South African Air Force Mirage III and Cheetah

External fuel tanks.

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South African Air Force – Mirage III and Cheetah – Use of external fuel tanks.

Introduction

The Mirage III has been developed into a multitude of various subtypes over its operational career, mainly by Dassault, the original manufacturer, and Israel. These include the Mirage 5 and 50 development of the basic Mirage III. Israel Aircraft Industries (IAI) has provided major upgrades to engines, avionics and airframe with their Kfir series and Mirage III and V derivatives.

The South African Air Force (SAAF) operated a significant number of Mirage III subtypes as well as three versions of the Cheetah. The Cheetah series is a development of the basic Mirage III using significant IAI development support and Kfir content.

The purpose of this document is to provide a consolidated reference work on the various types of external fuel tanks used by the SAAF on both its Mirage III and Cheetah aircraft. There is information available from various web-based sources pertaining to SAAF Mirage III and Cheetah external fuel tanks but there is no single consolidated reference work on this subject. This document is based on available internet data and data sourced from publications (including Flight Manuals and squadron "line books"), aircraft crew and enthusiasts.

So then, why worry about external fuel tanks, one may ask ? The answer is twofold:

1. the Mirage III and Cheetah aircraft were always limited in range due to low internal fuel volumes and thus generally carried external fuel tanks on most flights. These external fuel tanks are therefore a distinct feature of the Mirage III and Cheetah aircraft.
2. This document has been compiled with scale modelers, and those interested in the SAAF, in mind. The scale modeler specifically would be interested in accurate detail pertaining to external stores configurations and dimensions.

In preparing this document, the author has relied upon his own research as well as the valuable input of several keen SAAF modelers, armchair historians and flight crew, some of whom are members of a WhatsApp group titled "Model talk". Some of these good folks are referred, amongst themselves, as "rivet counters", a well-known terminology within the modeling fraternity. They pride themselves on accuracy and assume nothing at face value. Because of this, the author believes that this document portrays the most accurate reference work on this subject available. It is not to say this is the definitive work and more information on the subject may come to light in the future.

The structure of this document is as follows :

- Section 1 – addresses the various types of Mirage IIIs and Cheetahs in SAAF service – this is done at a superficial level as there are several other reference works which provide more detail of these aircraft and their operations with the SAAF.
- Section 2 – describes the types of external fuel tanks used on SAAF Mirage IIIs and Cheetahs complete with their designations and technical details.
- Section 3 – provides a table for the various external fuel tank configurations for each Mirage III and Cheetah type which have been corroborated through provided imagery.
- Section 4 – provides some reference data extracted from Flight Manuals for certain Mirage III and Cheetah C aircraft.

- Section 5 – deals with what is available in the model world pertaining to availability of scale fuel tanks.
- Reference Sections A to F – excerpts from Flight Manuals and aircraft operating procedures.

It is necessary to provide a disclaimer at this point : obtaining the manufacturers' (both Dassault and IAI) official designations for some of the external fuel tanks proved problematic through internet search. As such, some of the tank designations have been assumed and used as such for purposes of identification in this document. These are explained in more detail below.

The author thanks the following "rivet counters" for their valuable input to this document :

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Section 1A - SAAF Mirage III variants

The SAAF operated numerous versions of the Dassault Mirage III. The suffix "Z" was allocated to each version to denote that these were produced for the SAAF.

Mirage IIICZ – This is a single seat version based on the first incarnation of the production Mirage III (ignoring the IIIA), in this case the Dassault Mirage IIIC. The CZ can be identified from other SAAF Mirage III single seat variants by virtue of the extended fillet in front of the vertical stabilizer and the forward positioning of the engine air intakes relative to the canopy. It was fitted with the ATAR 09B engine. 16 CZs were delivered, aircraft numbers 800 to 815.

Mirage IIIBZ – dual seat trainer version of the IIICZ. ATAR 09B engine and leading edge fillet to the vertical stabilizer. 3 BZs were delivered, aircraft numbers 816 to 818.

Mirage IIIEZ – The Mirage IIIE was the second incarnation of the single seat Mirage III. The leading edge fillet to the vertical stabilizer was deleted. An extension to the fuselage aft of the cockpit resulted in the cockpit moving forward in relation to the engine air intakes. A doppler radar was located beneath the nose in a distinct fairing. The EZ was fitted with a more powerful ATAR 09C engine. 17 EZs were delivered, aircraft numbers 819 to 834 and 842.

Mirage IIIDZ – dual seat trainer version of the EZ. ATAR 09C engine. The DZ had the doppler radar and fairing beneath the nose. 3 DZs were delivered, aircraft numbers 839 to 841.

Mirage IIID2Z – further upgrade to the DZ (avionics). The D2Z was not equipped with the doppler radar with its prominent fairing resulting in an overall sleeker look. The ATAR 09C engine was installed. Contrary to claims in some sources, the D2Z was <u>not</u> equipped with the ATAR 09K50 engine. 11 D2Zs were delivered, aircraft numbers 843 to 853.

Mirage IIIRZ – reconnaissance development of Mirage IIIE airframe. Apart from the nose designed to house cameras, the rest of the airframe was similar to the IIIE. The RZ had the doppler radar and fairing beneath the nose. The RZ was delivered with the ATAR 09C engine. Only #836 was later upgraded with an ATAR 09K50 engine. 4 RZs were delivered, aircraft numbers 835 to 838.

Mirage IIIR2Z – further development of the RZ incorporating upgraded avionics and the higher thrust ATAR 09K50 engine. The R2Z was not equipped with the doppler radar and its prominent fairing beneath the nose resulting in an overall sleeker look when compared to the RZ. 4 R2Zs were delivered, aircraft numbers 854 to 857.

Section 1B - SAAF Cheetah variants – as in chronological order

Cheetah D – developed by upgrading the surviving SAAF fleet of Mirage IIIDZ and D2Z aircraft with new Kfir style wings and canards but retaining the original ATAR 09C engine. Some airframes were later further upgraded to include strengthened main undercarriage (16 ton) and a single piece windshield. Even later, the ATAR 09K50 was installed on some airframes to replace the ATAR 09C engines. The clearest indication that an 09K50 engine is installed is the scalloped (curved) engine intake splitter plates. 11 Cheetah Ds were delivered, aircraft numbers 839, 840, 841 (these three converted from Mirage IIIDZs) and 843, 844, 845, 846, 847, 849, 852 and 853 (these converted from Mirage IIID2Zs.

Cheetah B – similar to the Cheetah D development but using ex-Israeli Nesher T airframes. 5 Cheetah Bs were delivered, aircraft numbers 858 to 862.

Cheetah E – developed by upgrading the surviving SAAF fleet of Mirage IIIEZ aircraft with new Kfir style wing and canards. The Cheetah E retained the Mirage IIIE ATAR 09C engines. Upgraded avionics were installed for the air to ground mission. 16 Mirage IIIEZs were modified to Cheetah E, aircraft numbers 819, 820, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834 and 842.

Cheetah C – developed using Kfir airframes modified by removing the J79 engine and replacing with ATAR 09K50 engines. 38 Cheetah Cs were delivered, aircraft numbers 341 to 378.

Cheetah R – prototype development only for a proposed reconnaissance variant and not used by the SAAF. This was airframe #855.

Section 2 – External fuel tanks carried by the SAAF Mirage III and Cheetah aircraft

External fuel tanks were only carried on the inboard wing pylons or the centerline fuselage station on both the Mirage IIIs and Cheetahs. When carrying fuel tanks on the wing pylons, these were always carried symmetrically i.e. one on each pylon. A maximum of three external fuel tanks could be carried.

The following is a list of external fuel tanks used by the SAAF for the Mirage III and Cheetah.

RP18R – 500 liter supersonic fuel tank (non-jettisonable) without fins. These were of French origin. Carried on inboard wing stations only.

AZ – 500 liter supersonic fuel tank. These were of Israeli origin and were a development of the original French RP18R to include fins to allow them to be jettisoned in flight. The designation "AZ" has been identified as noted in an addendum to the Mirage IIICZ flight manual and is thus assumed not to be the original RP18R (refer to Figures E-5 and E-6 under Reference Section E of this document). Carried on inboard wing stations only.

BZ / RPK – this is the Israeli developed combined 500 liter tank / 2 bomb carrier and assumed to be based on the AZ tank. The designation "BZ" has been identified as noted in an addendum to the Mirage IIICZ flight manual and is described as "*500l BZ Tank/Bombrack*" (refer to Figures E-5 and E-6 under Reference Section E of this document). The designation "RPK" is used in the Cheetah C flight manual (refer to Figure F-1 and F-2 under Reference Section F of this document). It is therefore assumed that the "BK" and "PRK" are similar, if not the same. Note that this AZ/RPK is not the same as the French designed 4-bomb RPK combined tank / bomb carrier (which was not used by the SAAF). The BZ / RPK was carried on the inboard wing stations only.

600 – 600 liter subsonic fuel tank. These were of French origin. The "600" designation is allocated by the author for the purposes of this document as this is how it is referred to in the Mirage III Flight Manuals. This tank could be carried on the inboard wing stations and fuselage centerline station.

RP62 – 1,300 liter subsonic fuel tank. These were of French origin. The tank had horizontal fins with vertical end plates. This tank could be carried on the inboard wing stations and fuselage centerline station.

1302 – Israeli designed 1,300 liter subsonic fuel tank of different configuration to the RP62 and used on the Cheetah C only. This tank is more slender in shape than the RP62 and has horizontal fins without endplates. It also has a vertical support rod between the rear of the tank and the lower wing. Per the Cheetah C flight manual, reference is made to a "1300" and "1302" tank (refer to figures F-1 and F-2 under Reference Section F of this document). "1300" is assumed to refer to the French RP62 tank whilst "1302" is assumed to be the Israeli tank. The Cheetah C flight manual notes the "1300" tank to have a usable volume of 1,230 liters and for the "1302" tank a usable volume of 1,320 liters. This tank was carried on the inboard wing stations only.

RP30 – 1,700 liter subsonic fuel tank. These were of French origin. Although the Cheetah C flight manual lists a "1702" tank, it is assumed that this is similar to the RP30. Usable volume is noted as 1,685 liters. This tank is referred to as the "1702" in the Cheetah C flight manual (refer to figures F-1 and F-2 under Reference Section F of this document). It is assumed that the "1702" and RP30 were similar, if not the same. This tank was carried on the inboard wing stations only.

RP825 – supersonic fuel tank only carried on the centerline station of the Mirage III and Cheetah. These were of Israeli origin. There are potentially two versions – the original design for the Mirage III which, according to the Mirage IIICZ manual, was 880 liters in volume (refer to figure E-6 in Reference Section E of this document). This was used by all SAAF Mirage III versions as well as the Cheetah E. The Cheetah C flight manual refers to an "825" tank of 820 liters (refer to figures F-2 and F-3 in Reference Section F of this document). The author had access to an 880 liter RP825 tank mounted beneath RZ #835 at Swartkop Air Base and this was measured to be 6,305mm in length. Assuming the diameter remained unchanged, a reduction in volume from 880 liters to 820 liters equates to a length reduction of approximately 430mm. It is therefore possible that the Cheetah C and D used a shorter RP825 tank but this is not apparent from available images. The reason for the shorter length is unknown but may have something to do with maintaining CP/CG [(1)] limits on canard equipped derivatives including the Kfir. For purposes of this document, the designations RP825(1) and RP825(2) are allocated respectively for tanks used on the Mirage IIIs/Cheetah E and Cheetah C/D. We'll leave it up to the reader to make his own decision regarding the actual length of the latter unit.

