

Reggiane Re.2005 Sagittario



[Reggiane Re.2005 Sagittario de la Regia Aeronautica](#)

Le Reggiane 2005 fut le dernier chasseur construit par Reggiane pendant la Seconde guerre mondiale, et sans doute son dernier avion. Cela dit, ce fut, aux dires de certains, un des plus beaux chasseurs de ce conflit. Son étude commença en 1941 lorsque le DB 605A devint disponible en Italie. Ce moteur allait mener à la "série 5" (avec le Fiat G.55 et le Macchi C.205). L'équipe menée par Roberto Longhi décida de concevoir une nouvelle cellule autour de ce moteur, et non pas de partir du Re 2002. La cellule fut construite entre octobre 1941 et avril 1942, mais le moteur se faisait encore attendre (il aurait été égaré en gare de Milan, puis retrouvé !). Le RE 2005, nommé Sagittario (sagittaire) se distinguait par une cellule faite d'alliage en aluminium, des ailes semi-elliptiques. La partie arrière était très mince, même au standard italien. De fait, elle se révéla fragile. Il disposait d'un blindage atteignant 8 mm et 40 kg, ainsi que de 4 réservoirs auto-obturants, d'une capacité totale de 525 litres. Son armement était constitué d'un canon MG 151 (150 obus) et de 4 mitrailleuses de 12,7 mm. Le prototype, codé MM.494, vola pour la première fois le 9 mai 1942 entre les mains de Tullio de Prato, pour un vol de 5 minutes, train non rentré. Cependant, il fut endommagé dès le lendemain à cause d'un atterrissage dur. Le Re 2005 fut confronté à ses concurrents G.55 et C.205. Bien que considéré comme supérieur au G.55, il était également plus complexe à construire. Si le G.55 fut retenu pour une production en masse, la Regia Aeronautica commanda tout de même 16 prototypes (série 0), 18 appareils de présérie et 750 exemplaires de série du Re 2005. Le prototype entra lui-même en service au sein de la 362 Squadriglia, chargée de la défense de Naples et de Rome, au sein du 22 Gruppo. Cette unité était commandée par le maggiore Vittorio Minguzzi, qui garda une excellente impression du Re 2005. Son baptême du feu date du 2 avril 1943, lorsqu'il décolla sur alerte.

Il fut de suite considéré comme supérieur au Macchi C.202. La première victoire confirmée intervint le 28 avril, lorsqu'il intercepta 30 B-24 escortés par autant de chasseurs et abattit deux bombardiers. 4 Re.2005 avaient été engagés. En juillet 1943, ils furent déployés en Sicile, où ils se révélèrent à égalité avec les Spitfire Mk V. Un des Re.2005 fut capturé par l'USAAC et envoyé aux Etats-Unis. Les appareils italiens ayant été au final peu testés, on ne sait pas grand-chose, pas même le destin de cet exemplaire après-guerre. Lors de l'armistice, l'Italie revendiquait 24 victoires pour 12 pertes. 54 exemplaires furent construits en tout : 2 prototypes qui entrèrent en service, 3 prototypes envoyés en Allemagne pour évaluation, 1 prototype conservé par Reggiane, et 48 appareils de série. Lors de l'armistice le 8 septembre 1943, la plupart furent détruits. 6 rejoignirent l'ANR où ils servirent à l'entraînement avancé. 13 furent réquisitionnés par la Luftwaffe. Une rumeur veut que quelques exemplaires aient servis à la défense de Berlin, mais elle est probablement fausse. La Suède, qui produisait déjà le DB 605 sous licence, fut intéressée par 50 exemplaires. La commande ne fut jamais signée, à cause de l'armistice. Un projet de Re.2005 à double fuselage fut brièvement envisagé. Une version motorisée par le DB 603, le Re 2006, fut construit en septembre 1943 mais ne vola jamais. On estimait sa vitesse à 740 km/h. Une autre version, le Re 2005R, devait être propulsé par un pulsoréacteur Fiat A-20 de 370 ch, mais la consommation calculée, atteignant 1000 litres/heure, annula le projet. Le Re 2007, dérivé du Re 2006, devait accueillir un moteur à cylindres en étoile. Pendant longtemps et à l'instigation de Roberto Longhi, on crut qu'il s'agissait d'un projet de chasseur italien à réaction basé sur les moteurs Jumo 004. Il ne reste aujourd'hui aucun exemplaire complet de ce chasseur. Des restes sont visibles au musée Caproni de Trento.



