

**The Dassault Mirage F1  
in South African Air Force service**

**VOLUME 3**

**Mirage F1CZ external stores**

## **Revision 1**

Revision 0 of this document was published in September 2024. Based on further investigation and comments received from others, this Revision 1 of Volume 3 contains additional and updated data to provide a more complete record.

**South African Air Force Mirage F1 – Volume 3**  
**F1CZ external stores configurations**

**Section 3.1 – stores and weapons carried by the CZ**

The Mirage F1CZ could carry the following stores on the wing and fuselage hardpoints as indicated in the table below:

Port wingtip station	Port outboard wing Station 2	Port inboard wing Station 1	Centerline station	Starboard inboard wing Station 1	Starboard outboard wing Station 2	Starboard wingtip station
R550						R550
		R530		R530		
	V3S				V3S	
V3B						V3B
V3C						V3C
		RP35 1,200 liter fuel tank	RP35 1,200 liter fuel tank	RP35 1,200 liter fuel tank		
	Matra 68mm rocket pod	Matra 68mm rocket pod		Matra 68mm rocket pod	Matra 68mm rocket pod	
	Mk.81/82 GP bomb	Mk.81/82 GP bomb	Mk.81/82 GP bomb	Mk.81/82 GP bomb	Mk.81/82 GP bomb	
	450kg GP bomb	450kg GP bomb	450kg GP bomb	450kg GP bomb	450kg GP bomb	
		Practice bomb carrier	Practice bomb carrier	Practice bomb carrier		
	ACS pod				ACS pod	

- R550 Infrared guided air to air missile developed by Matra Hautes Technologies. It was delivered with the SAAF Mirage F1 order and was the primary missile carried by SAAF CZs during the border war due to the slightly larger warhead over the V3B.
- R530 Semi-active radar homing (SARH) air to air missile developed by Matra Hautes Technologies. This early generation missile was heavily dependent on depot level maintenance. In parallel to its poor reliability reputation worldwide, it was not use operationally by the SAAF.
- V3B Infrared guided air to air missile developed by Kentron. The successor to the V3A with improved sensitivity and view angle for the IR seeker and an upgraded motor. Sometimes carried by the CZ in training within South Africa, but not during combat operations.
- V3C Infrared guided air to air missile developed by Kentron. The V3C was supposed to offer increased performance in all areas over the V3B. It shares the outer mould line of the R550, but is a totally different missile. Slow development meant it was only used by the CZs after the war and only for operational testing and evaluation.
- V3S Infrared guided air to air missile developed by Rafael. Due to poor performance of the R550 and V3B in air combat and with the slow development of the V3C, the Python 3 was acquired post-haste after Arthur Piercy's mishap where his aircraft was damaged by an Angolan MiG-23 in late 1987. It was named the V3S "Snake" in SAAF service. Integration started in early 1988.
- CLB.4 4 bomb carrier typically used by CZs when performing their secondary ground attack role.
- Mk.81/82 125 kg and 250 kg bombs from the low drag Mk.80 series of aircraft bombs.
- GP General Purpose – unguided bomb. The 450kg GP bomb was the British Mk.10 1,000lb bomb as used by the SAAF.
- F4 155 Matra Hautes Technologies rocket pod - contains 18 SNEB 68mm rockets
- ACS pod Active Countermeasures System pod. Modification of the Elettronica S.p.A ELT-555 jamming pod by Grintek Electronics. Available in both noise and deception jammer variants. A very atypical store for use by the CZ.