JL-100 – combined fuel tank / rocket pod. These were of French origin. These were carried on the inboard wing stations only.

Further notes on Tank pylons

There were two types of tank pylons : those fitted to the Mirage IIIs and those fitted to the Cheetahs. These differed as follows :

- Centerline pylon for the RP825 fuel tank – on the Mirage IIIs, the pylon had a vertical leading edge and the tank was carried at a pronounced nose down angle. This pylon is designated as CRP-37 in the Mirage IIICZ flight manual. For the Cheetah D and Cs, this pylon was modified to have a swept back leading edge and a revised tank angle more parallel with the aircraft's longitudinal axis. This is referred to as the CRP-372 in the Cheetah C flight manual. For the Cheetah E, it appears that the original Mirage CRP-37 pylon was used. These pylons were used to carry both the RP825 and RP62 fuel tanks, and likely, the 600 tank as well.
- Inboard wing pylons for the 1,300 liter external fuel tanks and the JL-100 pods – these pylons were designated CRP-18 for the Mirage III and were configured to provide a more pronounced nose down attitude to the tank than those used on the Cheetah D and C. The Cheetah C and D inboard pylons are designated CRP-186 in the Cheetah C flight manual.

A possible reason for the change in tank alignment may be attributed to the different flight angle of attack between the Mirage IIIs and the canard equipped Cheetahs.

An additional detail is that the inboard wing pylons (CRP-18/186) were canted slightly outwards away from the main undercarriage. This is visible in several of the images in this document.

One final detail is that the location of the inboard wing pylons on the Mirage IIIBZ and CZ were closer by approximately 135 mmm to the main undercarriage legs than on the other SAAF Mirage IIIs and the Cheetahs.

(1) CP = aerodynamic Center of Pressure, CG = Center of Gravity. Simplistically, for longitudinal static stability of aircraft, the CG is usually ahead of the CP.

Further notes on the 500 liter fuel tanks

The RP18R and AZ fuel tanks were of similar volume and dimensions. The only difference is that the AZ was equipped with fins and was positioned further back on the wing pylon so that the rear of the tank was in line with the wing trailing edge, whereas the rear of the RP18R was more in line with the wing elevon hinge line.

The BZ tank was a development of the AZ to incorporate two bomb release units (BRU) and shackles to allow two bombs (either 250lb or 500lb bombs) to be carried beneath the tank in tandem. The overall length of the AZ and BZ tanks was the same and the volume is quoted as being 500 liters for both. This is odd as some fuel volume would surely have been lost to accommodate the BRUs. The author has checked the dimensions of each of the three 500 liter tanks based on measurements of actual tanks at Swartkop and Johannesburg Museum of Military History and they are all the same.

As noted elsewhere, the BZ is similar, if not the same, as the “RPK” used on the Cheetahs.

Further notes on RP62 and “1302” tanks

As noted above, both are of similar volume. The “1302” tank was designed by IAI for the Kfir aircraft and were subsequently supplied to South Africa for use on the Cheetah Cs only. One possible theory for this redesigned tank is that the dimensions had to be revised to maintain proper CP in relation to CG as the center of pressure on Kfirs and Cheetah Cs would have been impacted more by the large (100%) canard foreplanes than on the Cheetah D and E (70%). This is speculative at best.

Tank colours and coatings

Generally, the Mirage III tanks were mostly observed in a natural metal unpainted state. Some tanks used on the later grey camouflaged Mirage IIIRZs were also camouflaged grey. Some of the natural metal tanks were coated with an orange clear protective varnish which tended to flake and weather a lot.

The fuel tanks initially used on the Cheetah E and Ds were also in an unpainted state. These were later painted in low visibility grey. The Cheetah C fuel tanks were all painted in low visibility grey. However, as always, there may be exceptions so check your reference images.

Fuel tank data

Table 1 - External stores stations and locations for fuel tanks for the Mirage III and Cheetah aircraft

	Port wing outer	Port wing inner	Port Intake	Centerline	Starboard Intake	Starboard wing inner	Starboard wing outer
Mirage III	**5 hardpoints**						
Station #	1	2	-	3	-	4	5
		Fuel tank		Fuel tank		Fuel tank	
Cheetah E/D	**7 hardpoints**						
Station #	1	2	3	4	5	6	7
		Fuel tank		Fuel tank		Fuel tank	
	Note 1 – stations 3 and 5 are located beneath the engine intakes						
Cheetah C	**9 hardpoints**						
Station #	1	2	3/8	4	5/9	6	7
		Fuel tank		Fuel tank		Fuel tank	
	Note – the Cheetah C had two rear fuselage pylons designated as stations 8 and 9 above. Stations 3 and 5 were located beneath the engine intakes						

Table 2 - Volumes and dimensions for the various tanks

Tank	Volume (liters)	Volume (Imperial gallons)	Volume (US gallons)	Overall length (mm)	Diameter (mm)
RP18R	500	110	132	5,615	415
AZ	500	110	132	5,615	415
BZ / RPK	500	194	132	5,615	415
RP825(1)	880	194	232	6,305	510
RP825(2)	820	180	217	6,305 ?	510 ?
600	600	132	158		
RP62	1,300 (1,250 usable)	286	343	5,800	635
1302	1,320	286	343		
RP30	1,700 (1,650 usable)	374	449	6,400	690
1702	1,700 (1,650 usable)	374	449	6,400 ?	690 ?
JL-100	250	55	66	4,500	410

Data not present in the table above means that an actual fuel tank was not available to measure. “?” denotes and assumption based on similarity with other tanks.

Overall length is measured from nose tip to the rear of the tank or the trailing edge of the fins at the rear of the tanks (whichever is longer).

Table 3 – External fuel tank pylons

	Volume (liters)	Port wing inner station	Centerline station	Starboard wing inner station
Mirage III				
600	600	CRP-18	CRP-37	CRP-18
RP18R	500	Hard mounted		Hard mounted
AZ	500	Hard mounted		Hard mounted
BZ	500	Hard mounted		Hard mounted
JL-100	500	CRP-18		CRP-18
RP825	880		CRP-37	
RP62	1,300	CRP-18	CRP-37	CRP-18
RP30	1,700	Hard mounted		Hard mounted
Cheetah E				
AZ	500	Hard mounted		Hard mounted
BZ / RPK	500	Hard mounted		Hard mounted
RP825	880		CRP-37	
RP62	1,300	CRP-18 ? (note 1)	CRP-37	CRP-18 ? (note 1)
Cheetah B/D				
AZ	500	Hard mounted		Hard mounted
RPK	500	Hard mounted		Hard mounted
RP825	880		CRP-372	
RP62	1,300	CRP-18 ?	CRP-372	CRP-18 ?
Cheetah C				
RPK	500	Hard mounted		Hard mounted
RP825	820		CRP-372	
RP62	1,300	CRP-186	CRP-372	CRP-186
1302	1,300	CRP-186		CRP-186
1702	880	Hard mounted		Hard mounted

Hard mounted refers to an external fuel tank which has a shallow pylon configured specifically for the tank type.

Note 1 - It is possible that the Cheetah D and E used the CRP-186 inboard wing pylons as were used on the Cheetah C

Section 3 – SAAF Mirage III and Cheetah external fuel tank configurations with supporting images

The subsections on the following pages provide for each aircraft type a table indicating combinations of the various external fuel tanks as well as reference images. This may not be a definitive listing as it is based on images which could be found through various sources. For example, there are photos of Mirage IIIEZs carrying the RP62 tank on the centerline station and therefore there is no reason why the other Mirages could not do so. It may just be that this was not a common configuration, with the RP825 being the preferred option for the centerline station.

References to the images in this document are provided in the righthand column of each table.

Section 3-1 – Mirage IIIBZ

Port inboard wing Station 2	Centerline Station 3	Starboard inboard wing Station 4	Image reference
RP18R		RP18R	BZ-1 and BZ-2
AZ		AZ	BZ-3
RP62		RP62	BZ-4
RP62		RP62	BZ-5

Image BZ-1 and BZ-2 – two images of Mirage IIIBZ #818 with original French RP18R 500 liter supersonic fuel tanks. These tanks do not have the rear fins.

Image BZ-3 - Mirage IIIBZ #817 is carrying the Israeli designed finned 500 liter supersonic AZ fuel tanks. Note the fins at the rear of the tank.

Image BZ-4 - Mirage IIIBZ #817 carrying two RP62 1,300 liter subsonic fuel tanks on the inboard wing stations.

Image BZ-5 (below) – details of RP62 fuel tank fin arrangement (BZ #817).

Section 3.2 – Mirage IIICZ

Port inboard wing Station 2	Centerline Station 3	Starboard inboard wing Station 4	Image reference
RP18R		RP18R	CZ-1
	RP825(1) (880 liter)		CZ-2 and CZ-3
AZ		AZ	CZ-4
AZ	RP825(1) (880 liter)	AZ	CZ-5
BZ	RP825(1) (880 liter)	BZ	CZ-6, CZ-7, CZ-8
RP62		RP62	CZ-9
600		600	CZ-10
JL-100		JL-100	CZ-11

Image CZ-1 - Mirage IIICZ with original French RP18R 500 liter supersonic fuel tanks without fins. Note that the rear of the fuel tank is in line with the elevon hinge line.

Image CZ-2 - Mirage IIICZ #803 carrying the Israeli designed RP825 825 liter tank on the centerline. Note the distinct downward angle of the tank in relation to the aircraft. Note also the horizontal fins at the rear of the tank. The angle of the leading edge of the tank CRP37 pylon is at right angles to the aircraft underside.

Image CZ-3 - Mirage IIICZ #802 in the late low visibility camouflage and carrying the Israeli designed RP825 825 liter tank on the centerline.

Image CZ-4 – The Mirage IIICZ on the left of the image is carrying two Israeli designed AZ 500 liter supersonic fuel tanks. The fins can clearly be seen at the rear of the fuel tank.

Image CZ-5 - Mirage IIICZ #806 is carrying two AZ fuel tanks on the wing stations and one centerline RP825(1) 880 liter fuel tank. Both tank types could be used for supersonic flight, but it's unlikely that the CZ could achieve supersonic flight with all three installed.

Image CZ-6 – Mirage IIICZ, #805 (above) and #804 (below) are carrying two BZ combination 500 liter tank / duel bomb carriers (with 2 bombs each) on the wing inboard stations and an RP825(1) 880 liter tank on the centerline. This was a typical combat load which saw operational service over Angola in the 1980s. These images were likely taken at AFB Hoedspruit. The bombs in the image below are blue indicating practice bombs, either Mk.81 (250lb) or Mk.82 (500lb).

Image CZ-8 – Similar stores configuration as to the previous two images.

Image CZ-9 (above) – Mirage IIICZ #806 is carrying two French designed RP62 1,300 liter subsonic fuel tanks on CRP37 pylons. Note the nose down angle of the tanks relative to the aircraft. These tanks were equipped with horizontal fins and vertical end plates.

Image CZ-10 –Mirage IIICZ #802 in the foreground is carrying the early French subsonic 600 liter wing tanks. They appear similar in configuration to the RP62 tanks, but are significantly shorter and smaller in diameter. Compare these to the RP62s in the previous image. The third aircraft is carrying RP18Rs.

Image CZ-11 – The second Mirage is a CZ and is carrying two JL-100 combined fuel tank / and rocket pods on the inboard wing stations.