The **Reggiane Re.2005 *Sagittario*** (English: Archer, Sagittarius) was an Italian [monoplane fighter](#) and [fighter-bomber](#) produced for the [Regia Aeronautica](#) during the later years of [World War II](#). Along with the [Macchi C.202/C.205](#) and [Fiat G.55](#), the Reggiane Re.2005 was one of the three *Serie 5* Italian fighters. The lines of the [fuselage](#) were aerodynamically efficient, and the design was intended to exploit the famous [Daimler-Benz DB 605](#) engine.^[2] The only drawback was a certain structural weakness in the rear section of the fuselage.^[2] Only 48 examples had been delivered before the [Armistice](#), and these fighters took part in the defence of [Naples](#), [Rome](#) and [Sicily](#), with the survivors battling above the crumbling ruins of Berlin, in German insignia.^[3] British [ace](#) and military observer, Group Captain [Duncan Smith](#), DSO DFC, said that "The Re.2005 was altogether a superb, potent aeroplane".^[4]

Design and development

The Reggiane 2005 was the last of the Reggiane aircraft line to be built during World War II. The project which started in 1941 was carried out by a team led by Roberto Longhi with the designers Alessio, Maraschini, Toniolo and Pozzi. Preliminary work was completed before the end of the year despite being a new project and not the development of an existing design such as the [Reggiane Re.2002](#). The DB 605 engine was waiting to be delivered when the airframe was ready in February 1942.^[5] The new machine was not only rated as one of the best Axis wartime aircraft but also one of the best, if not the best-looking.^[5] Its semi-elliptical wings, long nose and large tail were all distinctive features of this small, nimble fighter. The prototype MM.494 first flew 9 May 1942 but, the day after, a heavy landing led to an [undercarriage](#) failure which caused serious damage, and the aircraft was grounded until June (MM.494 was damaged twice more in tests). This prototype had four [Breda](#) 12.7 mm machine guns and one [Mauser](#) cannon and was primarily used for testing and then for the aerial defense of [Naples](#). After a fierce competition, in which the C.205N was quickly abandoned and the G.55 was considered better from a production point of view (being only marginally inferior as a fighter but much easier to mass produce), the *Regia Aeronautica* ordered the production of 750 Re.2005 aircraft, an optimistic figure in wartime Italy.

Technical design



Re.2005 prototype photographed at the factory, spring 1942; note the lack of a radio mast behind the cockpit

The Re.2005 was a low-wing, single-engine, single-seat fighter [monoplane](#), made of light alloys. Propulsion was by a 1,475 hp (1,100 kW) Daimler Benz DB.605A-1 engine, either of original German production or built by [Fiat](#) as the RA.1050 RC.58 *Tifone* (Typhoon). The aircraft had a right-handed, three-bladed [Piaggio](#) P.2001 constant speed, mechanically controlled, variable-[pitch](#) metal [propeller](#). The streamlined but tiny [fuselage](#) was almost totally dominated by the DB 605 engine with little room for fuel storage. The fuselage-mounted [MG 151/20](#) cannon had less ammunition than those mounted in the wings (150 rounds versus 170 rounds in the wing gun bays from the second prototype on). The comparable Fiat G.55 had 250 rounds for the fuselage gun but also 600 for a 12.7 mm machine gun. The smaller Re.2005 also carried 100 fewer 20 mm but 100 more 12.7 mm rounds, a lighter armament array. The aft fuselage was unusually small, even by Italian standards and contained the radio equipment, oxygen bottles and supported the relatively large [fin](#). The [cockpit](#) was covered by a [canopy](#) which tilted to the right for access and had an [armoured 50 mm glass windscreen](#). Other protection included a seat with 8 mm (0.31 in)-thick steel shell weighing 40 kg (88 lb). The seat provided little protection against 12.7 mm rounds which were capable of piercing even 25 mm (0.98 in) at short distances but the armour was tempered, giving more protection than homogeneous steel. Given the heavy weight of a thick steel plate, every attempt was made to make the steel alloy used stronger and a headrest was attached to bulkhead six. The sophisticated wing design, often described as elliptical, was semi-elliptical, with wing thickness tapering from 15 percent at the root to 8 percent at the tip. The structure of the three spars incorporated a "T" section. The triangular-shaped wing and tail control surfaces were mostly fabric-covered, included all-metal two-part split [flaps](#) and statically balanced [ailerons](#). Fuel was carried in four [self-sealing wing tanks](#), two forward and two behind, providing a capacity of 525 L (115 imp gal; 139 US gal). The wide-track undercarriage retracted outwards into the wings and the tailwheel was fully retractable. The Re.2005 was the only Italian aircraft of the war to have hydraulically activated flaps. The Re.2005 was one of the most advanced Italian fighters but it was also too advanced to be made by the Italian industry and one of the most expensive, if not the most expensive to produce.^[5] The complexity of the Re.2005 design and small dimensions led to the [Fiat G.55](#), being evaluated as a superior choice for mass production.

