# The Dassault Mirage III
# in South African Air Force service




# PART 6

## SAAF Mirage III BZ and CZ detail photos

This E-book was compiled by Malcolm Reid
malcolmreid1136@gmail.com
Pretoria May 2022

In the compilation of this document, data has been obtained from various Internet sources and contributors. This data has been cross-referenced where needed to ensure, as much as possible, the consistency and correctness of that data. There have been many contributors to various Internet forums relating to the SAAF Mirage III, and in particular, the Unofficial SAAF Website (saairforce.co.za). Without the efforts by fellow enthusiasts, pilots and crews in providing this written and photographic documentation of the history of the Mirage III in SAAF service, this narrative would not have been possible. Many of the images sourced via Internet searches have been used without the specific permission from the originators as, in many cases, these are unknown. Others have been included with the originators' details retained and unedited as sourced from the Internet. The images have been included in this document on a "fair use" basis for the purposes of historical research and the recording thereof. This document is offered publicly as a free E-book and in no way does it provide a source of income for the author or any other party.

As noted in Part 1, the quality of images in many instances is low due to the electronic file size, some less than 50kB. These images have been retained as sourced from the Internet and have not been subject to any adjustments (hue, saturation etc.) and have not been sharpened.

# Part 6 - SAAF Mirage III BZ and CZ detail photos

1 MIRAGE IIICZ #813 – COCKPIT AND EJECTION SEAT DETAILS 4

2 MIRAGE IIICZ #813 – TYPICAL NATO AIRFRAME SERVICING STENCILING 13

3 MIRAGE IIICZ #813 – UNDERCARRIAGE AND AIRFRAME DETAILS 17

4 MIRAGE IIICZ #805 – UNDERCARRIAGE DETAILS 21

5 MIRAGE IIIBZ #816 – WALK AROUND 24

6 MIRAGE IIIBZ #818 – EJECTION SEAT DETAILS 31

7 MIRAGE IIIDZ – EJECTION SEAT DETAILS 33

8 MIRAGE IIIBZ #818 – WALK AROUND 34

9 MIRAGE IIIBZ #818 – UNDERCARRIAGE DETAILS 42

10 ATAR 09B ENGINE 45

11 MIRAGE IIIEZ COCKPIT 50

12 REFERENCES 51

# 1 Mirage IIICZ #813 – Cockpit and ejection seat details

The following pages present cockpit details of Mirage IIICZ #813 at the Johannesburg Museum of Military History. This aircraft is kept under cover and is thus well preserved.



This is the instrument panel with the flight control cluster (main flight control instruments) to the left and the navigation and engine indictors to the right. The engine instruments are contained within the yellow surrounded area. The center panel with 5 orange lights is the weapons control panel. Above this is the HUD with gun sight camera. The radar display is the large round instrument in front of the control column. The layout of the SAAF Mirage III instrument panels would differ between versions and were different to Mirage IIICs used by other countries.

The control column contains the following buttons : the large square grey button is the roll and pitch trim switch. To the right of this is the missile / bomb button. The button with blue surround at the top is the radio transmit button. The lower button with blue surround button is the roll stab button. The trigger button is not visible as its located at the upper front of the control column.

The silver cylindrical object to the bottom left is the throttle leaver. On the right hand side are a number of red warning lights with the dual hydraulic gauge to the right. At lower right is the radio / communications control panel.



Upper instrument panel showing the heads up display (HUD) assembly. The large square shape covers the gun camera. The bracket mounted to the top left of the canopy frame would have contained the analogue clock; the round dial to the right is the standby compass.