Section 3.3 – Mirage IIIDZ

Port inboard wing Station 2	Centerline Station 3	Starboard inboard wing Station 4	Image reference
RP18R		RP18R	DZ-1
AZ		AZ	DZ-2
RP62		RP62	DZ-3 and DZ-4
JL-100		JL-100	DZ-5

Image DZ-1 – Mirage IIIDZ #840 is carrying two of the original French finless RP18R 500 liter fuel tanks. The DZ can be distinguished from the similar D2Z by the prominent doppler radar antennae fairing beneath the cockpit just ahead of the nose landing gear.

Image DZ-2 – This Mirage IIIDZ is carrying two of the Israeli finned AZ 500 liter fuel tanks.

Image DZ-3 (above) – This Mirage IIIDZ is carrying two RP62 1,300 liter subsonic fuel tanks on the wing pylons. The object on the ground is a test article for the H2 glide bomb.

Image DZ-4 (below) – two RP62 tanks are carried by DZ #841.

Image DZ-5 – This Mirage IIIDZ is carrying two JL-100 combined fuel tank / rocket pods on the inboard wing stations.

Section 3.4 – Mirage IIID2Z

Port inboard wing Station 2	Centerline Station 3	Starboard inboard wing Station 4	Image reference
RP18R		RP18R	D2Z-1
AZ		AZ	D2Z-2
BZ		BZ	D2Z-3 and D2Z-4
JL-100		JL-100	D2Z-5

Image D2Z-1 – This Mirage IIID2Z #849 is carrying two of the original French finless RP18R 500 liter fuel tanks. The D2Z does not have the prominent doppler radar antennae fairing beneath the nose as is the case for the DZ.

Image D2Z-2 – These Mirage IIID2Zs are carrying two of the Israeli designed finned AZ 500 liter fuel tanks.

Image D2Z-3 – Mirage IIIDZ #844 is carrying two of the Israeli finned RPK18R 500 liter combined fuel tanks / bomb carrier – the shackles are just visible in the images above and below.

Image D2Z-4 – Close up of the forward part of the BZ combined fuel tank / bomb carrier showing the forward Bomb Release Unit (BRU) and bombs shackles.

Image D2Z-5 – Mirage IIID2Z #849 is carrying two JL-100 combined fuel tank / rocket pods on the inboard wing stations.

Section 3.5 – Mirage IIIEZ

Port inboard wing Station 2	Centerline Station 3	Starboard inboard wing Station 4	Image reference
RP18R		RP18R	EZ-1
AZ		AZ	EZ-2
	RP825(1)		EZ-3
RP-62		RP-62	EZ-4
JL-100		JL-100	EZ-5
JL-100	PM-3 bomb beam	JL-100	EZ-6

Image EZ-1 – This EZ is carrying two of the original French RP18R finless 500 liter fuel tanks on the wings.

Image EZ-2 – EZ #822 is carrying two of the Israeli designed AZ finned 500 liter fuel tanks on the wings.

Image EZ-3 – This EZ is carrying a single RP825(1) 880 liter tank on the centerline station. The missiles are practice V3B air to air missiles.

Image EZ-4 – EZ #823 in the foreground is carrying two RP62 1,300 liter subsonic fuel tanks on the wings. Note the weathered orange protective coating on the tanks.

Image EZ-5 – EZ #827 is carrying two JL-100 combined fuel tank and rocket pods on the wings.

Image EZ-6 – This EZ is carrying two JL-100 combined fuel tank and rocket pods on the wings and two 400kg bombs in tandem on the centerline PM-3 bomb beam.

Image EZ-7 – EZ #833 is carrying two JL-100 combined fuel tank and rocket pods on the wings and an RP62 1,300 liter fuel tank on the fuselage centerline station.

Section 3.6 – Mirage IIIRZ

Port inboard wing Station 2	Centerline Station 3	Starboard inboard wing Station 4	Image reference
RP18R		RP18R	RZ-1
	RP825(1)		RZ-2
RP62		RP62	RZ-3, RZ-4 and RZ-5
RP62	RP825(1)	RP62	RZ-6
AZ	RP825(1)	AX	RZ-7
RP30 (note 1)	RP825(1)	RP30	RZ-8
JL-100		JL-100	RZ-9

Note 1 – RZ #836 only after being fitted with 09K50 engine.

Image RZ-1 – this RZ is carrying two of the original French RP18R finless 500 liter fuel tanks. The RZ is distinguished from the R2Z by the prominent doppler radar fairing beneath the nose ahead of the nose landing gear, as can be clearly seen in this image.

Image RZ-2 – this RZ is carrying an RP825(1) 88- liter fuel tank on the centerline. The missiles are practice V3B items.

Image RZ-3 – this RZ is carrying two of the French RP62 1,300 liter subsonic fuel tanks under the wings.

Image RZ-4 – the RZ on the left is carrying two of the French RP62 1,300 liter subsonic fuel tanks. The R2Z on the right is carrying a similar load.

Image RZ-5 – this RZ is carrying two of the French RP62 1,300 liter subsonic fuel tanks under the wings and an AS-30 laser guided air to surface missile on the centerline The centerline pylon looks like the standard CRP37 used to carry the RP825 fuel tank.

Image RZ-6 – this RZ is carrying an RP825(1) 880 liter centerline fuel tank as well as two RP62 1,300 liter tanks on the wings.

Image RZ-7 – this RZ is carrying an RP825(1) 880 liter centerline fuel tank as well as two of the Israeli designed finned AZ fuel tanks on the wing stations. Note the weathered orange coating on two of the tanks.

Image RZ-8 – The aircraft on the left is an R2Z whilst the other two are RZs - note the lack of doppler radar faring beneath the nose of the R2Z. The R2Z is carrying two RP30 1,700 liter subsonic fuel tanks. The middle aircraft, a grey RZ is carrying an RP825(1) and two RP62 fuel tanks whilst the RZ on the right is carrying two RP30 1,700 liter tanks on the wings. Note that the RP62 are camouflaged in a similar grey to the aircraft. This latter aircraft is RZ #836 and was the only other SAAF Mirage III, apart from the R2Zs, which was seen carrying these large tanks. RZ #836 had been upgraded with an Atar 09K50 engine.

Image RZ-9 – lovely image of an RZ on the left in in original NATO green / grey camouflage carrying two JL-100 combined fuel / rocket pods. This is would not be a common load for a reconnaissance aircraft. The other two aircraft are EZs and each carries two JL-100 pods.

Section 3.7 – Mirage IIIRZ2

Port inboard wing Station 2	Centerline Station 3	Starboard inboard wing Station 4	Image reference
RP18R		RP18R	R2Z-1 and R2Z-2
RP62		RP62	R2Z-3 and R2Z-4
	RP62		R2Z-5
RP30		RP30	R2Z-6
JL-100		JL-100	R2Z-7

Image R2Z-1 (above) – RZ carrying two of the original French RP18R 500 liter fuel tanks

Image R2Z-2 (below) – this image shows the natural metal finish of the RP18R fuel tank. Note the two prominent circumferential weld seams.

Image R2Z-3 – R2Z carrying two RP62 1,300 liter fuel tanks.

Image R2Z-4 – Another R2Z carrying two RP62 1,300 liter fuel tanks. This aircraft can be identified as an R2Z by the scalloped (curved) intake splitter plates.

Image R2Z-5 – Unidentified R2Z carrying an RP62 1,300 liter fuel tank on the centerline station.

Image R2Z-6 – Another unidentified R2Z (possibly #857), this time carrying two RP30 1,700 liter fuel tank under the wings. Note the downward slant of the tank fins.

Image R2Z-7 – R2Z carrying two JL-100 rocket pods beneath the wings. This would likely not be a common load for a reconnaissance Mirage.

Section 3.8 – Cheetah E

Port inboard wing Station 2	Centerline Station 4	Starboard inboard wing Station 6	Image reference
AZ		AZ	E-1
	RP825(1)		E-2 and E-3
RP62		RP62	E-4 and E-5
RP62	RP825(1)	RP62	E-6
BZ		BZ	E-7 and E-8

Image E-1 – Cheetah E in the foreground is carrying two Israeli designed finned AZ 500 liter supersonic fuel tanks on the wing stations. The third Cheetah E is carrying RP62 1,300 liter fuel tanks.

Image E-2 and E-3 – Cheetah Es carrying centerline RP825(1) 880 liter fuel tanks. Note in the image below that this is the original CRP37 centerline pylon as used on Mirage IIIs which has a vertical leading edge. The missiles are practice V3Bs.

Image E-4 and E-5 – Cheetah Es carrying two RP62 1,300 liter subsonic wing tanks. Note the fins with end plates at the rear of the tanks.

Image E-6 – Cheetah E carrying a centerline RP825(1) 880 liter fuel tank on the centerline station and two RP62 tanks 1,300 liter tanks (note end plates on the fins at the rear of the tank) beneath the wings.

Image E-7 – Cheetah E #823 carrying two BZ combined fuel tank / bomb carriers beneath the wings.

Image E-8 – Another image of Cheetah E #823 carrying two BZ combined fuel tank / bomb carriers. The Triple Ejector Rack on the centerline was not used. The bombs are Mk. 81 250lb (125kg) GP bombs. The missiles are inert V3Bs.

Section 3.9 – Cheetah B/D

Port inboard wing Station 2	Centerline Station 4	Starboard inboard wing Station 6	Image reference
AZ		AZ	D-1 and D-2
	RP825(2)		D-3
RP62		RP62	D-4 and D-5
RP62	RP825(2)	RP62	D-6
BZ		BZ	D-7 and D-8

Image D-1 and D-2 – Cheetah D #853 (above) and another (below) carrying two finned AZ 500 liter fuel tanks

Image D-3 – Cheetah D #853 carrying a centerline RP825(2) 825 liter supersonic fuel tank. Note the raked back leading edge of the CRP-312 tank pylon. These were Israeli designed pylons originally for the Kfir.

Image D-4 – Cheetah D #845 carrying two RP62 1,300 liter tanks beneath the wings. These are mounted on CRP186 pylons.

Image D-5 – Cheetah D #849 carrying two RP62 1,300 liter wing tanks. Note that the tanks and pylons are canted outwards away from the main landing gear. This is typical for all Mirage and Cheetah aircraft carrying the RP62.

Image D-6 – Cheetah D #862 carrying an RP825(2) 825 liter fuel tank on the centerline and two RP62 1,300 liter tanks on the inboard wing stations.

Image D-7 and D-8 – Cheetah Ds (#852 above) carrying two RPK combined fuel tank / bomb carriers on the inboard wing stations.

Section 3.10 – Cheetah C

Port inboard wing Station 2	Centerline Station 4	Starboard inboard wing Station 6	Image reference
	RP825(2)		C-1 and C-2
1302	RP825(2)	1302	C-3 and C-4
RPK	RP62	RPK	C-5, C-6 and C-7
RP62	RP825(2)	RP62	C-8
1702	RP62	1702	C-9
	RP62		C-10

Image C-1 and C-2 – Cheetah Cs (#359 above and #347 below) carrying an RP825(2) 825 liter tank on the centerline station. The pylon for this tank was designated CRP-312. The missiles in the image above are the V4 Derby and in the image below are the V3S Python.

Image C-3 – Cheetah C #352 with an RP825(2) 825 liter tank on the centerline and two 1302 1,300 liter tanks beneath the wings. The pylon for the 1302 tanks was designated CRP-186.

Image C-4 – Cheetah C #368 with a 1302 1,300 liter tank prior to mounting onto the inboard wing station. This tank is different to the RP62 in that is it more slender in shape and does not have the end plates on the horizontal fins. The reinforcing post which supports the rear of the tank is visible in this image and is unique to this tank as used by the SAAF. This is an Israeli origin as designed for the Kfir series of aircraft.