Operational history

The first pilot to use the Re. 2005 in action was *Maggiore* Vittorio Minguzzi, commander of 22° *Gruppo*. The unit was based at [Napoli-Capodichino](#) airfield for the defense of the city. Minguzzi received the prototype of the Re.2005 (MM.494)—after flight test evaluations in [Guidonia](#)—and made the first flight with this aircraft on 7 March 1943. He and the most able pilots in the *Gruppo* flew this prototype until 23 March and they all had a very favourable and enthusiastic impression of it. He then took it to Napoli-Capodichino where it was incorporated into 362a *Squadriglia*. This unit—commanded by Capitano Germano La Ferla—was the first to be equipped with the Re.2005.^[6] Minguzzi scrambled for the first time in the *Sagittario* on 24 March, when Naples was attacked and on 2 April he claimed a four-engined [B-24 Liberator](#) bomber over the Isle of [Ischia](#). This claim is not verified against corresponding USAAF losses. Italian ace Vittorio Minguzzi was impressed by this aircraft following its tests and combat debut on 2 April 1943. He wrote:

The aircraft is in ideal flying conditions at an altitude of 7,000–7,500 m (23,000–24,600 ft) and can make repeated attacks on American heavy bombers in all positions and from all directions... I can therefore say that the speed and handling qualities are excellent even at 7,000 m (23,000 ft) and that compared to the Macchi 202, the *Sagittario* made two attacks in the time required by the Macchi C.202 for a single pass.^[7]

This statement provides a realistic comparison between the two aircraft: in theoretical speed, the Macchi C.202 was only 30 km/h (19 mph) slower but the Re.2005 with the DB-605 engine and larger wing, provided a substantial improvement in performance at high altitude (the difference was less marked at medium-to-low altitudes, as the comparison with the C.205V showed). During April, 362a *Squadriglia* received three more Re.2005s from the *0-serie* but the number of Re.2005s in the 22° *Gruppo* never exceeded eight. The first confirmed air victories came on 28 April, when four Re.2005s from 22° *Gruppo* scrambled (with C.202s and one Dewoitine D.520) from Capodichino to intercept a formation of 30 B-24s Liberators, escorted by 30 fighters heading for Naples. The Re.2005s were flown by *Maggiore* Minguzzi, *Capitano* La Ferla, *Tenente* Giulio Torresi and *Sergente* Donati. The 22o *Gruppo* claimed one B-24 (by Minguzzi) and four probables (one was later confirmed by ground observer and credited to Donati).