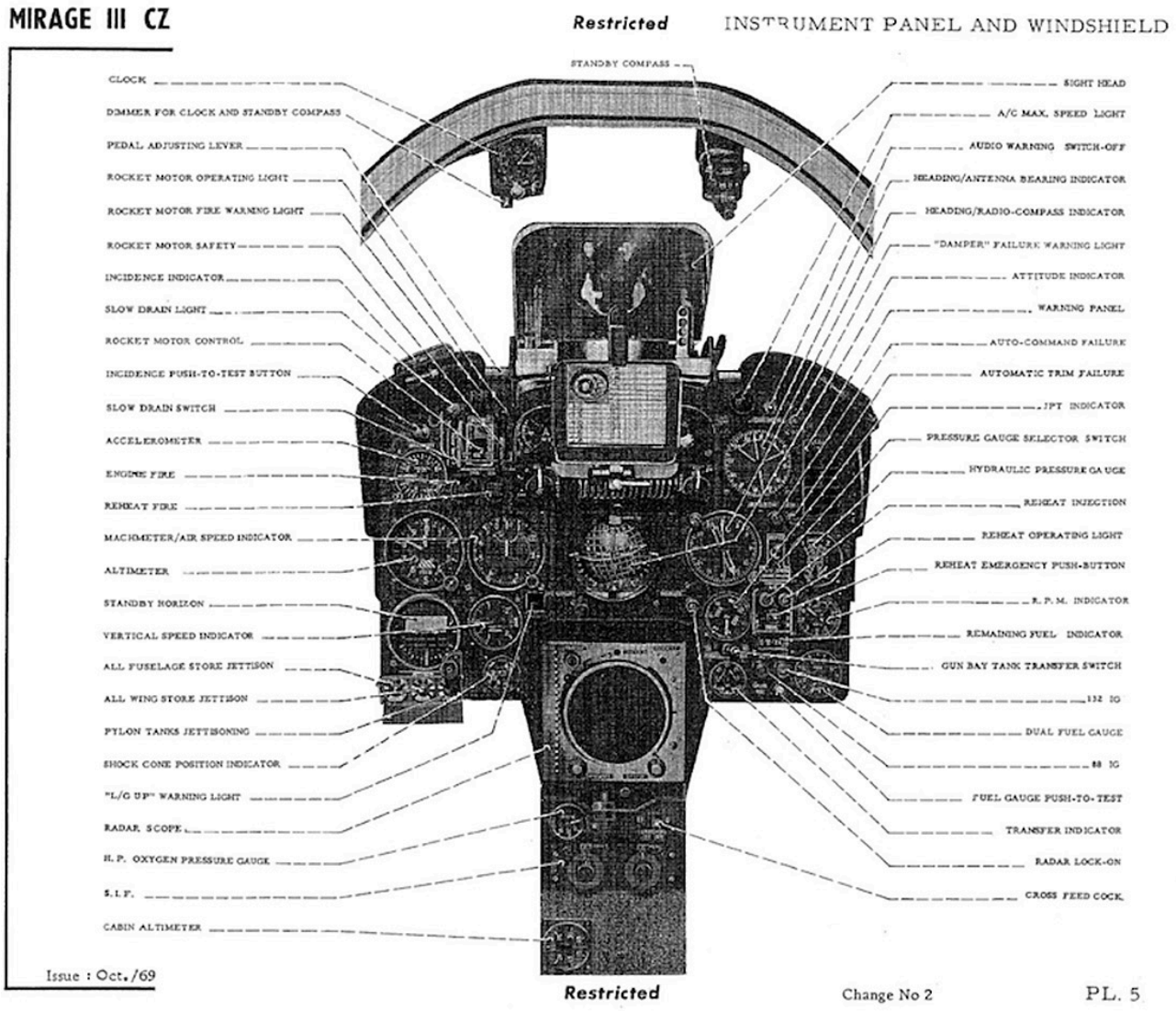
The yellow surrounded area is the engine instrument panel. This contains (left to right, top to bottom) EGT T4 (turbine outlet temperature), engine RPM, fuel transfer indicator cluster with 6 orange lamps), fuel quantity gauge and various warning lights. The yellow striped handle to the bottom right is the park brake.



Flight control instrument cluster on the left side of the instrument panel – this includes (top to bottom, left to right): G-meter (accelerometer), "Bezu Ball" Attitude Indicator, Altimeter, Airspeed indicator / Mach meter, Vertical speed indicator and standby artificial horizon.
The blanked off instrument at top right is most probably for the standby altimeter.



Instrument cluster on right side of the instrument panel: at top right is the intake shock cone position indicator; to the left and beneath this are a square and a rectangular blanking plate – this is likely where the Compact Radar Warning System (CRWS) indicator and warning panel would have been located (as it was, CZ #813 was not equipped with CRWS but the panels may have been standardized in layout); the two large instruments beneath these are associated with the navigation system : Possibly Tacan bearing and distance indicator (open hole) and heading bearing indicator; the yellow surrounded panel contains the engine instruments.




A schematic from the SAAF CZ Flight Manual, dated October 1969. Compare this to the photos of the updated instrument panel on the previous pages. The Mirage IIIs in SAAF service had a number of updates to the instrument panels, and this would vary depending on which version of Mirage III.



The three yellow vertical stripes on the top of the control column and on the left and right cockpit walls are the spin recovery marks. When these three sets of marks are in line, the neutral pitch position for spin recovery has been achieved.



The round dial to the right of the 12 red indicators is the dual hydraulic pressure gauge. The large round object to the upper left is the radar display. The four red switches bottom right are the selector switches for, from left to right, missiles, rockets, guns and bombs. Beneath these is a round dial for weapons mode selection and beneath that a weapons control panel (target altitude etc.).




The rectangular panel with diagonal yellow stripes is the cover over the three fuselage/wing tank jettison buttons. The yellow striped oval handle to the left is the emergency undercarriage release handle. The round dial beneath that is the undercarriage position indicator. The flat red object is the undercarriage actuation lever. The round yellow button at the top is the fuel dump activation button. The other two yellow buttons are the yaw and pitch damper plunger buttons. The orange lamp is to indicate air brakes deployed.




