Reggiane Re 2005 Sagittario

The Reggiane Re 2005 was defined by many as "the most beautiful fighter of the axis". In fact, not only was the Sagittario a really beautiful airplane, with a clean and fascinating shape, but also more importantly it had exceptional flying characteristics, very powerful armament and exceptional handling. It was "*the* fighter" of the Italian Air force, but it was limited by slow production during the war, due to the American bombing runs over the Reggiane factory.

To get an idea how the Re 2005 was thought of by pilots who flew it , it can be summarized in the sentence of General Vittorio Minguzzi :"all the series 5 fighters (Macchi 205,Fiat G55 and Re 2005) were competitive with the best ally fighters, including the Mustang and Spitfire IX, each one demonstrating a particular flight character exceptionally. The Re 2005 in particular is the best in handling at high altitudes". Had more Re 2005 aircraft been produced the legacy of the great aircraft would have almost certainly been guaranteed by the countless pilots that would fly it, and those that would face it in combat.

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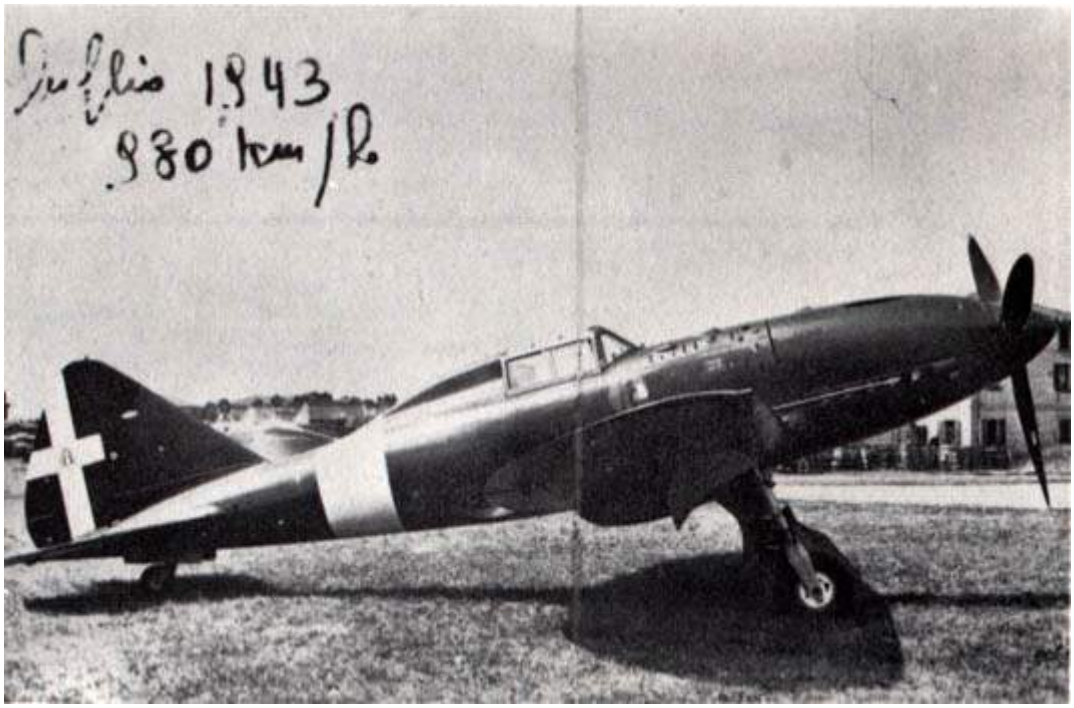
History

The Reggiane Re 2005 Sagittario was the ultimate refinement of a series of fighters which started with the Re 2000 Falco I, and continued with the Re 2001 Ariete I, and Re 2002 Ariete II. The 2005 was a major turning point in Reggiane airplanes due to the advantage the new Daimler-Benz DB-605 capable of producing 1475 HP. The Reggiane technical staff lead by Ing.Alessio and Ing.Longhi devoted itself with great determination to the success of the new fighter and the result was a superb fighter aircraft. The completed machine had little in common with the other planes of the Reggiane fighter series. The wing structure and the empennages were retained ,while the fuselage, undercarriage, wing profiles and armament were completely new.

The construction of the first prototype was started in October 1941 and was completed at the end of 1942. After the first flights the prototype was sent to the Experimental Air Force Center of Guidonia, where some modifications were requested. The Re 2005 proved to have better performance characteristics than the other series 5 fighters, with a top speed of 678 km\h at 2000 m. The Air Force ordered 750 Reggiane, but only few were produced. A series was produced also for the Luftwaffe.