The table below provides the more typical CZ load combinations as evidenced through the images in this document – some were considered “operational” loads used during combat operations by the SAAF:

Port wingtip station	Port outboard wing Station 2	Port inboard wing Station 1	Centerline station	Starboard inboard wing Station 1	Starboard outboard wing Station 2	Starboard wingtip station
-	-	-	RP35 1,200 liter fuel tank	-	-	-
R550	-	-	-	-	-	R550
-	V3S	-	-	-	V3S	-
R550	-	-	RP35 1,200 liter fuel tank	-	-	R550
R550	-	R530	RP35 1,200 liter fuel tank	R530	-	R550
R550	V3S	-	RP35 1,200 liter fuel tank	-	V3S	R550
-	-	RP35 1,200 liter fuel tank	-	RP35 1,200 liter fuel tank	-	-
R550	-	RP35 1,200 liter fuel tank	-	RP35 1,200 liter fuel tank	-	R550
-	-	Matra 155 68mm rocket pod	-	Matra 155 68mm rocket pod	-	-
R550	Matra 155 68mm rocket pod	Matra 155 68mm rocket pod	-	Matra 155 68mm rocket pod	Matra 155 68mm rocket pod	R550
R550	1 x Mk.81 / 82 bomb	RP35 1,200 liter fuel tank	CLB4 with 4 x Mk.81/82 bombs	RP35 1,200 liter fuel tank	1 x Mk.81 / 82 bomb	R550
R550	1 x Mk.81 / 82 bomb	1 x Mk.81 / 82 bomb	CLB4 with 4 x Mk.81/82 bombs	1 x Mk.81 / 82 bomb	1 x Mk.81 / 82 bomb	R550
-	-	Practice bomb carrier	-	Practice bomb carrier	-	-
-	-	-	Practice bomb carrier	-	-	-
-	ACS pod	-	-	-	ACS pod	-

The stores configurations presented in the grey cells in the table represent the typical combat operational loads used by the CZs during the Border War.



CZ #201 (above) and #211 (below) each carrying a single RP35 1,200 liter external fuel tank. These fuel tanks were initially unpainted as in these images. However, they were later painted medium blue-grey colour when the CZ received the three tone low visibility blue-grey camouflage. Wingtip missile launchers are fitted to both aircraft.





CZ #214 with single RP35 1,200 liter external fuel tank. #214 is in the original delivery scheme with a complete set of high visibility markings.



CZ with a single RP35 1,200 liter centerline tank and R550 missile on the wingtip launcher. The tank appears to have been painted in an overall medium blue-grey PE Blue colour.



CZ in low visibility three tone blue/grey camouflage carrying two RP35 external fuel tanks on the inboard (station 1) pylons. These tanks are painted in the medium blue-grey PE Blue colour.



This CZ is seen operating from Mpacha Air Base in the Caprivi Strip in 1986 and is carrying an unpainted RP35 external fuel tank on the port inboard wing station – these would have been carried symmetrically on the wings. An R550 missile is carried on the wingtip station.