Brake chute actuation handle on the left side of the cockpit.
The handle at the bottom right with diagonal yellow lines is the canopy jettison lever.



Left side of cockpit. The silver cylindrical object is the throttle lever. The lever aft of this is the radar control stick. The two open rectangular holes would house the primary and secondary UHF radio control units.



Right hand console which includes from left to right : fuse panel, and other aircraft systems control panels. The black cylindrical object at the bottom of the image is the cockpit light. The weathered handle with the curved slider at bottom right is the canopy open / close lever.










The weapons release selector panel. The switch at the left is the bomb intervalometer, in the middle is the fire control selector for the JL-100 rocket pod and on the right is the gun round selector (author's assumption).

The Mirage IIICZ was equipped with the Martin Baker MB.Mk. 4 ejection seat designated as ZM-4 or ZRM-4 (possibly to denote SAAF specific configuration). The original seats had a single face screen ejection handle whereas the seat installed in CZ #813 has the dual face screen handles (as seen below) possibly indicating a later model of the seat.



















# 2 Mirage IIICZ #813 – Typical NATO airframe servicing stenciling

The following images show a selection of typical NATO standard aircraft servicing stenciling which can be found on SAAF Mirage IIIs. These may have been painted over or significantly toned down on the later low visibility colour schemes used by the CZ and RZs.





























Maj
GEVAAR
UITSKIET
STOEL
DANGER
DANGER
EJECTION SEAT


2


NATO
F-35
BJSD
AVTUR/50
NATO
H-515
BJSD
OM-15


E
E


OM
VLIEENTIED
LOS TE LAAT
BREEK GLAS
EN TREK
HANDVATSEL
REDDING
RESCUE
TO FREE
PILOT
BREAK GLASS
AND PULL
HANDLE









# 3 Mirage IIICZ #813 – Undercarriage and airframe details










Nose gear details for CZ #813.

Main gear details for CZ #813.



Left main landing gear leg.



Right main landing gear leg.



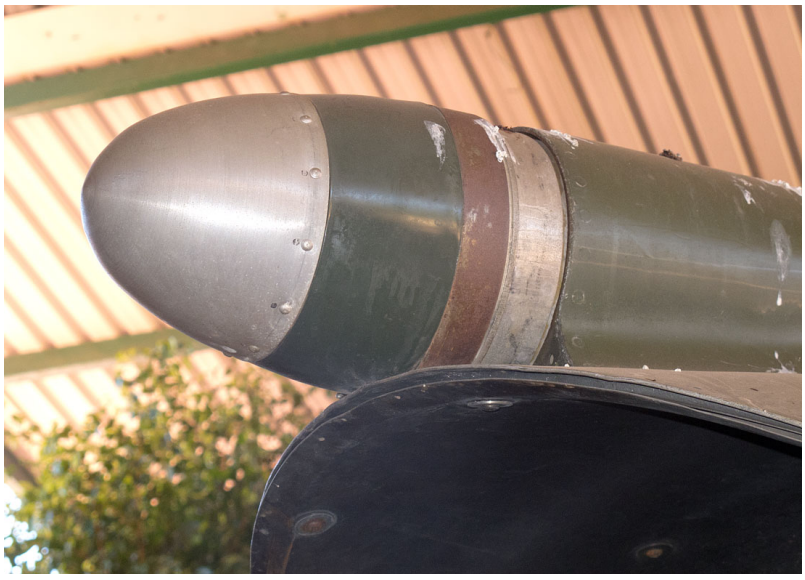
Left main landing gear leg looking forward. Silver rod is retraction piston



Right main landing gear leg looking aft.