In May of 1943, the first Sagittarios entered service with the Regia Aeronautica. The first prototype and several of the zero series aircraft were used operationally by the 362ª Squadriglia, 22° Gruppo at Naples-Capodichino starting in May 1943. They were used to defend Rome and Naples. The squadron had developed a rather daring method of attacking Allied B-17s. This involved diving head-on with all guns blazing, then flipping the aircraft over on its back and diving away at the last minute. The Reggiane had good behavior in close dogfight, and according to General Minguzzi, who flew both Re 2005 and Spitfire, it was even better than the Spitfire in tight turns and handling. The operational life of the Sagittario was concluded by the Armistice, that came in September of 1943.

Re 2005 was used by the R.S.I. (Italian fascist Social Republic) with good results and also by the Luftwaffe. Many say that the Luftwaffe put their Re2005's in use defending Bucharest and Berlin; their fate thereafter being unknown. At least one Re 2005 was captured by the U.S., and the fuselage of one Re 2005 survives in the Museo Aeronautico Caproni di Taledo in Milano. It is being restored by GAVS.



Performance

Engine	**One 1,475 hp Daimler-Benz DB 605A-1 V-12 inline liquid-cooled piston.**
Dimensions:	**Span: 36 ft 1 in / 11 m. Length: 28 ft 7 3/4 in / 8.73 m. Height: 10 ft 4 in / 3.15 m. Wing area: 219.58 sq ft / 20.4 m2.**
Weights:	**Empty: 5,732 lb / 2,600 kg. Maximum: 7,960 lb / 3,610 kg.**
Max speed:	**6,560 ft / 2,000 m: 421 mph / 678 kph 13,120 ft / 4,000 m: 351 mph / 565 kph 22,800 ft / 6,950 m: 421 mph / 678 kph 22,965 ft / 7,000 m: 421 mph / 678 kph**
Cruise speed:	**320 mph / 515 kph**
Climb rate: Time to	**6,560 ft / 2,000 m: 1 min 55 sec 13,120 ft / 4,000 m: 4 min 28 sec 19,685 ft / 6,000 m: 5 min**
Service ceiling:	**37,730 ft / 11,500 m**
Range:	**609 miles / 980 km.**
Crew	**One**
Armament:	**Two 12.7 mm Breda-SAFAT machine guns with 350 rounds each in upper engine cowling. One 20 mm Mauser MG 151 cannon with 150 rounds firing through propellor hub. Two 20 mm Mauser MG 151 cannon with 200 rounds each in wings. Up to 2,200 lb / 1,000 kg bomb or fuel tank under fuselage. Two wing hardpoints for 353 lb / 160 kg of bombs or fuel tanks.**

Cockpit

Getting the most out of your Gauges

Understanding the gauge readings their functions is essential in properly flying any aircraft.

1. Manifold Pressure – measures manifold pressure in the intake system. This is the primary power gauge for constant speed propeller aircraft. If working properly this gauge will display ambient atmospheric pressure when the engine is off.

2. Attitude Indicator – often known as the artificial horizon, this instrument gives immediate bank and pitch indications. It is vacuum driven and gyroscopic operated. Errors are at maximum when rolling out of a 180 degree turn. Small errors occur during acceleration and deceleration. Pitch and bank rates in excess of 180 degrees may cause this instrument to become inoperative for a period of time.

3. Altimeter – the altimeter is an adjustable barometric pressure gauge. It measures the density of the outside air along with the pilot applied adjustments to display indicated Altitude. Set the altimeter to the atmospheric pressure of the area and altitude you are flying in, or set it to the field elevation of your departure airport.

4. Clock – Displays time in minutes, hours, and seconds.

5. Magneto Switch – Used to control the duel sets of engine magnetos. Check each magneto on your preflight-run up for proper function. Engine roughness and loss of rpm are signs that there is an ignition problem with the selected magneto or magnetos. Generally this is due to carbon deposits on the spark plugs. To correct this lean the fuel-air mixture slightly and let the engine run for a few minutes. The lean mixture will heat the engine and burn the deposits from the spark plugs.

6. Direction Gyro – also known as the heading indicator, the DG is another gyroscopic vacuum driven instrument. It displays magnetic heading if properly set and working. In many cases the DG is slaved to magnetic compass and requires no adjustments. However a manually adjusted DG needs to be checked every 15 minutes for precession errors and readjusted to the magnetic compass only during straight and level unaccelerated flight.

7. Airspeed Indicator – By evaluating the ram air intake from the Pitot tube, and the static air pressure port, the airspeed indicator displays the indicated airspeed of the aircraft. The Airspeed indicator does not

measure groundspeed, but rather the speed in which the aircraft travels through the surrounding air. This is usually displayed in km/h or mph.

8. Turn and Slip Indicator – displays quality and rate of turn. The needle displays the rate of turn, and the inclinometer/(ball) indicates slip and skid turns. To avoid slip and skidding turns use the phrase "Step on the Ball." When stepping on the ball push in the rudder pedal that is on the same side as the ball until the ball is centered. When the ball is centered you are in a coordinated turn. Watch for erroneous errors during taxi to insure this instrument is working properly.