Ten more were claimed as shared damaged by the whole *Gruppo*.^[8] More aircraft arrived at 362a Squadriglia and in the following weeks, this unit displayed a lot more potency than C.202 units, claiming several bombers for the loss of a pair of Re.2005s.^[5] By 25 June 1943, Reggiane Re.2005 pilots claimed a total of seven B-24s and many others damaged but losses claimed seldom matched true losses. (See for example the passage in the entry for [Macchi C.205](#) describing the Battle of Capo Pula on 2 August, when none of the 12 [P-38 Lightnings](#) claimed were lost by the USAAF, whereas the Americans claimed three or four victories over the Axis fighters with no losses. Later records showed that only a Catalina and a C.202 were shot down.) At least one Reggiane, MM.092343 of Lt. Moresi, was shot down.^{[9][10]} On 2 July 1943, 362a was sent to Sicily to face the imminent invasion and were involved in combat with [Spitfires](#), claiming five shot down from 11 to 14 July (two were confirmed kills: a reconnaissance Spitfire and another downed in a strafing attack over [Comiso](#)).^[11] Spitfires were formidable opponents (even if many were only Mk Vs), with two Re.2005s destroyed on 11 July and the rest bombed or strafed on the ground. Only two aircraft returned to Sicily. Ten more fighters joined 362a but when one was damaged in a steep dive on 21 August 1943, some concern was raised. On 25 August, MM.092356 (Lt Dario Signorini bailed out) was lost during another dive and so further flights were discontinued. It was discovered that at speeds over 660 km/h (410 mph) [TAS](#), every manoeuvre could adversely affect the flight control in the tail and then cause damage to the fuselage from [flutter](#). Re.2005 pilots were forbidden from attaining very high speeds (VNE 800 km/h (500 mph)) but by then, operations were winding down as the [Armistice](#) was taking effect.^[5] In July 1943 trials, Cmdr. de Prato achieved a speed of 980 km/h (610 mph) in a dive with no loss of control and experienced no flutter. The production Fiat R.A. 1050 *Tifone* engines, licensed produced [DB 605s](#), were limited to 2,650 rpm instead of the usual 2,800 rpm with a corresponding drop in power from 1,100 to 1,007 kW (1,475 to 1,350 hp). The MM.494 prototype fitted with a DB 605 had a recorded speed of 678 km/h (421 mph) when flown fully equipped but this speed was attained by levelling the aircraft after a dive. The official maximum speed was 628.5 km/h (390.5 mph) at an altitude of 6,950 m (22,800 ft). The Re.2005 had good handling in dogfights and according to General Minguzzi, who flew both the Re.2005 and the Spitfire, the Re. 2005 was even better than the Spitfire in tight turns and handling. One of the few examples of combat reports, dated 11 July 1943, seems to contradict Minguzzi's statement, when together with other Italian fighters, Eugenio Salvi's Re.2005 fought against Spitfires over Sicily. A Spitfire Mk V latched onto the tail of Salvi's Re.2005. Salvi tried all the tricks he knew: dives, tight turns and climbs but the Spitfire remained steadily attached to his tail following every move and then opened fire. Salvi's Re.2005 was struck by many bullets and Salvi was sure he was going to be killed when the Spitfire just as suddenly vanished, possibly out of ammunition. Fuel levels and pilots skill probably were the deciding factor in this incident. On 25 August de Prato carried out test dives at Guidonia. He then flew the aircraft back to Reggio Emilia where three more dives were made on 27, 29 and 31 August. According to De Prato's account, the tests concluded that the "shaking" began at 660 km/h (410 mph) true air speed and that they were caused by inadequate dynamic balancing of the empennage, the balance likely lost during full excursion rudder maneuvers performed during dives. After correcting the balancing, de Prato dived the aircraft to 980 km/h (610 mph) TAS convincing himself that the structure of the Re.2005 was fully capable of high [g](#) maneuvers. De Prato wrote, "Our pilots were used to small rudder control surfaces, such those of Macchis and Messerschmitts; with such aircraft full excursion rudder movements were not a problem. With the armistice on 8 September 1943, some of the few surviving Re.2005s were destroyed by their pilots to prevent them from falling into German hands. Six aircraft were used as trainers by the [Aeronautica Nazionale Repubblicana](#) (ANR) (the air force of the German allied [Italian Social Republic](#)). About thirteen Re.2005s were seized by [Germany](#) and some sources have these aircraft in use during late 1943 by the [Luftwaffe](#) for air defense against Allied bombing raids over Berlin; others believe that the Re.2005s were used by the Germans in Romania as interceptors over the [Ploiești](#) oil fields.^{[3][12]} Other research indicates that the aircraft probably never left Italy; on 18 March 1944, three aircraft of the *Luftdienst Kommando Italien* (M.M.096100, 096106, 096110) were severely damaged at Maniago by a U.S. air raid, while at least three others suffered accidents at Maniago (096108: 16 March 1944, 096100: 1 June 1944) and Airasca (19 April 1944) and were returned to Reggiane for repairs. As late as 31 July 1944, five Re.2005 were listed in service with the *Flieger Ziel Staffel 20*, which operated them from June to December 1944.^[13] The Re.2005 climbed almost as well as the [Bf 109G-14](#) and turned almost as well as the Spitfire Mk IX, having a turn radius of 195 m (639 ft) without full flaps and 148 m (487 ft) with full flap.

