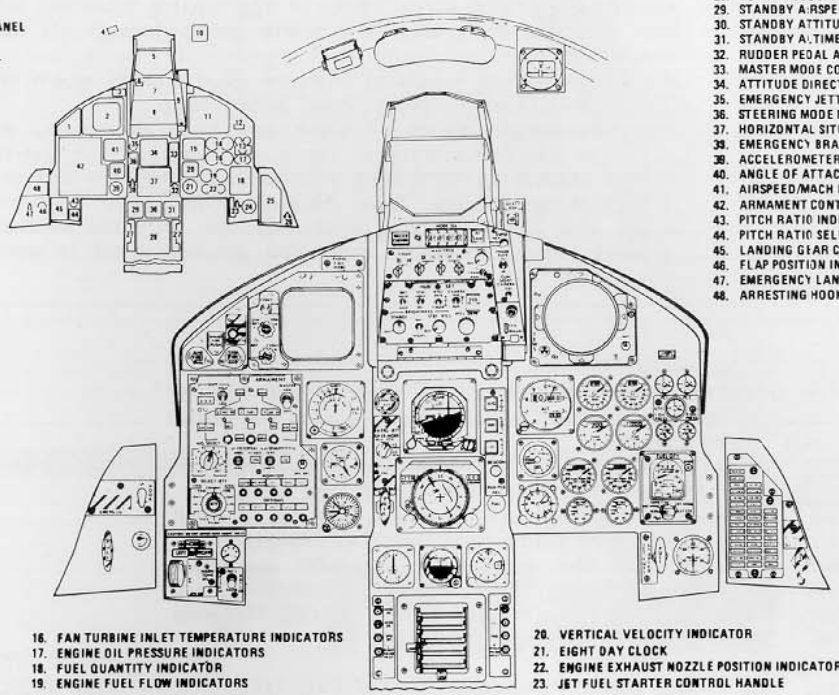
Front cockpit



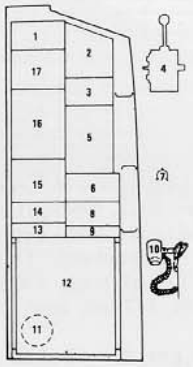
1. FIRE WARNING/EXTINGUISHING PANEL
2. VERTICAL SITUATION DISPLAY (VSD)
3. RADIO CALL PANEL
4. AIR REFUELING READY LIGHT
5. HEAD UP DISPLAY COMBINING GLASS
6. MASTER CAUTION LIGHT
7. MAIN COMMUNICATIONS CONTROL PANEL
8. HEAD UP DISPLAY CONTROL PANEL
9. GUN SIGHT CAMERA CONTROL PANEL
10. STANDBY MAGNETIC COMPASS
11. TEWS DISPLAY UNIT
12. CANOPY UNLOCKED WARNING LIGHT
13. HYDRAULIC PRESSURE INDICATORS
14. ENGINE TACHOMETERS
15. ALTIMETER

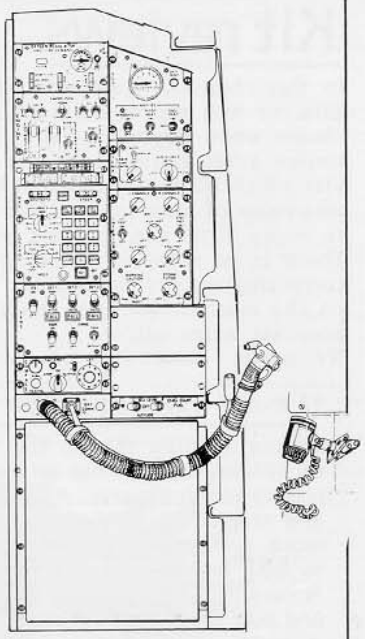


1. ILS/TACAN CONTROL PANEL
2. CONTROL AUGMENTATION SYSTEM CONTROL PANEL
3. BLANK
4. THROTTLE QUADRANT
5. EXTERIOR LIGHTS CONTROL PANEL
6. INTEGRATED COMMUNICATIONS
7. CONTROL PANEL
8. BLANK
9. ANTI-G PANEL
10. BLANK
11. ARMAMENT SAFETY OVERRIDE SWITCH
12. GROUND POWER PANEL
13. BLANK
14. EMERGENCY AIR REFUELING HANDLE
15. BIT PANEL
16. INTERROGATOR CONTROL PANEL
17. IFF CONTROL PANEL
18. IFF ANTENNA SELECT SWITCH
19. TEWS PANEL
20. SEAT ADJUST SWITCH
21. RADAR CONTROL PANEL
22. V_{MAX} SWITCH
23. BLANK
24. FUEL CONTROL PANEL
25. MISCELLANEOUS CONTROL PANEL
26. CANOPY JETTISON HANDLE