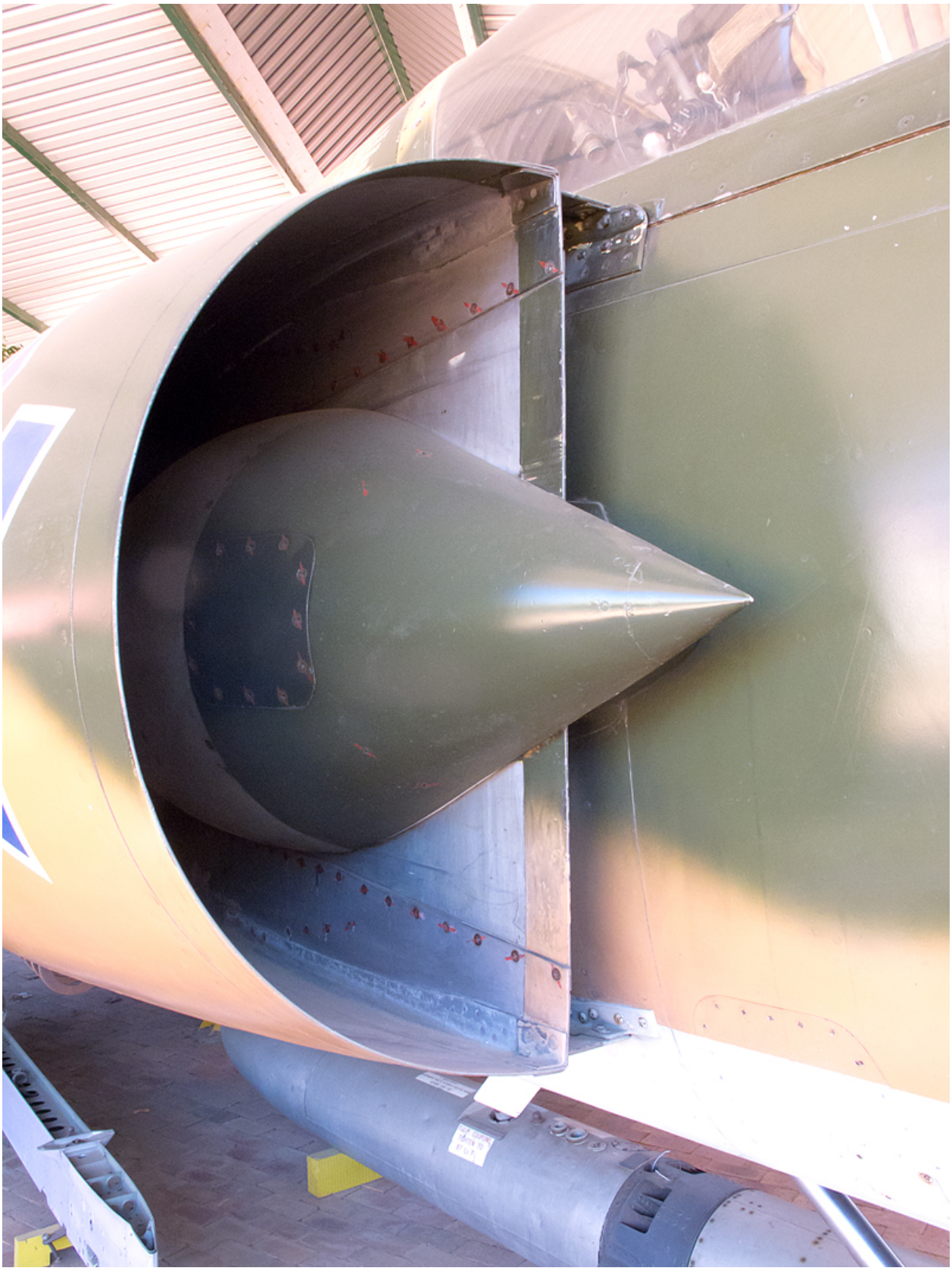

Nose gear covers comprise 3 separate doors. The two above and the lateral opening main door. “13” is typical as to the application of the last two digits of the aircraft number on the nose gear door. All SAAF Mirages were in the “800” series.



Drag chute cover. On some aircraft, the green portion would be a metallic blue. These covers were reused and some were rather badly dented.



This is the auxiliary engine air door on the starboard intake. This would be opened to allow additional air to the engine at low speeds



Starboard intake of CZ #813 clearly showing the application of camouflage wrapping around to the inner edge of the intake duct. Note how far this extends on the movable inlet bullet fairing. The French called these “Mice”. Note the upper and lower plate-like reinforcing straps between the leading edges of the intakes and the fuselage.

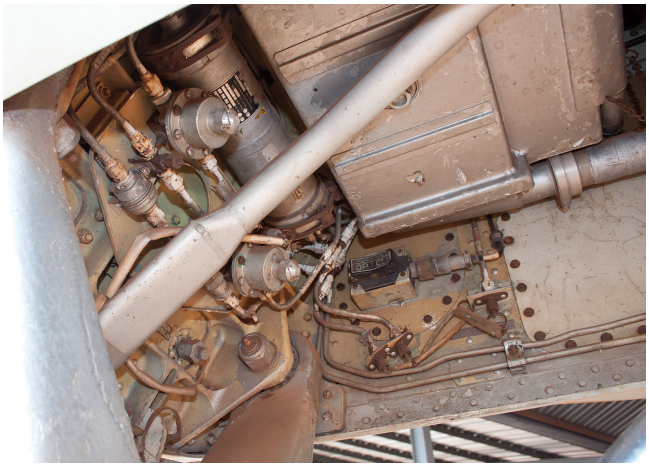
# 4 Mirage IIICZ #805 – Undercarriage details





Nose undercarriage leg and nose bay details for CZ #805.

The image below is looking up at the forward part of the nose gear bay.
The image to the right is looking to the rear of the nose gear bay.









Left hand main landing gear leg detail. The diagonal stabilizing arm configuration is different to that used on the DZ, D2Z, EZ, RZ and R2Z.









Details of CZ wheel brake assemblies and hydraulic hoses. BZ was similar.




Retraction piston on the left main undercarriage leg.