Image C-5 – Cheetah C #354 carrying an RP62 1,300 liter tank on the centerline and two RPK combined fuel tank / bomb carriers beneath the wings. Note the bomb shackles on the BZ tanks.

Image C-6 – Cheetah C #371 carrying an RP62 1,300 liter tank on the centerline and two RPK combined fuel tank / bomb carriers beneath the wings.

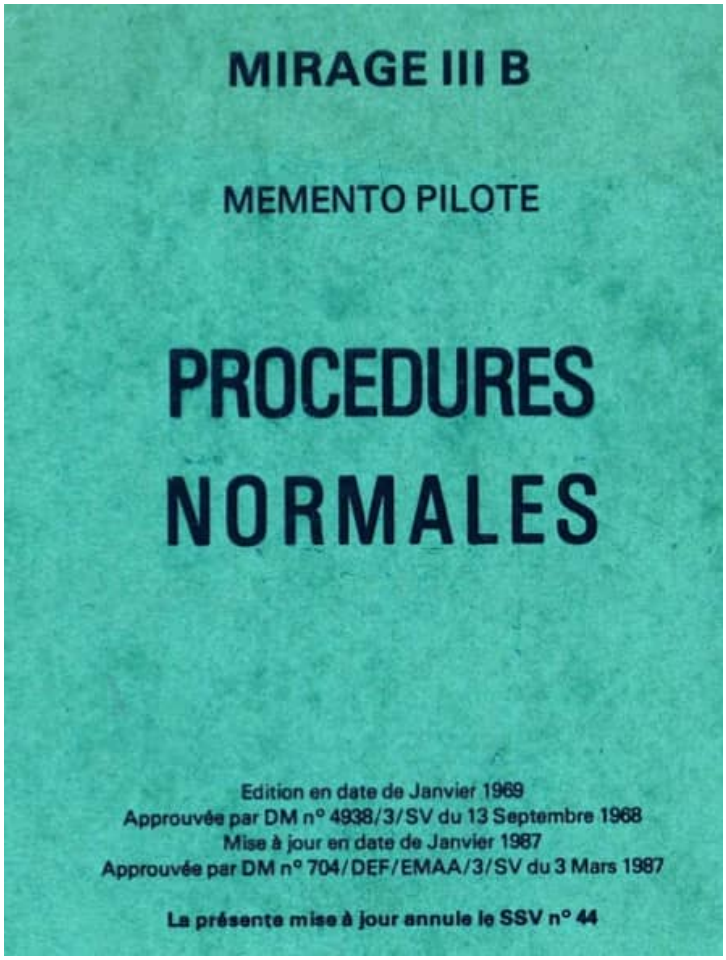
Image C-7 – Cheetah C #354 carrying an RP62 1,300 liter tank on the centerline station and two RPK combined fuel tank / bomb carriers beneath the wings.

Image C-8 – Cheetah C #382 carrying an RP825(2) 825 liter tank on the centerline and two RP30 1,700 liter tanks on the wings.

Image C-9 – in this image taken from the 2 Squadron Lines Book, a very substantial external fuel tank fit is seen consisting of two x 1,700 liter wing tanks and a centerline RP62 1,300 liter wing tank. It is unlikely that the Cheetah C could've lifted off with this configuration with full fuel; it's more likely that they would be refueled in air.

Image C-10 – close up view of RP62 1,300 liter tank on Cheetah C centerline. Note swept back leading edge of the CRP-372 pylon.

Reference Section A – extracts from French Mirage IIIB flight manual– the SAAF Mirage IIIBZ would be similar.



8 - ARMEMENT

Son armement est le suivant :

- en air-air : 2 canons de 30 mm
- en air-sol : 2 bombes de 400 kg
  et 2 lance-roquettes JL 100

A la place des lance-roquettes, on peut emporter 2 réservoirs largables de 600 ou 1 300 litres, ou 2 réservoirs non largables de 500 litres supersoniques.

3 - RESERVOIRS EXTERNES

On peut installer sous les ailes :
les réservoirs largables suivants :

- 2 x 600 litres ou
- 2 x 1 300 litres (1 250 litres utilisables) ou
- 2 x JL 100 (1 JL 100 = 250 litres)

ou les réservoirs non largables :

- 2 x 500 litres (réservoirs supersoniques)

Figure A-1

From the Flight Manual extract above : Mirage IIIB could carry either of a) 2 x JL-100 combined fuel tank / rocket pods or b) 2 x 600 liter tanks or c) 2 x 1,300 liter tanks or d) 2 x 500 liter tanks on the inboard wing pylons. The latter is defined above as *non largable* which means non-jettisonable in flight. The first three could be jettisoned in flight and were mounted on the CRP18 wing pylon. Only the tanks could be jettisoned leaving the CRP18 in place. The 500 liter tank had a more shallow pylon allowing the tank to be carried much closer to the wing. The 500 liter tank is defined above as *supersoniques* (supersonic). Note that the 1,300 liter tank provided only 1,250 liter of usable fuel.

2 - SOUS CHAQUE AILE

Une station interne (2 points d'attache) peut recevoir une cheminée universelle. A cette cheminée s'accroche, au choix :

- un réservoir largable de 1 300 litres
- un réservoir largable de 600 litres
- un lance roquettes JL 100.

Ce lance-roquette contient 18 roquettes de 68 mm dans sa partie avant et 250 litres de carburant dans sa partie arrière.

La cheminée universelle n'est pas largable, mais on peut larguer les charges accrochées aux cheminée à l'aide du bouton "BIDONS" à chaque poste pilote.

En outre, la station interne peut recevoir un réservoir supersonique de 500 litres. Ce réservoir est monté directement sous la voilure sans l'intermédiaire de cheminée.
Il n'est pas largable.

Figure A-2

In the Flight Manual extract above, it is noted that the JL-100 combined fuel tank / rocket pod can carry 250 liters of fuel and 18 x 68mm rockets.

2 - VITESSE MAXI :

	Vi MAX	Mi MAX
2 RL. 600 litres	600 kt	1, 5
2 R. 500 litres	730 kt	$34000 \leq Z^2 \leq 47000$
2 RL. 1 300 litres	600 kt	$Z > 18000$ ft : 1, 20
Bombes 400 kg	600 kt	1, 05
2JL 100 sans cône	600 kt avec T° sol = 15° C	1, 4

Figure A-3

This table above extracted from the Flight Manual provides maximum speed / Mach for each of the external fuel tanks. Note that, in theory, they are all Mach 1 capable.

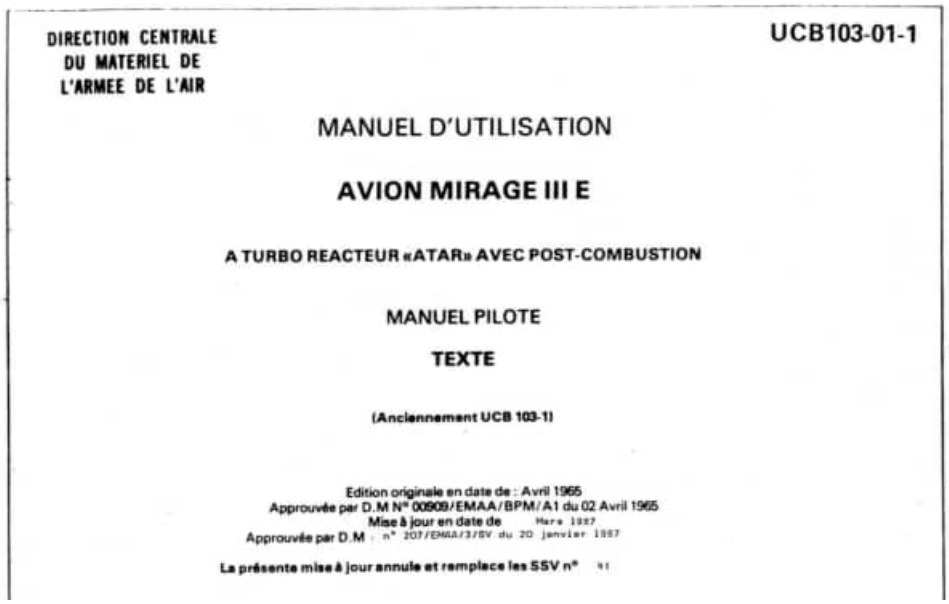
3,3.2 - AVION AVEC CHARGES

configuration		n. maxi autorisé	
2 RL. de 1300 litres	PLEINS	+ 5	- 2,4
	VIDES	+ 6	- 3
2 RL. de 600 litres	PLEINS	+ 6	- 3
	VIDES	+ 7,2	- 3,8
2 R de 500 litres	PLEINS	+ 5,5	- 2,7
	VIDES	+ 6,7	- 3,5
2 JL 100		+ 6	- 3
2 Bombes STRIM 2 x 400 kg		+ 5	- 2,5

Figure A-4

This extract above from the Flight Manual provides data on maximum g-load for each of the external stores configurations. The French words *PLEINS* and *VIDES* mean “Full” and “Empty” respectively.

Reference Section B – extracts from French Mirage IIIE flight manual– the SAAF Mirage IIIEZ would be similar.



DIRECTION CENTRALE
DU MATERIEL DE
L'ARMEE DE L'AIR

UCB103-01-1

MANUEL D'UTILISATION

AVION MIRAGE III E

A TURBO REACTEUR «ATAR» AVEC POST-COMBUSTION

MANUEL PILOTE

TEXTE

(Anciennement UCB 103-1)

Edition originale en date de : Avril 1965
Approuvée par D.M N° 00909/EMAA/BPM/A1 du 02 Avril 1965
Mise à jour en date de Mars 1987
Approuvée par D.M : n° 207/EMAA/3/SV du 20 janvier 1987

La présente mise à jour annule et remplace les SSV n° 41

- une station interne (2 points d'attache) qui reçoit :
  - un réservoir de 500 litres supersonique non largable ou
  - un réservoir largable de 1700 litres ou
  - une poutre universelle CRP 18 non largable, sous laquelle s'accrochent au choix :
    - un réservoir largable de 1300 litres
    - un réservoir largable de 600 litres
    - un lance-roquettes JL 100 contenant 18 roquettes de 68 mm dans sa partie avant et 250 litres de carburant dans sa partie arrière.

Les réservoirs de 500 litres et les poutres ne sont pas largables.

Figure B-1

The extract from the Mirage IIIE Flight Manual above reflects that the E could carry the same underwing stores as for the IIIB. However, the E could also carry the large 1,700 liter tank (one on each inboard wing stataion). Similarly to the 500 liter tank, the 1,700 liter tank had its own specific shallow pylon which allowed the tank to be carried mcuh closer to the wings than those carried on the CRP18 wing pylons.

Although the 1,700 liter tank was cleared on the IIIE, it appears that the SAAF never used this tank on the IIIEZ. The author could find no images of EZs with these tanks. This may have to do with “hot and high” operating conditions in South Africa.

The French Flight Manual does not show any fuel tanks to be carried on the fuselage centerline station. However, the SAAF EZs did operate with both the RP825 and the RP62 on the centerline, as the images elsewhere in this document show.