16. FAN TURBINE INLET TEMPERATURE INDICATORS
17. ENGINE OIL PRESSURE INDICATORS
18. FUEL QUANTITY INDICATOR
19. ENGINE FUEL FLOW INDICATORS
20. VERTICAL VELOCITY INDICATOR
21. EIGHT DAY CLOCK
22. ENGINE EXHAUST NOZZLE POSITION INDICATORS
23. JET FUEL STARTER CONTROL HANDLE
24. CABIN PRESSURE ALTIMETER
25. CAUTION LIGHTS PANEL
26. EMERGENCY VENT CONTROL HANDLE
27. CIRCUIT BREAKER PANELS
28. COCKPIT COOLING AND PRESSURIZATION OUTLET
29. STANDBY AIRSPEED INDICATOR
30. STANDBY ATTITUDE INDICATOR
31. STANDBY ALTIMETER
32. RUDDER PEDAL ADJUST RELEASE KNOB
33. MASTER MODE CONTROLS/MARKER BEACON PANEL
34. ATTITUDE DIRECTOR INDICATOR
35. EMERGENCY JETTISON SWITCH
36. STEERING MODE PANEL
37. HORIZONTAL SITUATION INDICATOR
38. EMERGENCY BRAKE/STEERING CONTROL HANDLE
39. ACCELEROMETER
40. ANGLE OF ATTACK INDICATOR
41. AIRSPEED/MACH INDICATOR
42. ARMAMENT CONTROL PANEL
43. PITCH RATIO INDICATOR
44. PITCH RATIO SELECT SWITCH
45. LANDING GEAR CONTROL HANDLE
46. FLAP POSITION INDICATOR
47. EMERGENCY LANDING GEAR HANDLE
48. ARRESTING HOOK CONTROL SWITCH

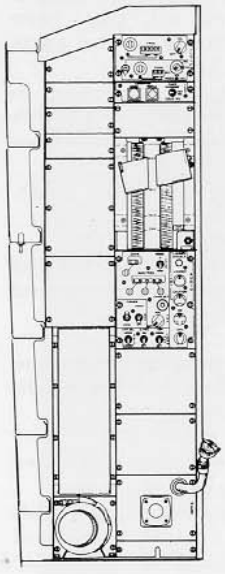


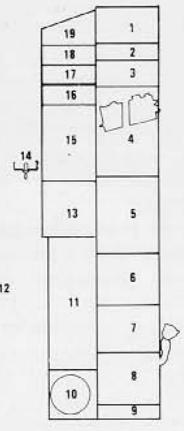


1. OXYGEN REGULATOR
2. ECS PANEL
3. TEMPERATURE PANEL
4. CANOPY CONTROL HANDLE
5. INTERIOR LIGHTS CONTROL PANEL
6. TEWS POD CONTROL PANEL
7. OXYGEN HOSE STOWAGE FITTING
8. BLANK
9. ENGINE START FUEL SWITCHES
10. UTILITY LIGHT
11. VACUUM BOTTLE
12. STOWAGE COMPARTMENT
13. OXYGEN/COMMUNICATION OUTLET PANEL
14. COMPASS CONTROL PANEL
15. TEWS POWER CONTROL PANEL
16. NAVIGATION CONTROL PANEL
17. ENGINE CONTROL PANEL