# 5 Mirage IIIBZ #816 – Walk around







MIRAGE III BZ
Nº 816
816


Mirage III BZ








DANGER
EJECTION
SEAT
GEVAAR
GEVAAR
EJECTION SEAT


GEVAAR
UITSKIET
STOEL
DANGER
DANGER




Mirage III BZ



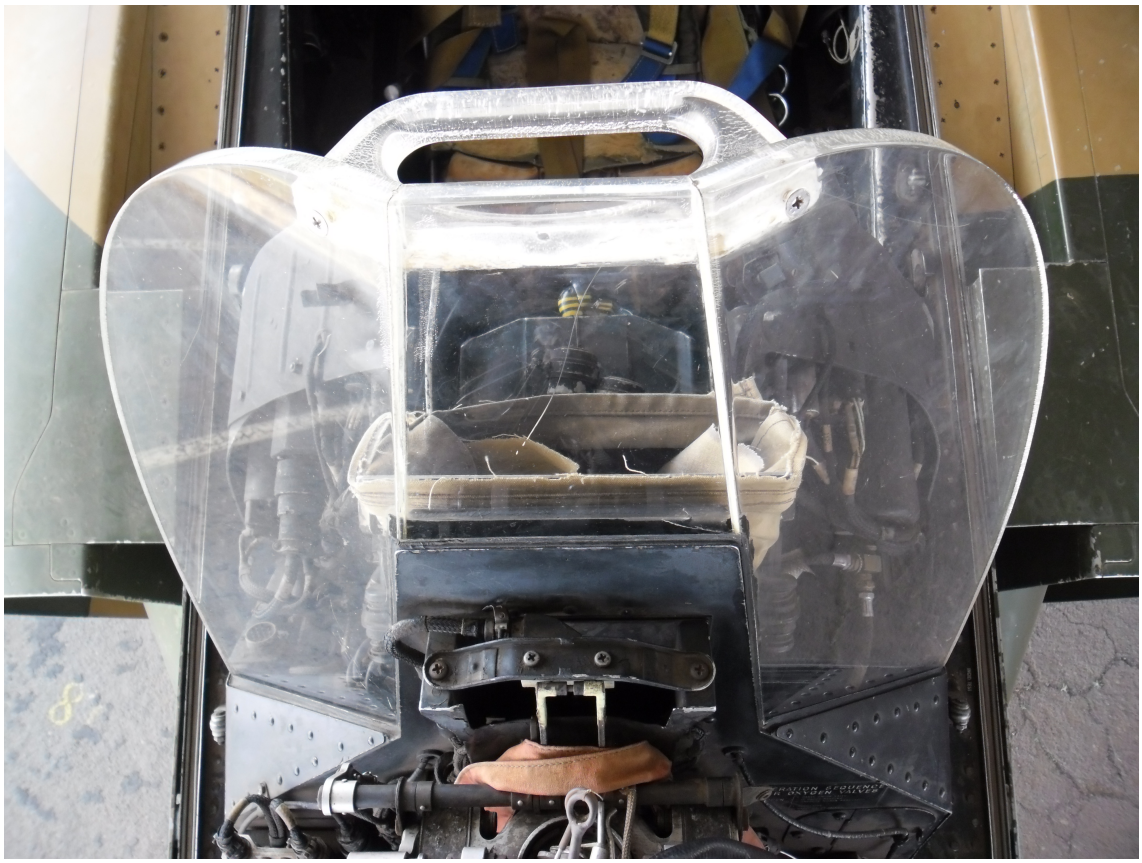
Front instrument panel of BZ #818.