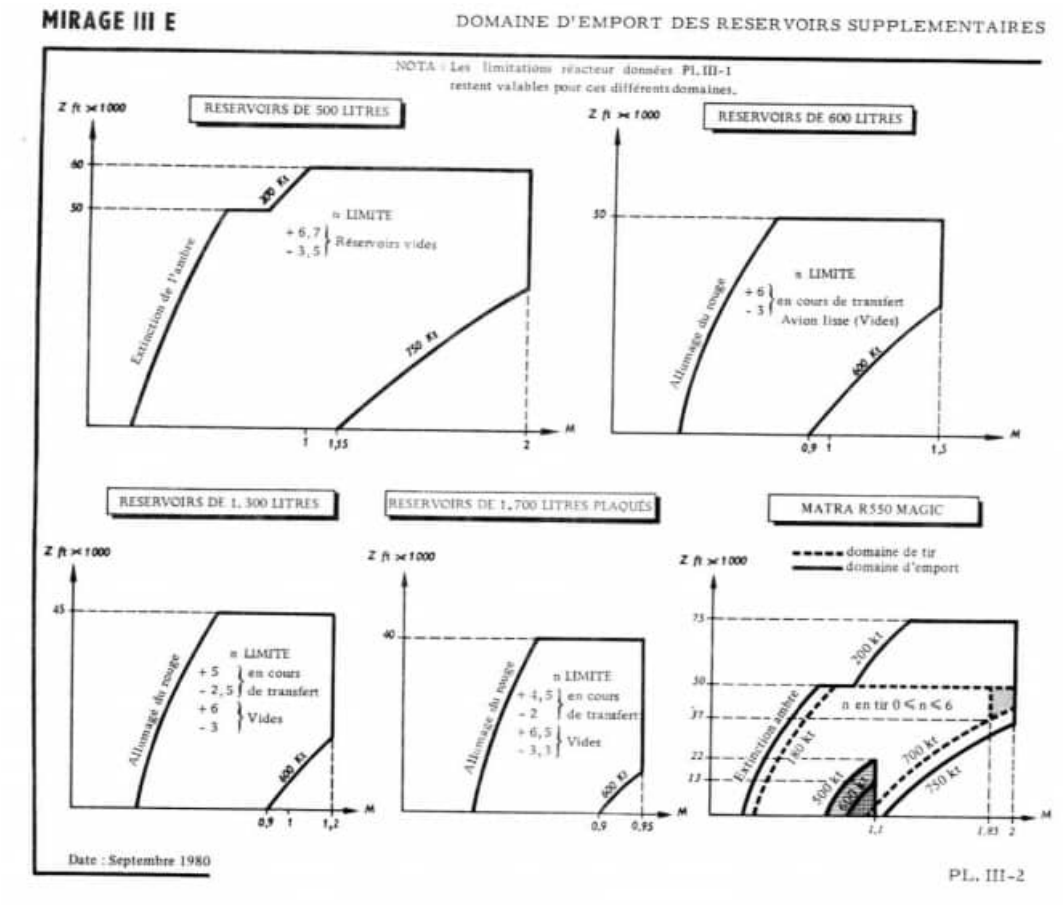


Figure B-2

The graphs from the Mirage IIIE flight manual above show the speed versus altitude envelope for the aircraft for the various fuel tank configurations. Note that at sea level, only the 500 liter fuel tank is capable of supersonic speeds. The 1,700 liter tank is limited to subsonic speeds and could not be jettisoned in flight (hard mounted).

2 - VITESSE MAXI

	Vi max.	Mi max.
MATRA 530	750 kt	2
SIDEWINDER ou MATRA R550	730 kt	2
2R. 500 litres avancés	750 kt	2
2R.L. 600 litres	600 kt	1,5
2 R.L. 1300 litres	600 kt	1,2
2 R.L. 1700 litres	600 kt	0,95
JL 100	600 kt	1,4
AS 30	750 kt	1,7
Bombes STRIM	600 kt	0,95
2 L.R. type F2	550 kt	0,9
2 L.R. type LAU 32B/A	530 kt	0,9

Figure B-3

The table above provides the maximum speed / mach number for each of the fuel tank configurations.

3,3.2 - AVION AVEC CHARGES

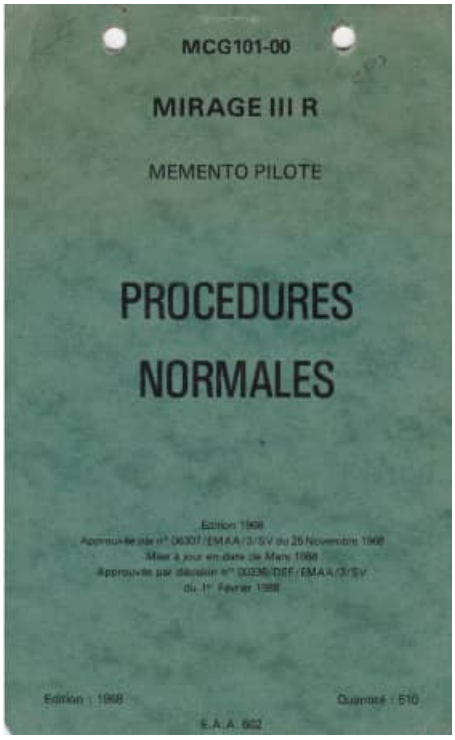
Configuration		n max. autorisé	
2 R.L. 1700 litres	Transfert	+ 4,5	- 2
	Vides	+ 6,5	- 3,3
2 R.L. 1300 litres	Transfert	+ 5	- 2,5
	Vides	+ 6	- 3
2 R.L. 600 litres	Transfert	+ 6	- 3
	Vides	voir lisse	
2 JL 100 - AS 30		+6	- 3
Bombes STRIM		+5	- 2,5
2 R.L. type F2		+4,5	- 2,1
2 L.R. type LAU 32 B/A		+4	- 2

Date : Décembre 1980

Figure B-4

This table provides data on the maximum G-loading (*n max.)* for each of the external stores configurations. The French words *Transfert* and *Vides* mean “Transfer” and “Empty” respectively. Logically, lower G-loads are allowable with full tanks.

Reference Section C – extracts from French Mirage IIIR flight manual – the SAAF Mirage IIIRZ would be similar.



LIMITATIONS

DOMAINE DE VOL

	Z Maxi	VITESSE Maxi	MACH Maxi	VITESSE Mini	INCIDENCE Maxi
LISSE	50 000	750	2	145	ROUGE PUR
600 l	50 000	600	1,5	Allumage du rouge	Allumage du rouge
2 1300 l sous voilure	45 000	600	1,2		
JL 100	45 000	600	1,4		
1300L ventral cyclope	45 000	600	1,2	ROUGE PUR	ROUGE PUR
2x1700L	40 000	600	0,95	Allumage du rouge	Allumage du rouge

Figure C-1

The table extract above is from the French Mirage IIIR Flight Manual. The French Mirage IIIR was cleared to operate with the large 1,700 liter wing tanks. Similar to the Mirage IIIEZ in SAAF service, the RZ did not use the 1,700 liter tanks. The only exception was RZ #836 once it had been fitted with the higher thrust 09K50 engine (similar to the R2Z). Not operating the EZ and RZ with the 1,700 liter tank must have been a SAAF directive due to hot / high operating conditions combined with the lower thrust 09C engine.

Reference Section D – extracts from SAAF Mirage IIID2Z flight manual – the SAAF Mirage IIIDZ would be similar.

AVIONS MARCEL DASSAULT
BREGUET AVIATION

FLIGHT MANUAL
(PILOT NOTES)

Mirage IIID2Z

PLATES

AIRCRAFT

Issue : May 1973
Revised : October 1973

Doc. AMD-BA No U-0-M3D2Z

B - Fuel

The loading stations can be used to install the following :

- 2 x 374 IG (1700 l) drop tanks or
- 2 x 286 IG (1300 l) drop tanks or
- 2 x 110 IG (500 l) non-droppable supersonic tanks

} Under wings

Figure D-1

The table extract above is from the SAAF Mirage IIID2Z Flight Manual. The SAAF Mirage IIID2Z was thus cleared to operate with the large 1,700 liter wing tanks. However, the author could find no images of DZs or D2Zs operating with this fuel tank. It is therefore assumed, similarly for the RZ (all equipped with the 09C engine), that these aircraft were subject to a SAAF directive to not use these tanks due to hot / high operating conditions combined with the lower thrust 09C engine.

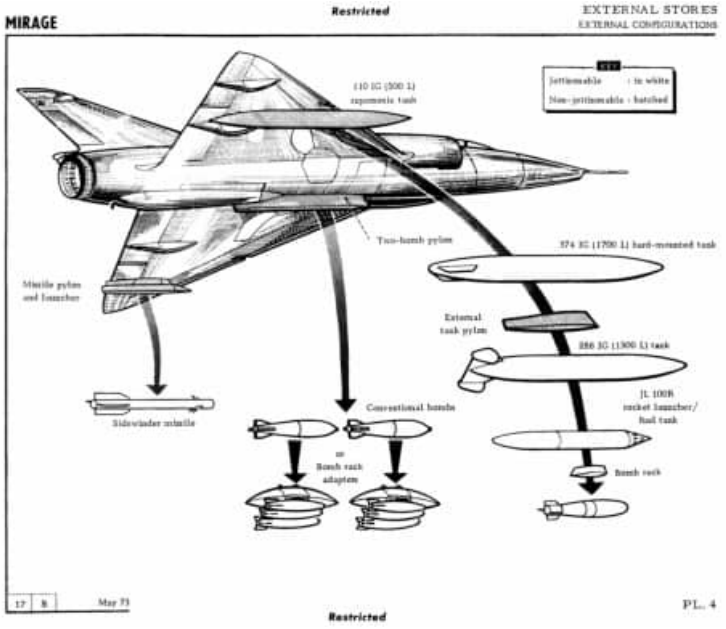


Figure D-2

Note that in Figure D-2 above, an excerpt from the Mirage D2Z Flight Manual, shows no external fuel tanks mounted on the fuselage centerline station. Consistent with this is that no images of DZ and D2Z aircraft could found by the author showing external fuel tanks on the centerline stations.

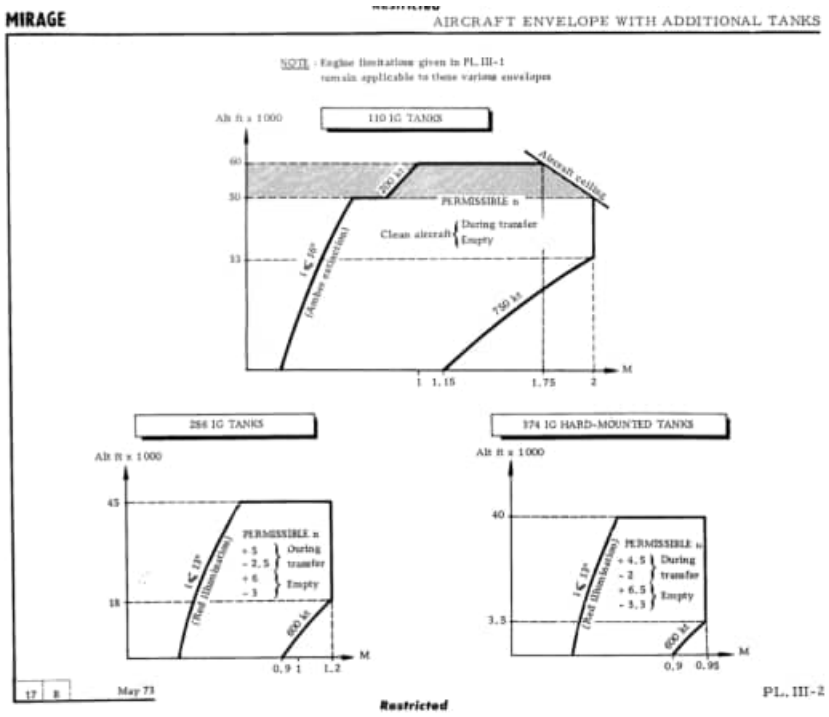


Figure D-3

Speed – altitude envelope curves for the various external fuel tank configurations. Note that the 374 imperial gallon (1,700 liter) tanks are described as “hard mounted” – this is interpreted to mean that they could not be jettisoned in flight.