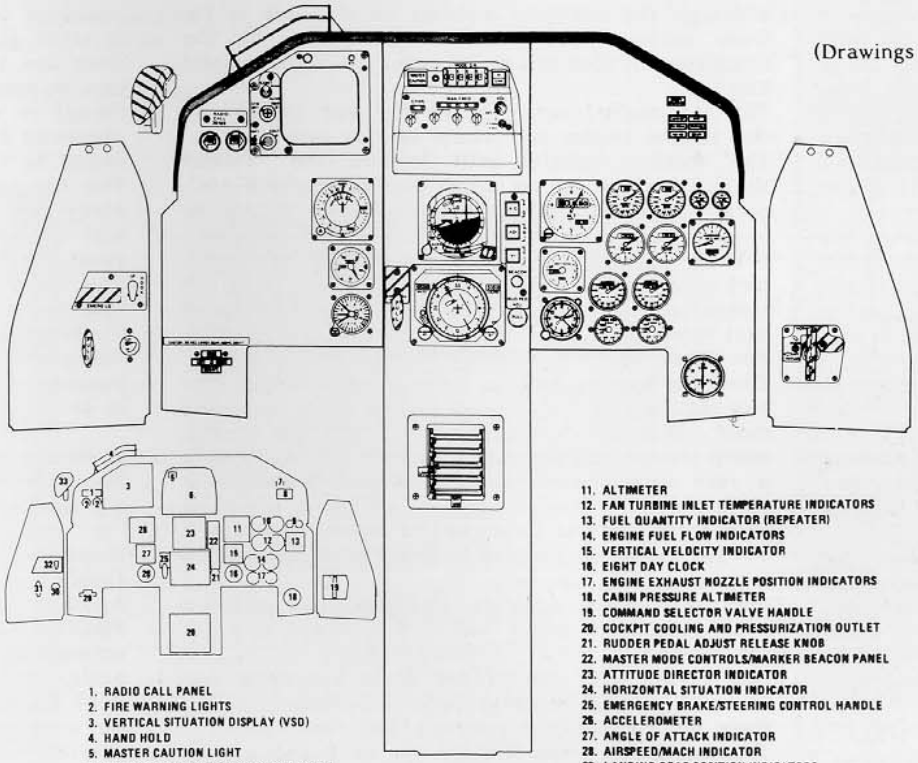
Rear cockpit

(Drawings courtesy USAF)

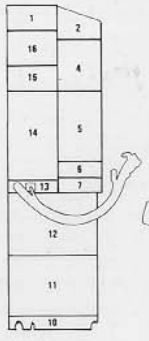


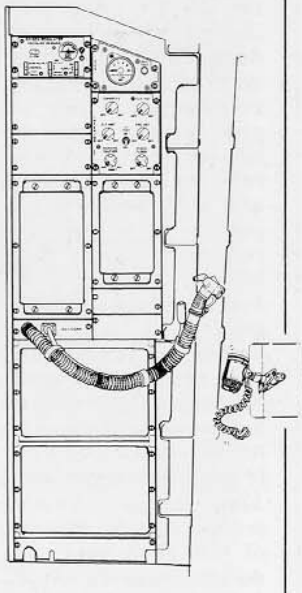


1. ILS/TACAN CONTROL PANEL
2. TAKE COMMAND/ICS CONTROL PANEL
3. BLANK PANEL
4. THROTTLE QUADRANT
5. INTEGRATED COMMUNICATIONS CONTROL PANEL
6. BLANK PANEL
7. BLANK PANEL
8. ANTI-G PANEL
9. BLANK PANEL
10. VACUUM BOTTLE
11. STOWAGE COMPARTMENT
12. CIRCUIT BREAKER PANEL
13. BLANK PANEL
14. SEAT ADJUST SWITCH
15. BLANK PANEL
16. BLANK PANEL
17. BLANK PANEL
18. BLANK PANEL
19. BLANK PANEL



1. RADIO CALL PANEL
2. FIRE WARNING LIGHTS
3. VERTICAL SITUATION DISPLAY (VSD)
4. HAND HOLD
5. MASTER CAUTION LIGHT
6. MAIN COMMUNICATIONS CONTROL PANEL
7. CANOPY UNLOCKED WARNING LIGHT
8. CAUTION LIGHTS PANEL
9. ENGINE OIL PRESSURE INDICATORS
10. ENGINE TACHOMETERS
11. ALTIMETER
12. FAN TURBINE INLET TEMPERATURE INDICATORS
13. FUEL QUANTITY INDICATOR (REPEATER)
14. ENGINE FUEL FLOW INDICATORS
15. VERTICAL VELOCITY INDICATOR
16. EIGHT DAY CLOCK
17. ENGINE EXHAUST NOZZLE POSITION INDICATORS
18. CABIN PRESSURE ALTIMETER
19. COMMAND SELECTOR VALVE HANDLE
20. COCKPIT COOLING AND PRESSURIZATION OUTLET
21. RUDDER PEDAL ADJUST RELEASE KNOB
22. MASTER MODE CONTROLS/MARKER BEACON PANEL
23. ATTITUDE DIRECTOR INDICATOR
24. HORIZONTAL SITUATION INDICATOR
25. EMERGENCY BRAKE/STEERING CONTROL HANDLE
26. ACCELEROMETER
27. ANGLE OF ATTACK INDICATOR
28. AIRSPEED/MACH INDICATOR
29. LANDING GEAR POSITION INDICATORS
30. FLAP POSITION INDICATORS
31. EMERGENCY LANDING GEAR HANDLE
32. ARRESTING HOOK CONTROL SWITCH
33. CANOPY JETTISON HANDLE