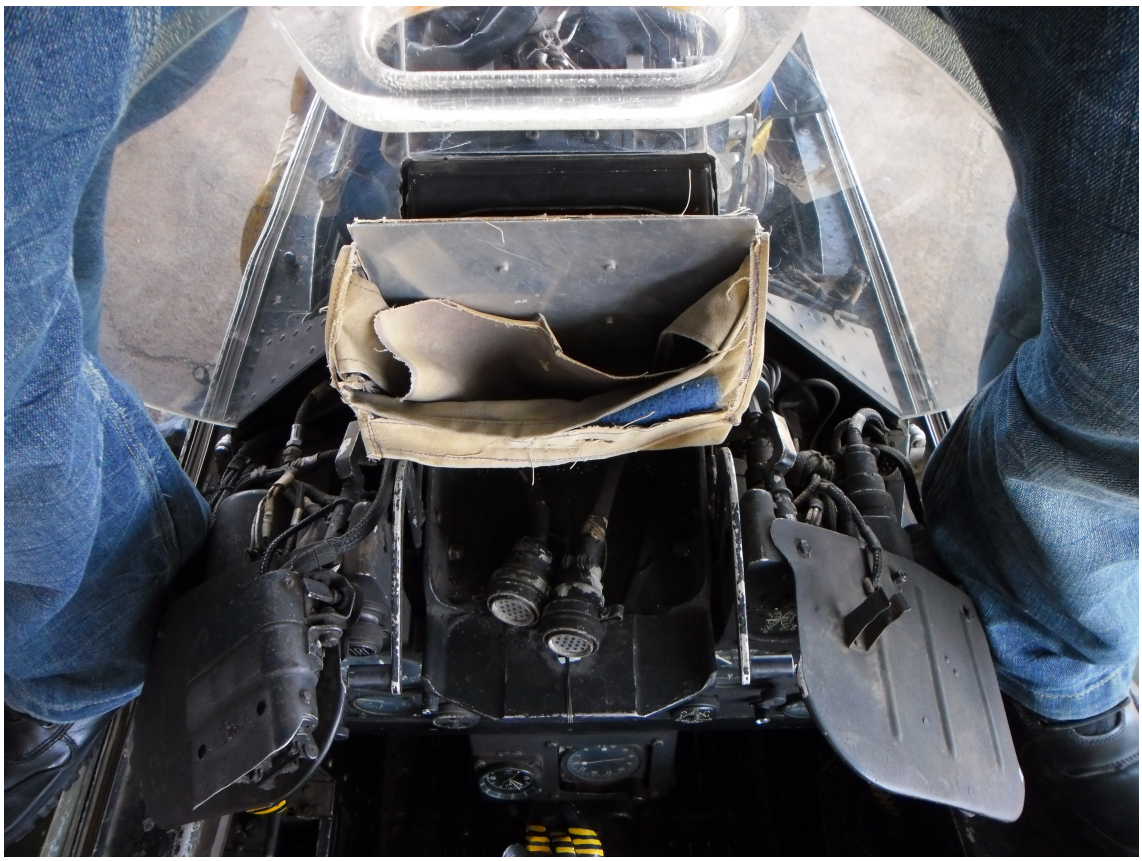
Rear instrument panel of BZ #818.




BZ #818 rear cockpit looking aft with canopy open. The top of the ejection seat is visible. The two objects at the top of the image either side of the seat are the canopy opening pistons. Note also at bottom left the additional canopy support arm. The one on the right appears to be missing. This detail is typical for the DZ and D2Z.



Clear blast panel between front and rear cockpit sections. This would protect the rear seat occupant in the case of ejection or damage to the forward canopy. Looking rearwards (above) and forwards (below).



# 6 Mirage IIIBZ #818 – Ejection seat details




BZ #818 as seen at the SAAF Museum Swartkop Air Base in 2016.





Rear MB.Mk.4 ejection seat in BZ #818.