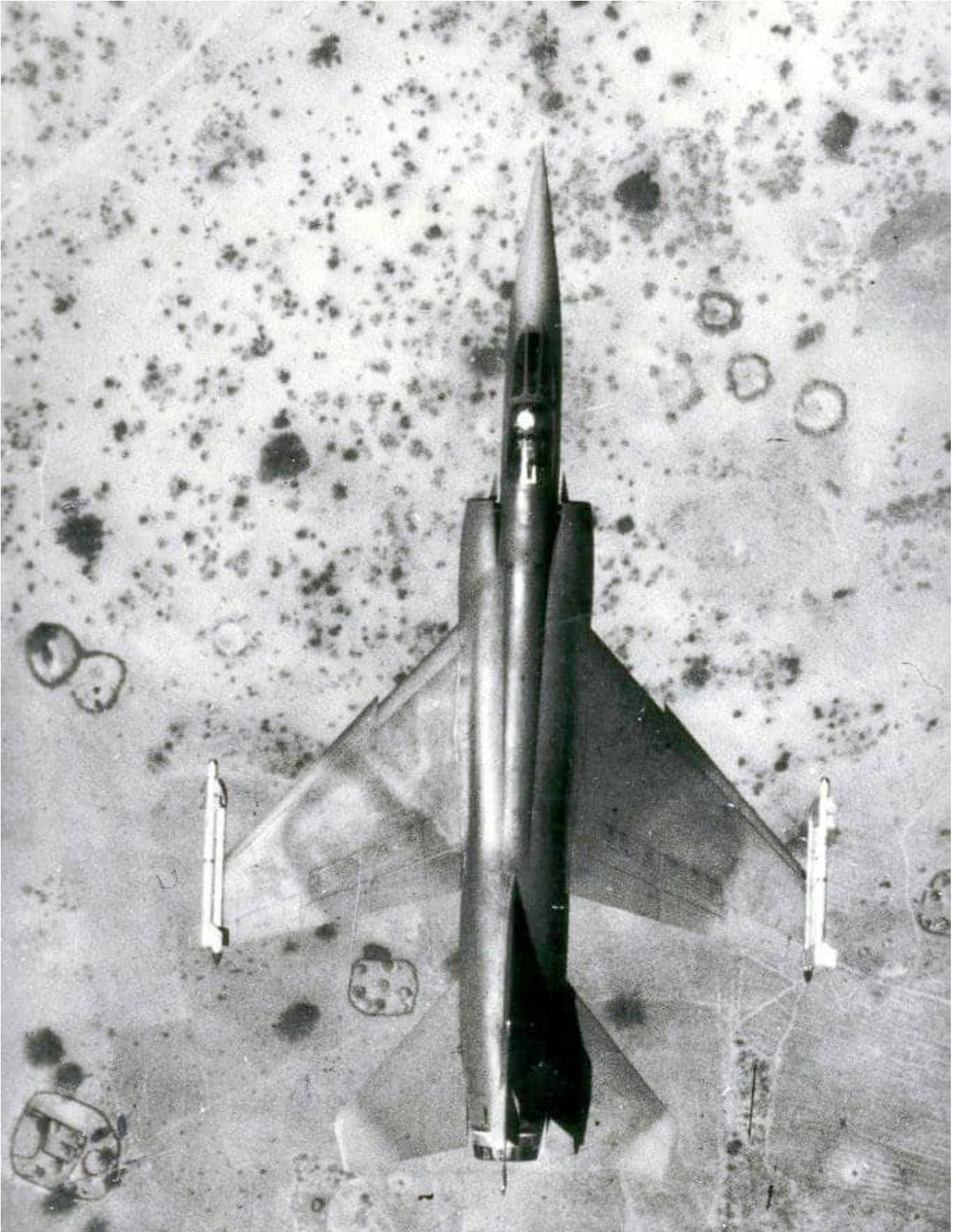
Here's an interesting one of a CZ in the operational area carrying three RP35 external fuel tanks, one on each inboard wing station and one on the fuselage centerline. This, and the two tank configuration, was a much less common configuration than the single RP35 carried on the centerline station.



CZ #214 with wingtip mounted R550 IR guided air-to-air missiles.



One of the CZs above is carrying wingtip mounted R550 missiles.



Interesting image of a CZ in low visibility blue/grey over the Namibian or Southern Angolan landscape. It is carrying two R550 IR missiles on the wingtips. Note the shapes of the SAAF Castles on the wings.



Two CZs carrying RP35 external fuel tanks and R550 missiles. This photo was taken in the Operational Area during the Border War, most likely Ondangwa. It would appear that the fuel tank in the image below has been painted in the low visibility medium blue-grey colour. The grey CZ is possibly #203 during the operational assessment of the low visibility camouflage scheme.





Two CZs in standard air intercept configuration with two R550 missiles and a single RP35 external fuel tank.



CZ #213 carrying SARH R530 missiles on the inboard wing pylons (station 1) and an RP35 external fuel tank on the fuselage centreline.



Interesting photograph apart from the obvious... a CZ in delivery camouflage with Matra SARH R530 missiles on the inboard wing pylons (station 1) and R550 IR missiles on wingtip pylons.