1. OXYGEN REGULATOR
2. ECS PANEL
3. CANOPY CONTROL HANDLE
4. INTERIOR LIGHTS CONTROL PANEL
5. BLANK PANEL
6. BLANK PANEL
7. BLANK PANEL
8. OXYGEN HOSE STOWAGE FITTING
9. UTILITY LIGHT
10. BLANK PANEL
11. BLANK PANEL
12. BLANK PANEL
13. OXYGEN/COMMUNICATION OUTLET PANEL
14. BLANK PANEL
15. BLANK PANEL
16. BLANK PANEL

Kit reviews

In this chapter, which can not be omitted in a book like this, we will try to help the modeler in making a sensible choice when buying a kit.
Unlike other publications, our policy is to review only those kits which we feel are worth buying. You may disagree with this point of view but we feel modeling should be something to enjoy from the moment you open the box.
There is no sense in spending weeks of filling, sanding and correcting a poor quality kit when there are top-class kits on the market. We even doubt you are going to finish that poor kit after all.
We agree those kits are somewhat more expensive but imagine how much a few weeks of aggravating modeling will cost you. We don't feel it is worth going through all that trouble.
We have selected 4 kits of extreme good quality which are readily available in every good hobby shop.
Not surprisingly three of them are from Hasegawa, the Japanese kit manufacturer. Their name stands for quality with a capital Q, something you can tell from the box art. Breathtaking artwork from Shigeo KOIKE, the Japanese artist who keeps amazing every modeler with his amazing artwork, including yours truly. The artwork itself is worth buying the kit for.

1/ F-15C Eagle /Hasegawa kit N° K25 1/72

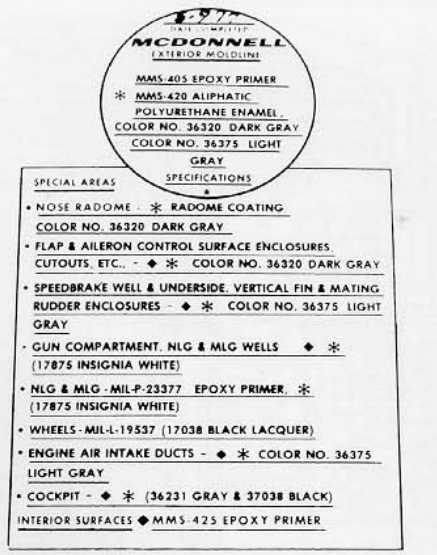
To our opinion this is the best kit of the F-15C on 1/72nd scale. It has no less than 100 well-tooled, crisply-molded parts. All panel lines are engraved and almost all of them are correctly situated. The more demanding modeler can use the scale plans to add the rest of the panel lines.
According to these scale drawings the overall shape and size of the kit is nearly perfect. Cockpit detail is outstanding for a 1/72nd kit and even the ejection seat looks nice, be it incorrect. This can be replaced by the nice AcesII seat from Verlinden Productions, available in both 1/72nd and 1/48th scale.
An attempt has been made to get the correct shape of the cockpit hood and Hasegawa has succeeded for it looks perfect. All parts are nicely detailed in a way one would expect from a 1/72nd scale kit these days. Each tailpipe consists of five different segments and fifteen actuating rods. The landing gear is very nice but adding a few cables will make it look even better. The wheels have the correct shape and size.
Since two frames marked D are included, you will end up with four complete fuel tanks, too many for one F-15 but your spare box will benefit from it.
As far as constructing is concerned, problems may occur when joining the nose section to the fuselage to make sure they align perfectly. Fit before you glue is once again the golden rule.
No armament is included, but the kit instructions refer to Hasegawa's own range of weapon sets which are sold seperately and which you should have purchased in the past. If not, we can highly recommend them. No pilot figure is included in this kit.
The decal sheet, immaculately printed and of good quality, will enable you to represent your model in the following markings:
57th FIS USAF /Iceland; 18th TFW PACAF / Kadena AB Japan; 32nd TFS USAFE /Camp New Amsterdam Soesterberg Holland or 36th TFW USAFE Bitburg AB /Germany.
It must be said the color of the tail band of the 32nd TFS F-15 is incorrect for it is known to be orange instead of nearly red. The only shortcoming of this decal sheet. Instructions for applying these decals are very clear.
A first-class kit which will please many modelers.