German tests at the Rechlin test center concluded that the aircraft "curved well, rolled like the Bf 109 G-4 with rudder forces a little less". Grp Cpt. [Duncan Smith](#), DSO, DFC, a British fighter pilot and fighter leader of World War II, greatly respected the Re.2005. The Re.2005 'Sagittario' was a potent aircraft. Having had a dog-fight with one of them, I am convinced we would have been hard pressed to cope in our Spitfires operationally, if the Italians or Germans had had a few Squadrons equipped with these aircraft at the beginning of the Sicily campaign or in operations from Malta. Fast, and with excellent manoeuvrability, the Re.2005 was altogether a superb aeroplane. Neither the Macchi 205 nor the Bf 109G measured up to the capabilities of the Re.2005 series in manoeuvrability or rate of climb. I think it was easily the best aircraft Italy produced. It is a pity that no Re.2001/5s survive this day because they were fine examples of Italian engineering craftsmanship.^[4] It seems that one of the two Reggiane that had returned to Sicily was captured by the [United States Army Air Forces](#) and sent to the US. Little is known of this aircraft, which vanished after the war. While German and some Japanese aircraft were extensively tested, the few captured Italian aircraft (another extant example is a captured Macchi C.202) were not known to be tested, so detailed information about them and their flight characteristics is scarce. [Sweden](#) was interested in the Re.2005 (already producing the DB-605 under licence) but the order for 50 airframes was never finalized. Total production included two prototypes used as preproduction aircraft which later saw combat service, 48 series production, three prototypes sent to the *Luftwaffe* for evaluation and one evaluation aircraft at the factory.