A starboard side view of a CZ carrying the same missiles as in the first image on this page. The airbrakes were not normally open when the aircraft was static on the ground. The open access hatch ahead of the airbrake is silver with the lower half painted in yellow with black stripes. An unpainted RP35 external fuel tank is carried on the fuselage centerline. The gun ammunition is for the two 30mm DEFA canon.



Two images of CZ #212 on airshow display duty with a standard air intercept load of two R530s, two R550s and a 1,200 liter fuel tank. The R530 was not used by the SAAF in combat operations. The external fuel tank is unpainted.





Images on this page and the next show the late configuration (post-RWS and RIMS mod state) of the CZ in the interceptor role – two V3S Snake IR missiles on the outboard wing hard points (station 2) and two R550 IR missiles on the wingtip launchers with a single RP35 external fuel tank on the centerline. The external fuel tanks were by this stage also camouflaged in a low visibility medium blue-grey colour.





Of interest in these two images are the barely visible red stripes on the wings just forward of the flaps and ailerons, on the horizontal stabilizer and on the wing / fuselage junction.





Two images of a CZ carrying V35 missiles on the outboard wing pylons. Notice how the V35 launch rail interfaces to the standard Station 2 pylon through and adaptor. The aircraft above is carrying an R550 missile on the wingtip station, whereas the aircraft below carries a V3B in this location.





These images show the typical ACM training configuration in the last years of service, with a single V3S Captive Air Training Missile (CATM) under each wing. These are missiles with inert motors and warheads, but with live IR seeker heads for use during training. They typically have their steering fins and wings removed to reduce store drag and mass. CZ #204 below has a CATM on the port wing and a dummy missile (mass representative only) on the starboard wing.





CZ with what appears to be V3B infrared missiles on the wingtips. Barely visible is the V3B canard fin configuration which is distinctly different to the Matra R550. The CZ was unlikely to have used the V3B in combat operations, favoring the R550. This aircraft has the RWS installed.



This image shows the installation of Russian Vypel R73 (NATO name AA-11 Archer) infrared air to air missiles on outboard wing stations of the F1CZ. R550 missiles are carried on the wingtips. The R73 was integrated and successfully test fired from the CZ, but was not taken into service by the SAAF despite a number being acquired.



CZ shown carrying a dummy V3S Snake on the port outboard wing station and a V3C missile on the wingtip.



CZ shown carrying a dummy V3S launcher on the port outboard wing station and a V3C test article on the wingtip.

Both images were taken at AFB Durban in 1990. As the V3C was never accepted into SAAF service this was likely only an operational test and evaluation exercise on behalf of Kentron.



#207 above is fitted with a Taxan towed target drogue which is towed behind the aircraft and used for air-to-air gunnery practice. The Taxan agile target is highly manoeuvrable and contains a real time scoring device which counts rounds passing through a volume which is comparable in size to an enemy aircraft.



CZ #213 is fitted with a V3S CATM and a live R550 for missile firing practice. Due to the cost of live missile launches, this was not a common training activity. By the early 1990s, however, the R550 was considered old and outdated, making practice firing a good way to both dispose of them and provide live missile launch experience to pilots while doing so. The Squadron also fired V3Bs for the same reasons.

These two pictures showcase some of the activities that would have taken place during air-to-air gunnery training camps at AFB Langebaanweg.



CZ on display. To note are the 8 x Mk 81 or 82 bomb configuration (4 on centerline bomb carrier, 1 on each wing station), Matra rocket pods on the floor and R530 missile on the stand in the foreground. Note that the Matra rocket pod to the right has the individual rockets protruding out of the nose cone (for display purposes) and the operational configuration with rockets inside and protected with frangible covers. The frangible covers would shatter as the rockets were fired.



CZs were used on combat close air support combat operations. This image is not the best but has been included as it shows a three-tone low visibility blue/grey camouflaged CZ with a centerline CLB4 4-bomb carrier. CZs were used for bombing sorties alongside AZs in this configuration during the bush war. The aircraft to the left carries an R550 missile on the wingtip.