2/ F-15D/DJ Eagle /Hasegawa kit N°K26 1/72.

A different box art by a different artist but generaly the same kit except for frame E which is replaced by the dual cockpit outfit with the larger canopy which is also correct in overall appearance.
What has been said in the previous review applies to this kit as well. Extensive markings on the decal sheet include:
201st Sqn 2nd AW, 202nd Sqn 5th AW, 203rd Sqn 2nd AW and 303rd Sqn 6th AW of the JASDF.
Two more markings are included. One for a 32nd TFS USAFE from Camp New Amsterdam/Soesterberg Holland with the special "Wolfhounds" markings, this time with the correct orange tailband, and for an F-15D of 12th TFS 18th TFW PACAF Kadena AB /Japan.

3/ F-15C Eagle /Hasegawa Kit N° P10 1/48

Unlike what most modelers think, this is not a blow-up from the previously released 1/72nd scale kit.
Tooling is much crisper and panel lines (engraved) are slightly different. Cockpit detail is somewhat more extensive and a pilot figure is included although the injection molding on this one is far from perfect, but it's nice compared to the Frankenstein look-alikes included in some model kits.
The air intake ducts run all the way through to the engine intake fan which is also provided.
The exhaust nozzles still feature the "Turkey feathers" which are no longer carried on the F-15C. Scratchbuilding these correctly will be a hell of a job. Hasegawa has released a special high-tech F-15 on 1/48th scale with the correct jet pipes, including photo-etched parts. We found this kit somewhat too expensive for just a few extras and that is why it has not been included in this chapter. For those who are willing to pay...
The clear canopy has the correct bulby shape. This was obtained by molding the canopy in a two-split mold . This leaves a tiny seam across the canopy which should be removed. Carefully cut it off with a very sharp knife (do not scrape), holding the scalpel in a horizontal position. Extensive polishing with toothpaste will remove the seam completely. To get the shiny appearance back, polish it with a good quality car wax.
For the diorama builders, Hasegawa has included a side-mounted ladder which is accurate and not too oversized.
In contrast with the 1/72nd scale kits, this one features some weaponry: pylons, Sidewinders and their launching rails, Sparrows and fuel tanks.
The markings in this kit are for an F-15C of the 1st TFW Langley AFB /USA (commanders aircraft AF800037 with the special "Eagle" markings on the inner tail as it appears on the box art), and for the commanders aircraft of the 313th Air Division PACAF /Kadena AB Japan.
Full painting instructions for the airframe as well as for the weaponry are included.
A beautiful kit which you will enjoy building.



Color specification stenciling as it appears on the aft chine on starboard side, just in front of the tailplane.

4/ F-15A/C Eagle /Revell kit N°4759 1/32

The reason why we mention this kit is not it's superb quality but the fact that it's the only one available on 1/32nd scale so far.
It is of good quality although the engraved panel lines are too wide and too deep. Correcting this can be done but it will take some time and effort.
Detail is very good for a Revell kit, they have improved over the years. Good fitting of the parts seems to vary from one kit to another.
The kit can use some detailing and updating in every part to make it into an accurate F-15C. This will definitly involve some scratchbuilding from your side.
This Lock On will prove to be a useful guide.
Sparrows and Sidewinders are included.
Markings are for an F-15 of the 318th FIS.
Being an impressive model because of it's size and because it's not too expensive we can recommend it to all modelers.

It should be noted that none of these kit have the fast packs included, they can be found in the F-15E kit available from the same manufacturers.

Remember, modeling shouldn't stop once you have finished that smashing little replica.
Another Verlinden & Stok nv division, VERLINDEN PRODUCTIONS, is producing a great deal of accessories for the aircraft modeler on a regular basis, including some special sets to update the F-15 Eagle.
We suggest you ask your local hobby shop for a catalog.
It may be your first step to discover a whole new world of modeling.

Happy modeling!