Reference Section E – extracts from SAAF Mirage IIICZ flight manual


AVIONS MARCEL DASSAULT

FLIGHT MANUAL

Mirage IIICZ

BOOK I

PLATES

AIRCRAFT

Issue : February 1967

DOC. AMD. 100 CZ

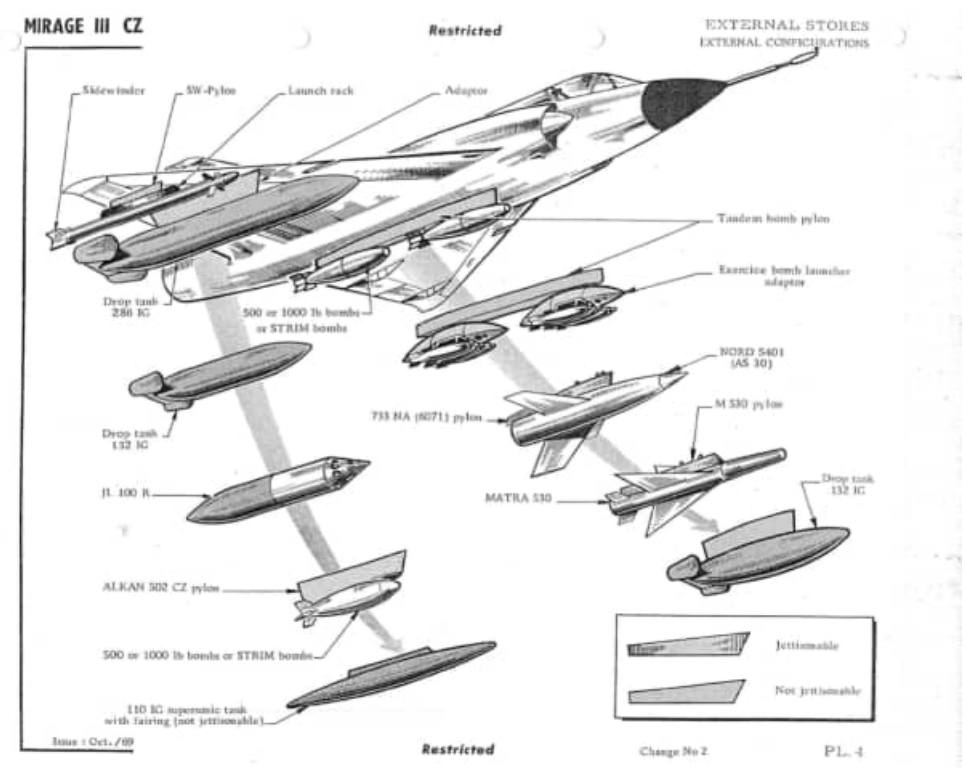


Figure E-1

This excerpt from the CZ flight manual shows that the CZ could carry the smaller 600 liter (132 Imp. Gallon) fuel tank on the fuselage centerline station and inboard wing pylons. The CZ was also capable of carrying the Israeli RP825 880 liter tank on the centerline as images elsewhere in this document indicate. This version of the flight manual is dated 1969 and has not been updated to reflect the carriage of the Israeli developed RP825, finned AZ 500 liter fuel tank and BZ combined fuel tank / bomb carrier.

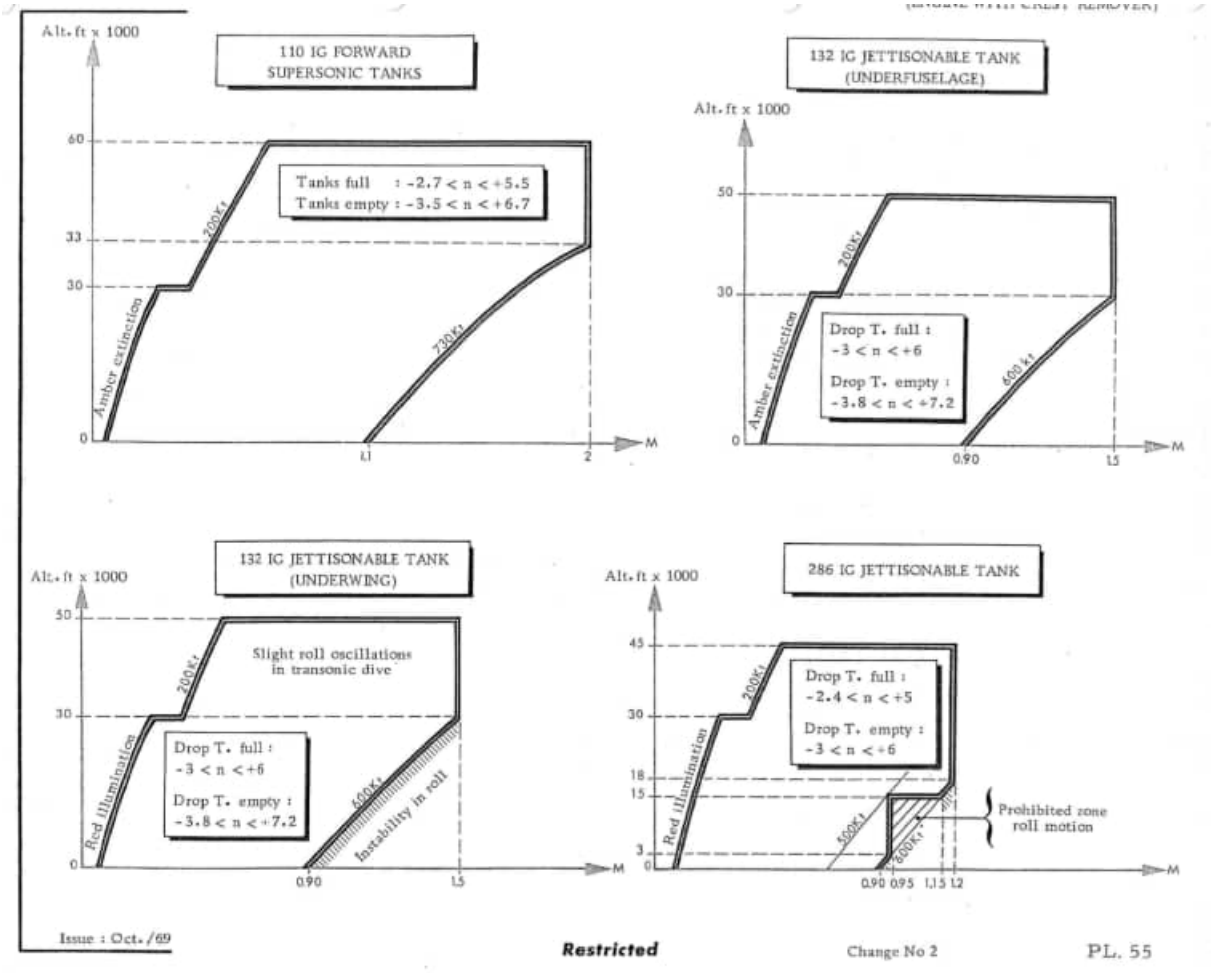
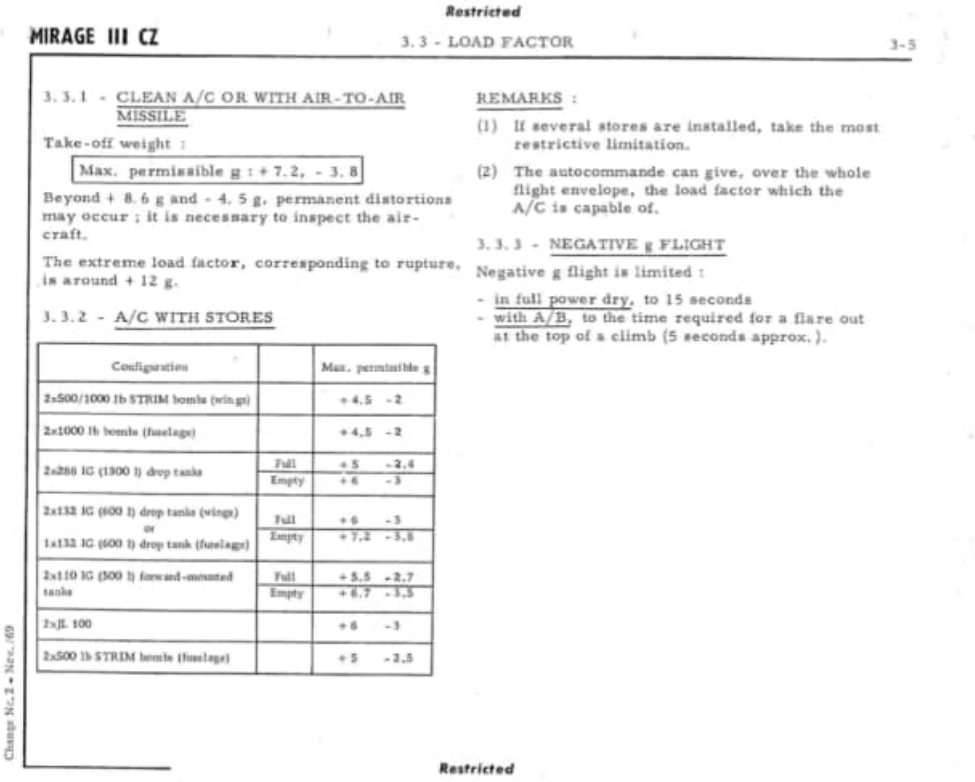


Figure E-2

Speed – Altitude – speed curves for each of the external fuel tanks for the Mirage IIICZ



Restricted

MIRAGE III CZ — 3.3 - LOAD FACTOR — 3-5

3.3.1 - CLEAN A/C OR WITH AIR-TO-AIR MISSILE

Take-off weight :

Max. permissible g : + 7.2, - 3.8

Beyond + 8.6 g and - 4.5 g, permanent distortions may occur ; it is necessary to inspect the aircraft.

The extreme load factor, corresponding to rupture, is around + 12 g.

3.3.2 - A/C WITH STORES

Configuration		Max. permissible g
2x500/1000 lb STRIM bombs (wings)		+ 4.5 - 2
2x1000 lb bombs (fuselage)		+ 4.5 - 2
2x286 IG (1300 l) drop tanks	Full	+ 5 - 2.4
	Empty	+ 6 - 3
2x132 IG (600 l) drop tanks (wings) or 1x132 IG (600 l) drop tank (fuselage)	Full	+ 6 - 3
	Empty	+ 7.2 - 3.8
2x110 IG (500 l) forward-mounted tanks	Full	+ 5.5 - 2.7
	Empty	+ 6.7 - 3.5
2xJL 100		+ 6 - 3
2x500 lb STRIM bombs (fuselage)		+ 5 - 2.5

REMARKS :

(1) If several stores are installed, take the most restrictive limitation.

(2) The autocommande can give, over the whole flight envelope, the load factor which the A/C is capable of.