## 7 Mirage IIIDZ – Ejection seat details



# 8 Mirage IIIBZ #818 – Walk around







Mirage III BZ


818






DANGER
GEVAAR
GEVAAR


MirageIIIBZ
GEVAAR
DANGER


18


818












818







# 9 Mirage IIIBZ #818 – Undercarriage details

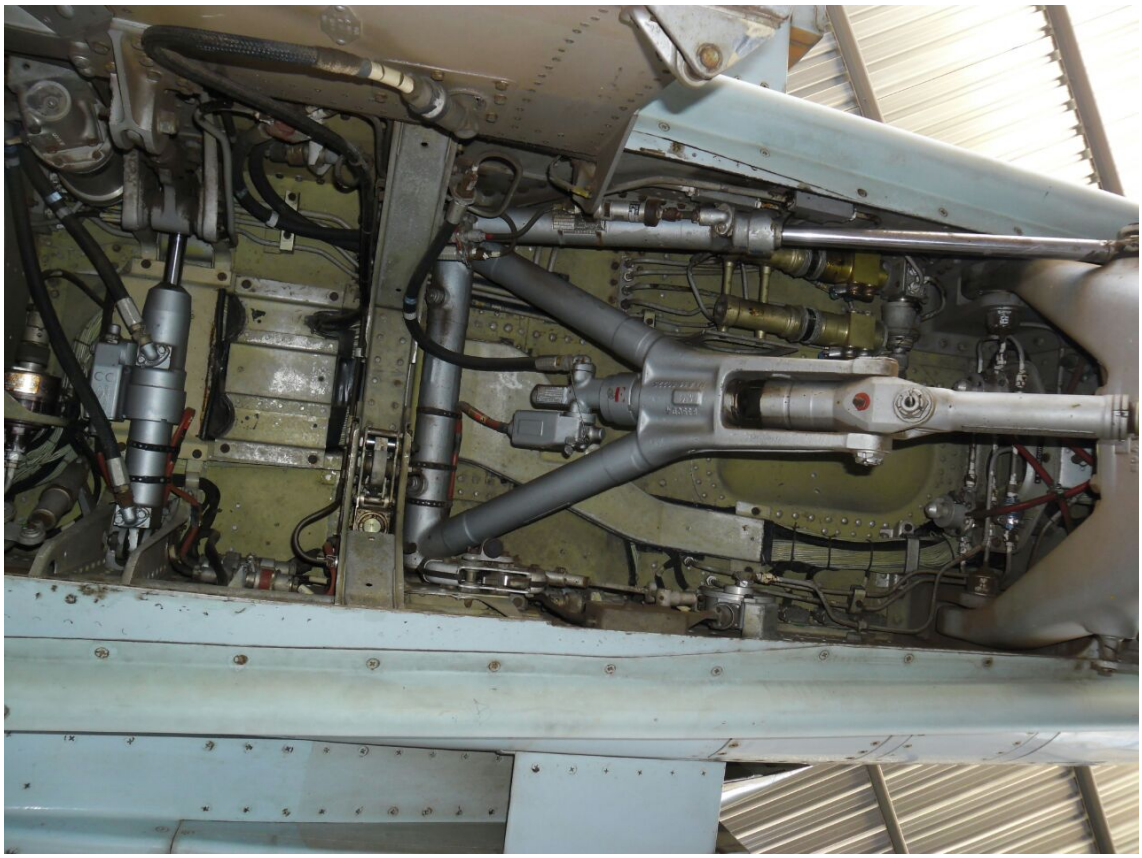


Starboard main undercarriage looking aft. Note that the main wheel well is chromate yellow whereas leg well appears to be silver. Note cutouts in main gear doors characteristic of the BZ and CZs. The yellow and black striped panel is the cover over the manual main door override lever. The main wheel doors were usually closed once the undercarriage had been locked in the lowered position.









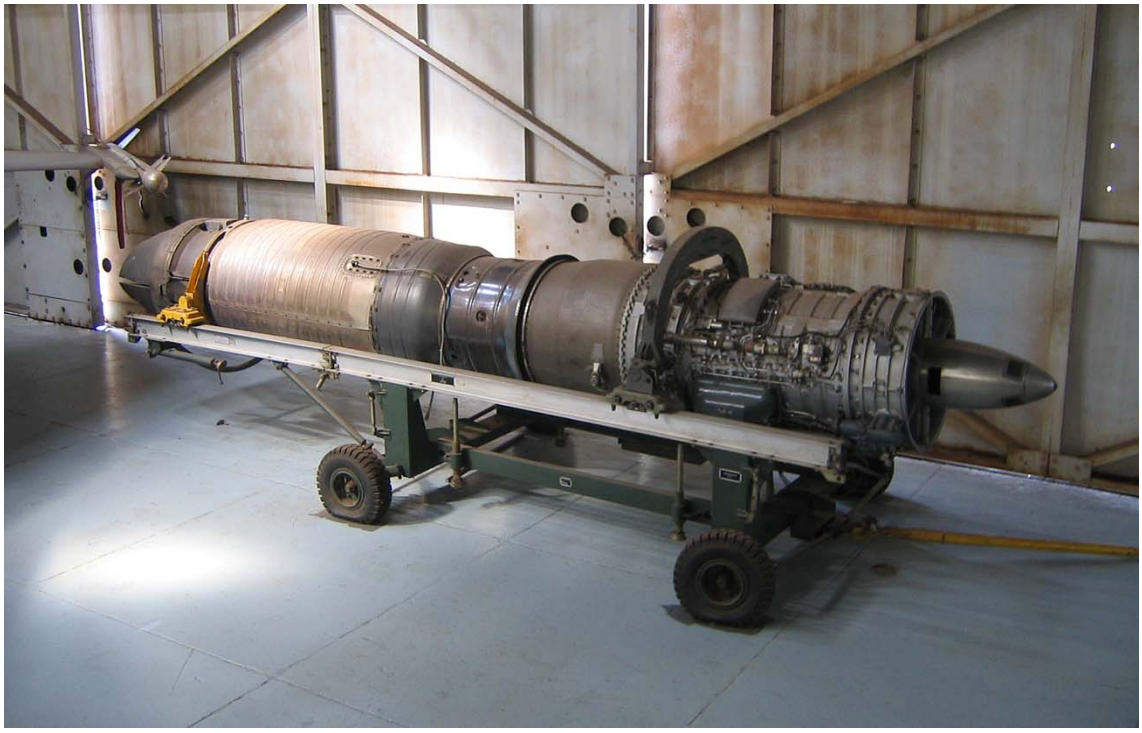
Forward section of nose gear bay on BZ #818. The nose gear retraction strut configuration of the BZ is different to that of the single seaters which have a single centrally mounted retraction piston and lack the Y-support arm.