Concepts and advanced projects

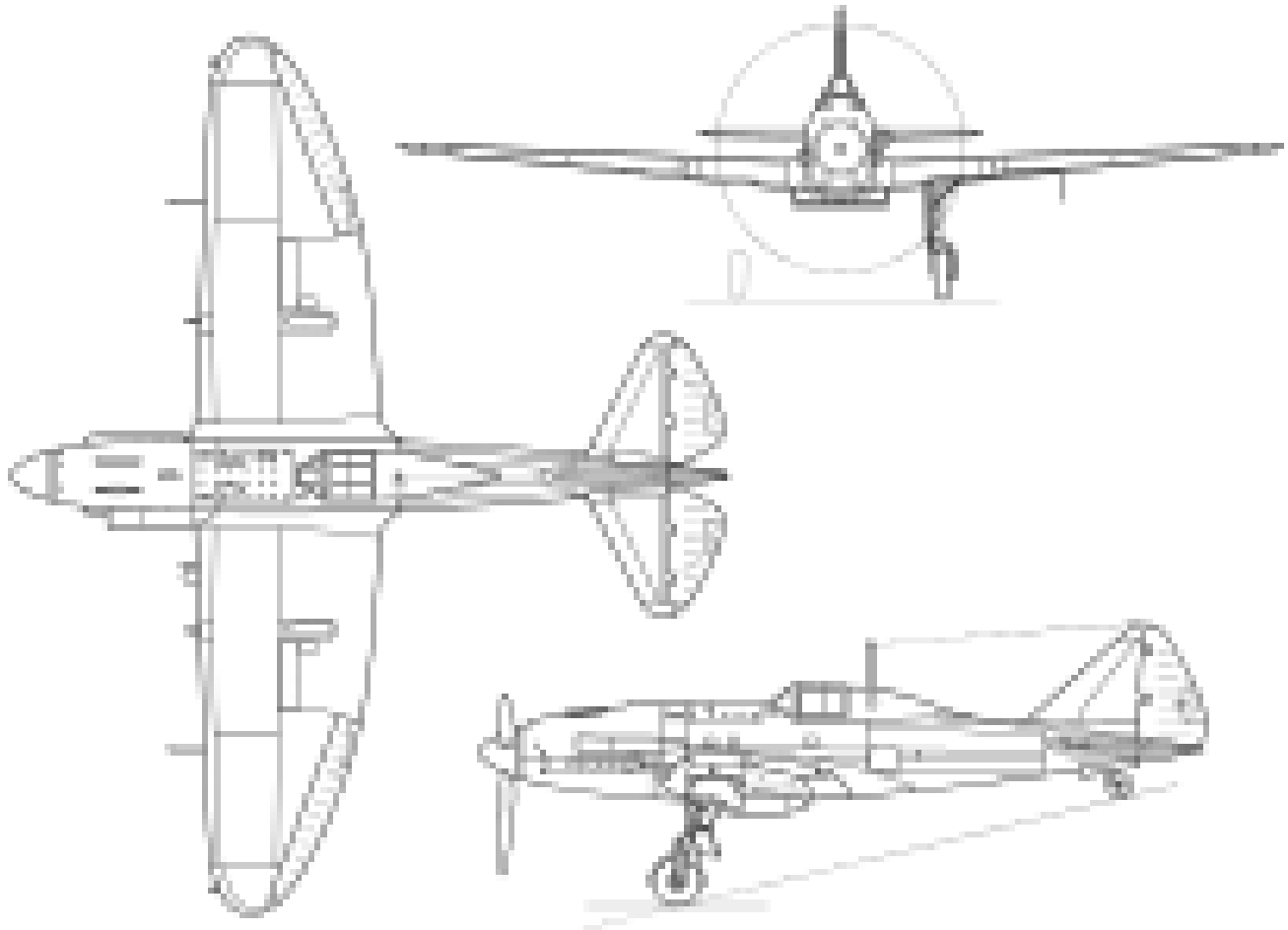


Mechanic Bruno Ferrari posing beside a Re.2005 at [Reggio Emilia](#) airfield c. 1944–45.

A request by the German [Ministry of Aviation](#) led to one Re.2005 (MM.495), known as the Reggiane Re.2005 "LW", to be modified to German standards for tests in late July 1943. It was evaluated first in Guidonia and later at the Rechlin airfield. Tests revealed improved performances with speeds of up to 628 km/h (390 mph) with the FIAT engine and more than 650 km/h (400 mph) with the DB engine in level flight, without using [war emergency power](#).

A prototype of the follow-on [Re.2006](#) was almost completed before September 1943 but not flown. It was to use the [DB 603](#) engine with 1,750 hp (1,300 kW) and had an estimated maximum speed of 740 km/h (460 mph). Only the G.56 was flown with this engine. A twin-fuselage version and a [motorjet](#) variant, the R.2005R were considered. On the R.2005R, speed could have been increased to 750 km/h (470 mph) but fuel consumption would have reached nearly 1,000 L/h (220 imp gal/h; 260 gal/h), almost four times the normal consumption of the Re.2005, at full throttle. This aircraft project was not considered as a serious alternative to the Re.2006.

Specifications



General characteristics

- **Crew:** 1
- **Length:** 8.73 m (28 ft 8 in)
- **Wingspan:** 11 m (36 ft 1 in)
- **Height:** 3.15 m (10 ft 4 in)
- **Wing area:** 20.4 m² (220 sq ft)
- **Airfoil:** N-38^[14]
- **Empty weight:** 2,600 kg (5,732 lb)
- **Gross weight:** 3,610 kg (7,959 lb)
- **Powerplant:** 1 × [Fiat RA.1050 R.C.58 Tifone](#) V-12 inverted liquid-cooled piston engine 1,475 [PS](#) (1,455 hp; 1,085 kW) ^[15]

(license built [Daimler-Benz DB 605A-1](#))

- **Propellers:** 3-bladed constant-speed propeller

Performance

- **Maximum speed:** 628 km/h (390 mph, 339 kn) at 6,950 m (22,802 ft)^[16]
- **Cruise speed:** 515 km/h (320 mph, 278 kn)
- **Stall speed:** 155 km/h (96 mph, 84 kn)
- **Range:** 980 km (610 mi, 530 nmi) internal fuel

1,130 km (702 mi; 610 nmi) with 300 L (79 US gal; 66 imp gal) drop tank

1,270 km (789 mi; 686 nmi) with 300 L (79 US gal; 66 imp gal) drop tank + 2 × 150 L (40 US gal; 33 imp gal) drop tanks

- **Service ceiling:** 11,500 m (37,700 ft)
- **Rate of climb:** 20 m/s (3,900 ft/min)
- **Wing loading:** 177 kg/m² (36 lb/sq ft) maximum

Armament

- **Guns:**
 - 2 × 12.7 mm (0.500 in) [Breda-SAFAT machine guns](#) in upper cowling (350 rpg);
 - 1 × 20 mm (0.8 in) [MG 151 cannon](#) firing through propeller hub (150 rpg);
 - 2 × 20 mm (0.8 in) [MG 151 cannon](#) in wings (200 rpg)
- **Bombs:**
 - Underfuselage (non standard) hardpoint 1,000 kg (2,200 lb) bomb or 1 × 300 L (66 imp gal; 79 US gal) drop tank
 - Hardpoints on wings: 160 kg (350 lb) bombs or 2 × 150 litres (33 imp gal; 40 US gal) drop tanks



Source : https://en.wikipedia.org/wiki/Reggiane_Re.2005_Sagittario