3.3.3 - NEGATIVE g FLIGHT

Negative g flight is limited :

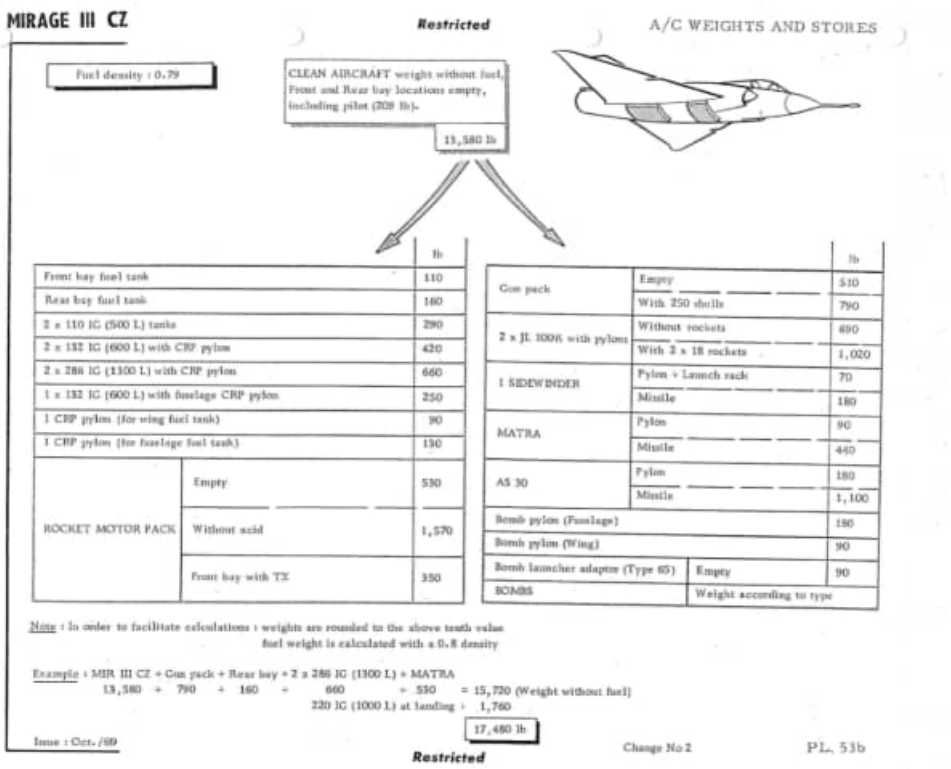
- in full power dry, to 15 seconds
- with A/B, to the time required for a flare out at the top of a climb (5 seconds approx.).

Change No.2 + Nov./69

Restricted

Figure E-3

Maximum G-load factors for the CZ with the various tank configurations as per the original 1969 Flight Manual.



MIRAGE III CZ — Restricted — A/C WEIGHTS AND STORES

Fuel density : 0.79

CLEAN AIRCRAFT weight without fuel, Front and Rear bay locations empty, including pilot (209 lb).

13,580 lb

		lb
Front bay fuel tank		110
Rear bay fuel tank		160
2 x 110 IG (500 L) tanks		290
2 x 132 IG (600 L) with CRP pylon		420
2 x 286 IG (1300 L) with CRP pylon		660
1 x 132 IG (600 L) with fuselage CRP pylon		250
1 CRP pylon (for wing fuel tank)		90
1 CRP pylon (for fuselage fuel tank)		130
ROCKET MOTOR PACK	Empty	530
	Without acid	1,570
	Front bay with TX	350

		lb
Gun pack	Empty	510
	With 250 shells	790
2 x JL 1006 with pylons	Without rockets	690
	With 2 x 18 rockets	1,020
1 SIDEWINDER	Pylon + Launch rack	70
	Missile	180
MATRA	Pylon	90
	Missile	440
AS 30	Pylon	180
	Missile	1,100
Bomb pylon (Fuselage)		180
Bomb pylon (Wing)		90
Bomb launcher adapter (Type 65)	Empty	90
BOMBS	Weight according to type	

Note : In order to facilitate calculations : weights are rounded to the above tenth value fuel weight is calculated with a 0.8 density

Example : MIR III CZ + Gun pack + Rear bay + 2 x 286 IG (1300 L) + MATRA
13,580 + 790 + 160 + 660 + 530 = 15,720 (Weight without fuel)
220 IG (1000 L) at landing : 1,760

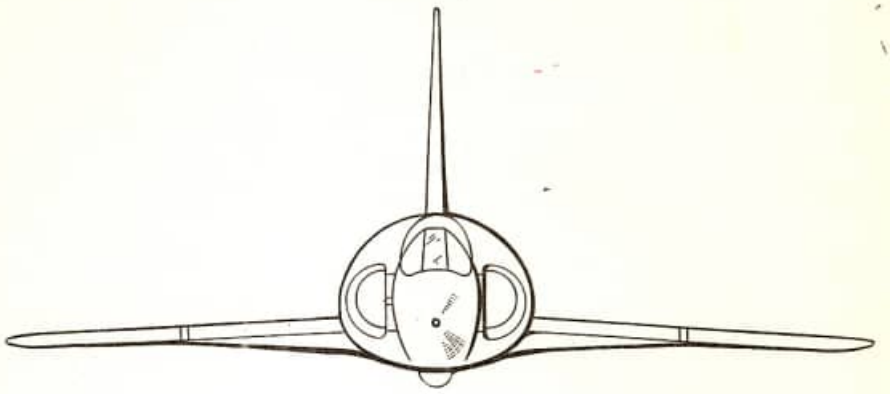
17,480 lb

Issue : Oct./69 — Restricted — Change No 2 — PL. 53b

Figure E-4

This table provides for the empty weights for the various external fuel tanks as carried by the CZ.

MIRAGE III CZ EXTERNAL STORES



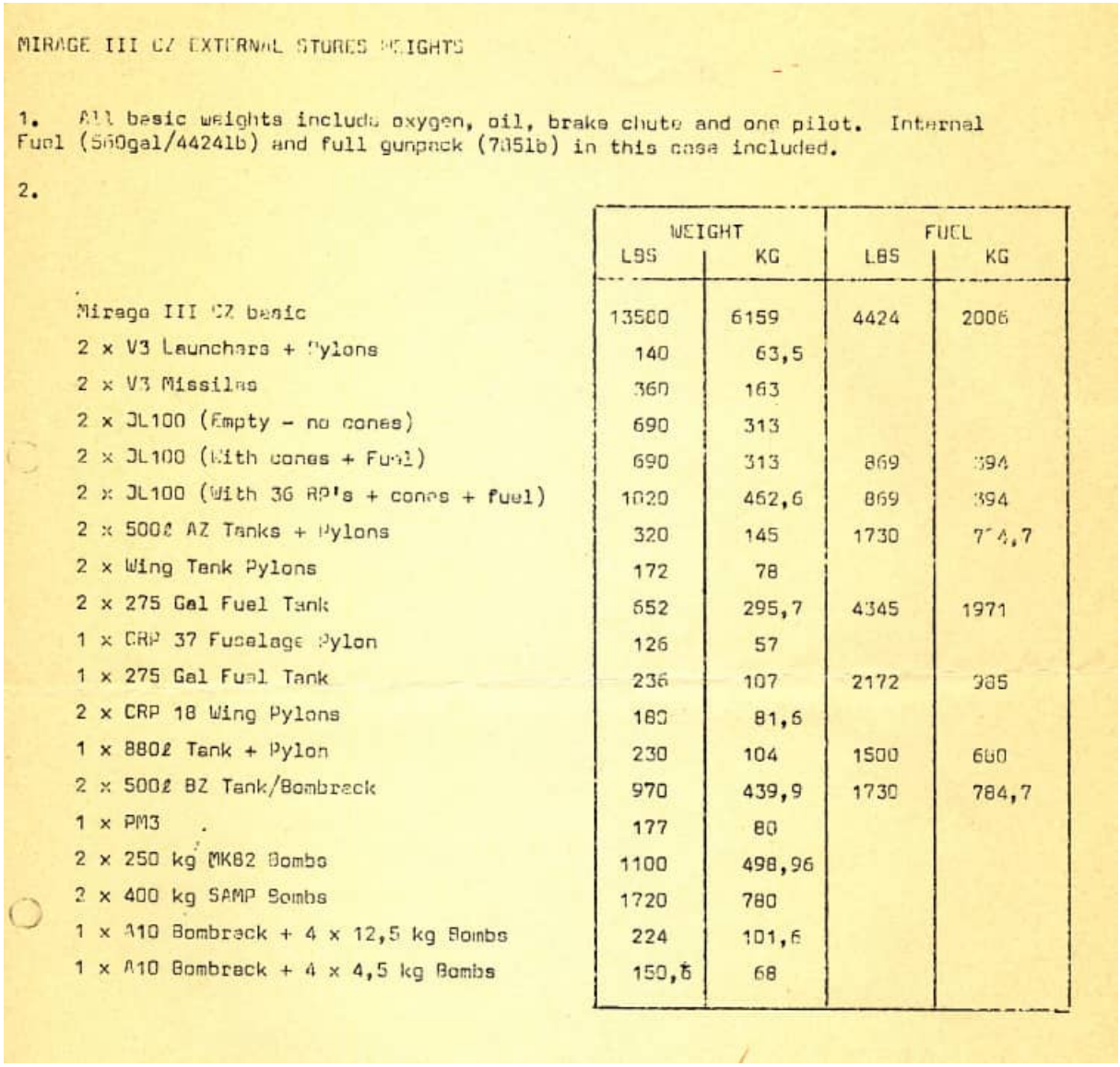
V3B MISSILE		X								X
JL 100 ROCKET LAUNCER AND CRP 18[illegible] PYLON				X				X		
286 GALLON FUEL TANK + CPR 18[illegible] PYLON				X				X		
110 GAL AZ SUPER= SONIC FUEL TANK				X				X		
110 GAL BZ SUPER= SONIC FUEL TANK + 2 X BOMBS				X				X		
ALKAN 502 PYLON AND A10 PRACTICE BOMB CARRIER				X				X		
PM3 PYLON + 2X BOMB OR 2X A10 PRACTICE BOMB CARRIERS OR SECAPEM A-A TARGET						X				
200 OR 286 GAL BELLY TANK AND CRP 37 PYLON						X				

Figure E-5

This is an updated sheet inserted into the original CZ flight manual. It reflects different designations for the 500 liter tanks as follows :

- "AZ" – this is assumed to be the Israeli designed 500 liter tank with fins.
- "BZ" – this the AZ tank further developed with bomb release units allowing two bombs to be carried beneath the tank in tandem.

The last line in the table reflects the ability to operate the CZ with either the 200 imperial gallon (909 liters) or 286 imperial gallon (1,300 liter) tanks on the fuselage centerline station. The 909 liter tank is what this document refers to as the Israeli designed RP825(1) which had a usable capacity of 880 liters as indicated in the table on the following page.



MIRAGE III CZ EXTERNAL STORES WEIGHTS

1. All basic weights include oxygen, oil, brake chute and one pilot. Internal Fuel (560gal/4424lb) and full gunpack (785lb) in this case included.

2.

	WEIGHT		FUEL	
	LBS	KG	LBS	KG
Mirage III CZ basic	13500	6159	4424	2006
2 x V3 Launchers + Pylons	140	63,5		
2 x V3 Missiles	360	163		
2 x DL100 (Empty - no cones)	690	313		
2 x DL100 (With cones + Fuel)	690	313	869	394
2 x DL100 (With 36 RP's + cones + fuel)	1020	462,6	869	394
2 x 500ℓ AZ Tanks + Pylons	320	145	1730	784,7
2 x Wing Tank Pylons	172	78		
2 x 275 Gal Fuel Tank	652	295,7	4345	1971
1 x CRP 37 Fuselage Pylon	126	57		
1 x 275 Gal Fuel Tank	236	107	2172	985
2 x CRP 18 Wing Pylons	180	81,6		
1 x 880ℓ Tank + Pylon	230	104	1500	660
2 x 500ℓ BZ Tank/Bombrack	970	439,9	1730	784,7
1 x PM3	177	80		
2 x 250 kg MK82 Bombs	1100	498,96		
2 x 400 kg SAMP Bombs	1720	780		
1 x A10 Bombrack + 4 x 12,5 kg Bombs	224	101,6		
1 x A10 Bombrack + 4 x 4,5 kg Bombs	150,5	68		

Figure E-6

Another added sheet to the 1969 CZ flight manual refers to a single 880 liter tank (Israeli designed RP825 given the designation RP825(1) in this document), AZ 500 liter tanks and BZ combined 500 liter tank / bomb carrier.