CZ carrying the CLB4 with four Mk. 82 bombs on the centerline and external fuel tanks on the wings – these are painted in a light grey.



A flock of CZs on the flightline during Operation Protea in 1981. They are equipped with the CLB4 4-bomb carrier on the centerline station. The aircraft on the right carries R550 missiles on the wingtips.



Interesting image of a CZ (note the spotlight on the intake) carrying the CLB4 4-bomb carrier which is being loaded with what look like Mk.82 bombs. There is also one Mk.82 on each of the wing pylons, for a total load of eight bombs.



Another view of a CZ (note the 3 Sqn badge on the tail) armed with eight Mk.82 bombs. Just visible to the left of the photo is the protective cover for the R550 IR seeker.



A pair of CZs carrying a single Mk.82 on the centerline pylon. This is not a combat typical load indicating they are preparing for a practice bombing sortie.



Two images of CZs carrying Matra 155 rocket pods on the inboard wing station and an RP35 external fuel tank on the fuselage centerline.





Not a common CZ load: Four Matra 155 rocket pods housing 18 SNEB 68mm rockets each. This appears to be a test firing of all four pods simultaneously. Note the rearward facing camera housing beneath the nose as well as what could be a flight test data link pod on the centerline. The missiles on the wingtips are Matra R550 IR missiles.



CZ with single RP35 external fuel tank, practice bomb carriers on the inboard wing stations and R550 missiles on the wingtips.



CZ carrying a single practice bomb carrier on the centerline. Note the false canopy and vertical stabilizer painted in black on the underside.



CZ #210 carrying what look to be four 450kg bombs, one on each of the underwing hardpoints.  
This was an unlikely operational load for the CZ.



CZ #200 in France carrying a rather heavy load of eight 450kg GP bombs under the fuselage on a CLB4 bomb carrier and beneath the wing. It also carries two Matra R550 missiles on the wingtips. Pretty impressive, but quite impractical as combat radius with a load like this and without any external fuel tanks would have been significantly compromised.



CZ #207 demonstrating some of the weapons which the CZ could carry. Matra 155 rocket pod, Mk.82 bomb, 450kg bomb and Matra R550 missile on the wingtip. One of the DEFA 30mm canon is displayed on the stand to the left. The F1 was fitted with two of these, one beneath each of the intakes.



CZ carrying two ACS pods. This was a very atypical load for the CZ. With its performance already marginal over the MiG-23, any external stores could prove a liability.

## Reference list.

Apart from the Internet, several published reference works were used in the compilation of the three Volumes of this book. These are:

Aircraft of the South African Air Force	Herman Potgieter and Willem Steenkamp	Struik ISBN 0 86977 133 7 1980 first edition
South African Air Force In Profile Artwork (1960 - 1989)	Piet van Schalkwyk	Golden Eagle Artwork, 2022
South African Air Force In Profile Artwork Volume 2 (1985 - 2003)	Piet van Schalkwyk	Golden Eagle Artwork, 2024
Squadrons of the South African Air Force (and their aircraft 1920 - 2005)	Steven McLean	Interpak Books ISBN 0-9584929-4-8 2005
More Than Game - A salute to the South African Air Force	Herman Potgieter	AirReport ISBN 0-620-19213-5 1995
Vlamgat - the Story of the ~Mirage F1 in the South African Air Force	Dick Lord	Covos-Day Books ISBN 0-620-24116-0 2000
The SAAF at war 1940 - 1984	JS Bouwer and MN Louw	Chris van Rensburg Publications (Pty) Ltd ISBN 0 86848 056 7 1989
The MiG diaries - Fighter pilot memoires & accounts of Cuban, SAAF and Angolan air combat in Southern African skies	Lt-Col E. Gonzalez Sarria & Lionel Reid	Burnet Media ISBN 978-1-990956-60-7 2023
Africa @ War 54 - War of Intervention Angola Volume 4	A. Fontanellaz, T. Cooper, J.A. Matos	Helion & Company Limited ISBN 978-1-804510-59-9 2021