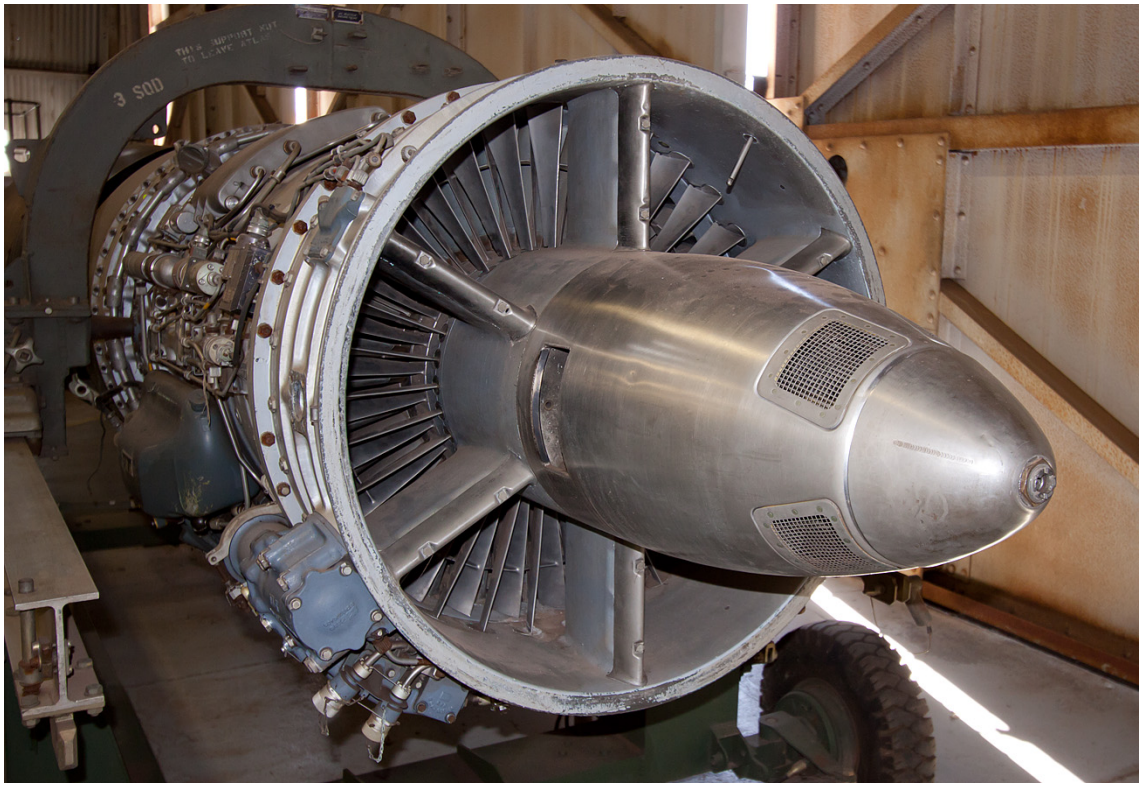
Rear portion of nose gear bay on BZ #818.

# 10 ATAR 09B engine

The Atar 09B engine was only fitted to the Mirage IIIBZ and CZ and was characterized by its clamshell variable exhaust nozzle design :



Atar 09B engine on display at SAAF Museum at Swartkop Air Base. Note the clamshell exhaust in the closed position. The Atar 09C would've looked very similar expect for the round annular variable exhaust configuration.




Engine intake with first stage guide vanes and compressor blades visible



09B clamshell exhaust nozzle.
Note the green colour assumed to be some form of heat resistant coating. The dark corrugated section is the afterburner plenum chamber. The afterburner rings can be seen deep inside the plenum chamber. The perforated shroud attached to the external skin at top and bottom may be for some form of cooling.





Details of clamshell actuation mechanism.





More details. In the image below, the heat shield to protect the upper fuselage is clearly visible.





09B on its engine cradle at Swartkop. The clamshell halves are in the closed positions.



# 11 Mirage IIIEZ cockpit



EZ cockpit. Layout of the instrument panel is largely similar to that of the CZ. The location of the central radar display is higher up than on the CZ.

# 12 References

The Unofficial SAAF Website – www.saairforce.co.za - both reference section and discussion forums including the following contributors – Dean Wingrin, Piet van Schalkwyk (SAAFColours), Greg Swart (GregAir), Alan Taylor (FlyingSpringbok), Vernon Vice (Spice), Joker, Brent Best (Kremlin), Sean Thackray (Madmax).

Other fine folks who shared their Mirage III information with me : Daan Conradie, Martin Strümpfer, Jon Durant (Battlebirds Models), John Weideman (ScaleWorx).

Squadrons of the South African Air Force and Their Aircraft 1920 – 2005, Steven McLean, ISBN No. 0958492948

Aircraft of the South African Air Force, Herman Potgieter and Willem Steenkamp, ISBN No. 0869771337

Cheetah – Guardians of the Nation, Winston Brent, African Aviation Series No. 23

More Than Game, Herman Potgieter, ISBN No. 0620192135

The SAAF at War 1940 – 1984, JS Bouwer and MN Louw, ISBN No. 0868460567

On Wings of Eagles – South Africa's Military Aviation History, D. Becker, ISBN 0947478477

Mirage IIIEO flight manual – this is the Australian version which was essentially similar in terms of systems to the SAAF Mirage IIIEZ.