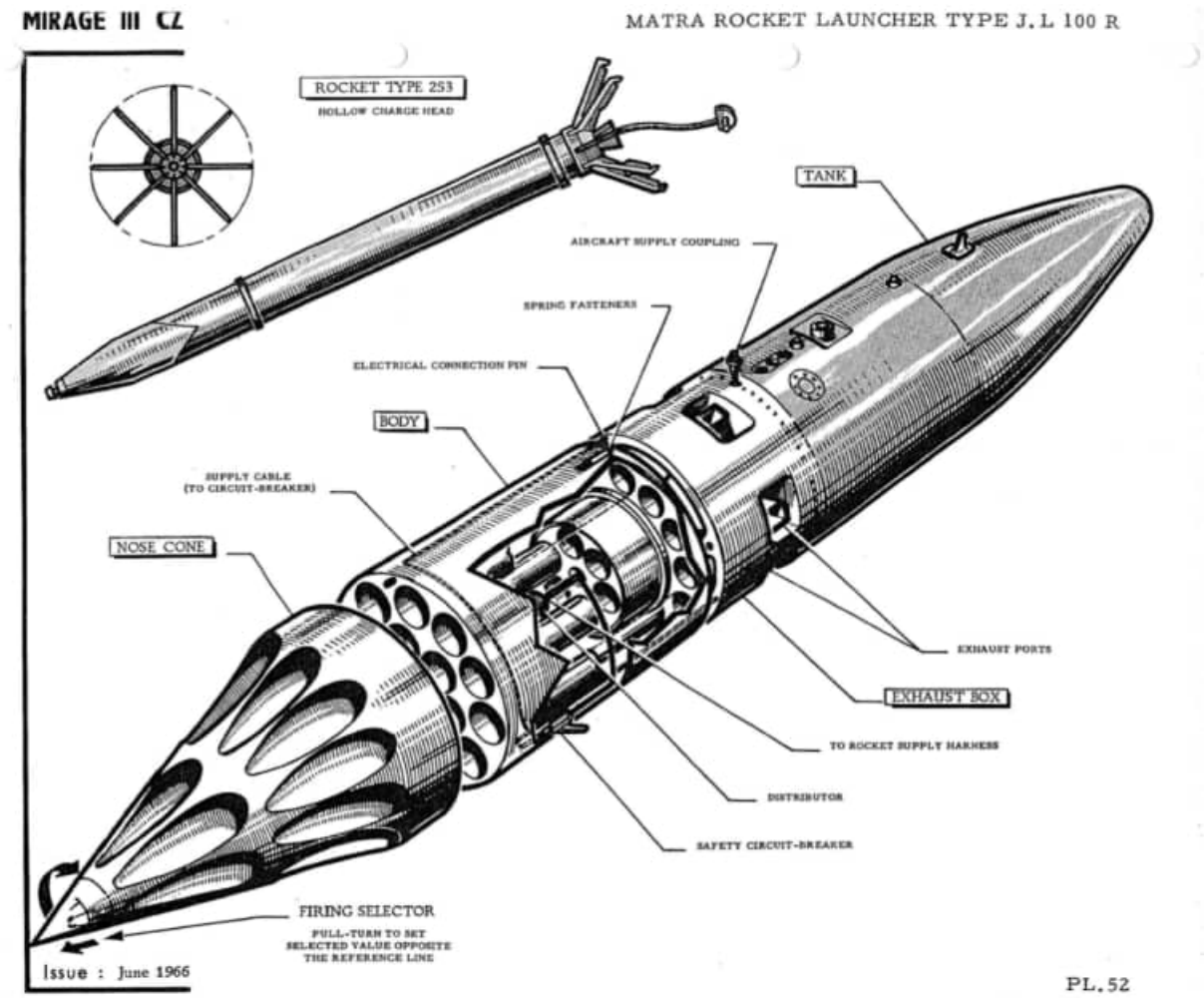
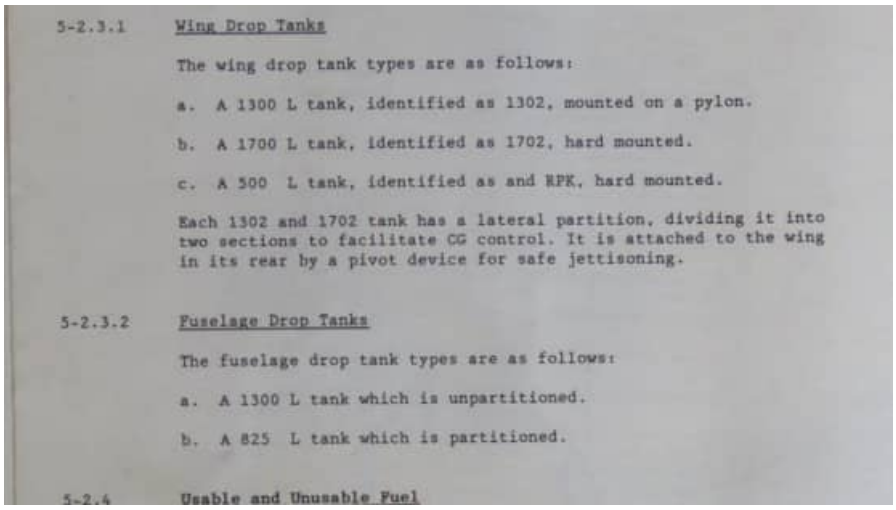


Figure E-7 - Technical drawing of the JL 100 combined fuel tank (250 liter) / rocket pod.

Reference Section F – excerpts from SAAF Cheetah C Flight Manual



5-2.3.1 Wing Drop Tanks

The wing drop tank types are as follows:

a. A 1300 L tank, identified as 1302, mounted on a pylon.

b. A 1700 L tank, identified as 1702, hard mounted.

c. A 500 L tank, identified as and RPK, hard mounted.

Each 1302 and 1702 tank has a lateral partition, dividing it into two sections to facilitate CG control. It is attached to the wing in its rear by a pivot device for safe jettisoning.

5-2.3.2 Fuselage Drop Tanks

The fuselage drop tank types are as follows:

a. A 1300 L tank which is unpartitioned.

b. A 825 L tank which is partitioned.

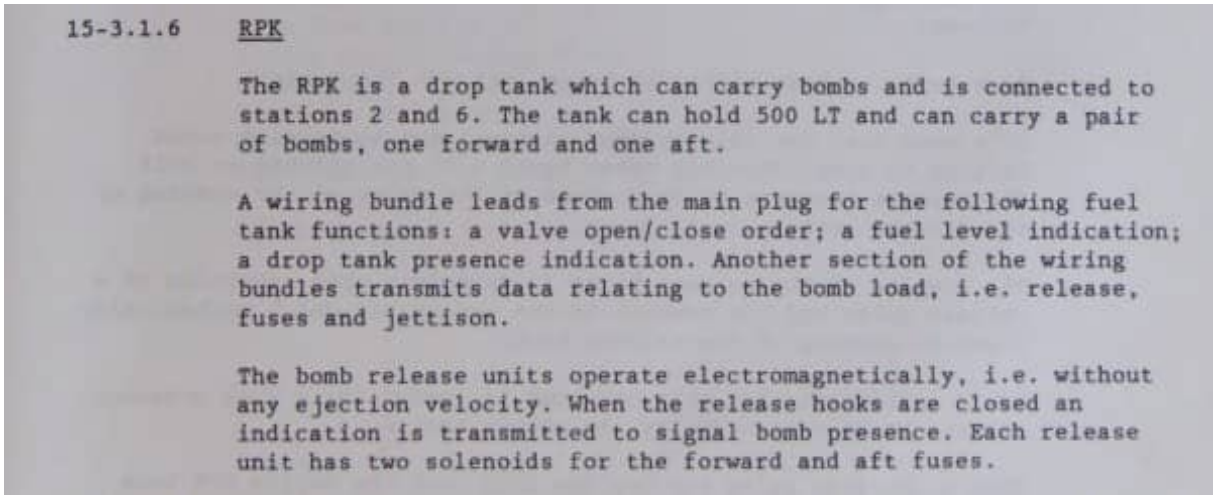
5-2.4 Usable and Unusable Fuel

Figure F-1

From the table above, the two different 1,300 liter tanks are apparent. These are :

a) The one identified as “1302” which is of Israeli origin and carried on the wings only
b) The one carried on the fuselage which is the original French RP62

The Cheetah C therefore did not carry the RP62 on the wing stations.



15-3.1.6 RPK

The RPK is a drop tank which can carry bombs and is connected to stations 2 and 6. The tank can hold 500 LT and can carry a pair of bombs, one forward and one aft.

A wiring bundle leads from the main plug for the following fuel tank functions: a valve open/close order; a fuel level indication; a drop tank presence indication. Another section of the wiring bundles transmits data relating to the bomb load, i.e. release, fuses and jettison.

The bomb release units operate electromagnetically, i.e. without any ejection velocity. When the release hooks are closed an indication is transmitted to signal bomb presence. Each release unit has two solenoids for the forward and aft fuses.

Figure F-2

This refers to the combined fuel tank / 2-bomb carrier as an “RPK” and is similar to the “BK” referred to in the Mirage IIICZ Flight Manual (Figure E-6). This is of Israeli origin. The French RPK could carry 4 bombs.

15-1 **EXTERNAL FUEL TANKS**

15-1.1 **Fuel Tank Pylons**

15-1.1.1 CRP-372

The CRP-372 is a pylon connected to the aircraft's No. 4 suspension point and is used to carry a fuel drop tank (1300 or 825 LT).

The pylon itself cannot be jettisoned. The drop tanks can be jettisoned by means of two pyrotechnical cartridges located in the pylon.

A jettison pulse is sent through the pylon's main plug - via an electrical wiring bundle and safety pin - to two pyrotechnical cartridges. Inserting the safety pin disables the jettison ability.

In addition to the pylon's armament functions an intersection is utilized to transfer fuel functions relating to drop tanks.

15-1.1.2 CRP-186

The CRP-186 is the pylon for the 1302 LT drop tank. The pylon is attached at No. 2 and 6 suspension points. The pylon is connected to the wings by two leading screws and therefore cannot be jettisoned (including emergency jettison).

The pylon has a wiring bundle which leads from the main plug attached to the wing and is used for:

- Operating the pyrotechnical devices for drop tank jettison.

- Relaying the fuel functions from the drop tank to the pylon.

The jettison pulse is sent through the main plug, the safety pin and an additional plug, and operates the pyrotechnical cartridge. The presence of the safety pin disables the pulse from reaching the pyrotechnical cartridge. This is done by a microswitch which disconnects the 28V electrical current to the cartridge.

The functions transmitted from the drop tank are: indication of the drop tank pressure; indication of the fuel quantity according to the drop tank float marker; operation of the drop tank pressure valve.

Figure F-3

This section of the manual refers to the Cheetah C external fuel tank pylons.