9. Vertical Speed Indicator – display the vertical velocity of the aircraft. It measures the rate of change of the ambient outside air pressure as the aircraft climbs and descends. This change is measured and indicated on the gauge. It may take up to 9 seconds for an accurate vertical speed indication to be displayed.

10. Hydraulic Pressure – This displays the hydraulic fluid pressure used for many of the aircrafts components. Correct hydraulic pressure is required to insure proper operation of many landing gear and flap systems.

11. Mixture Lever – This adjusts the fuel-air ratio that enters the engine by reducing or increasing the amount of fuel added to the intake air. A full rich mixture is one in which the mixture lever is adjusted to allow the most fuel to mix with the intake air. A completely lean mixture is one without any fuel. To properly shutdown the engine completely lean the mixture until the engine dies. When flying at altitudes above 3,000ft (914.4m) you will need to lean the mixture from full rich. As altitude increases the outside air density also decreases thus to maintain the proper fuel/air ratio you will need to lean the mixture.

12. Oil Pressure – The oil pressure gauge can give you an excellent indication of the health of various systems in your engine. A certain amount of oil pressure is needed to circulate oil throughout the engine and to maintain adequate lubrication. Low readings can be caused by low oil level, oil leaks, dirty oil, or a clogged oil filter or lines. High oil pressure is generally not a concern, but can be caused by too high viscosity oil or by a faulty pressure relief value.

13. Tachometer – The tachometer displays the engines rotation speed. In aviation this is displayed in rounds per minute or rpm. The proper rpm setting is essential for a proper aircraft performance. Many aircraft have fixed pitch propellers and rpm speed is controlled by the throttle. However on constant speed propellers rpm is either manually controlled by a prop/pitch lever or automatically controlled by the aircrafts systems. Improper settings can greatly effect fuel economy, aircraft speed, and climb performance.

14. Manifold Pressure – See explanation 1

15. Ammo Counters - Displays the rounds remaining in the specified machine guns.

16. Fuel Quantity – Displays the amount of fuel remaining. This is usually in gallons or liters. It is interesting to know that the Re2005 had a knob that manually operated the float fuel float. The pilot would turn the knob until the fuel gauge value stopped. The static value would then be correct. This is not functional in Fs2004 so the true level is always displayed.

17. Air pressure – This gauge is not functional in fs2004, but more than likely it displayed the air pressure at the machine gun ports.

18. Gear Lever – this lever triggers the hydraulically operated landing gear.

19. Fuel Pressure – Fuel pressure is established when either a electric or mechanical fuel pump transport fuel from the fuel tank to the injection system. Correct fuel pressure is required for proper and adequate delivery of the fuel to the carburetor or fuel injection system. A low reading may be caused by a puncture or leak in the fuel system, a clogged filter or line, or a fault in the fuel pump system. High readings may be caused by a faulty fuel pressure regulator, restrictions in return line, or faulty couplings at the fuel tank.

20. Flap Lever – this lever triggers the hydraulically operated flaps. There are several flap settings, or increments, displayed by the tic marks on the lever base. It is up to the pilot to determine the operate level of flaps needed for take off and landing. Remember the primary function of the flaps is to steepen the angle of descent without increasing airspeed.

21. Coolant Temperature – Displays the temperature of the cooling liquid in a liquid cooled aircraft engine. This liquid, usually a water, antifreeze, and anticorrosion mixture is pumped through and around the engine by a water pump and this is returned to the radiator for cooling. High readings may be caused by improper coolant mixture, low liquid level, or improper engine operation.

22. Oil Temperature – Oil is the number one cooling agent in an aircraft engine, and an improper oil temperature is a quick sign that the engine is not running properly or that the oil level is high or low. High oil temperatures can be caused from the engine producing too much heat, the cooling system not working, or an inaccurate gauge reading. Low oil temperature are usually caused by excessively cold weather.

23. Gear Indicator – Gives a visual indication of the landing gear position. Incorrect indications may be caused by one or more of the light bulbs to be out, or more seriously a landing gear malfunction.

24. Vacuum Pressure – displays the pressure of the vacuum caused by the engine. Proper pressure is essential in operating vacuum gauges such as the Attitude Indicator and Direction Gyro. Power settings can greatly affect the level displayed on the vacuum gauge. However, an faulty vacuum pump, clogged filters, or kinks and blocks in vacuum lines can cause errors in your vacuum system.

Properly Using the 2D Panel sub-panels

The 2D panel consists of the main panel and several sub-panels that are essential in operating and navigating the aircraft. Understanding the below image will help in properly operating the aircraft.

Re2005 Panel Features

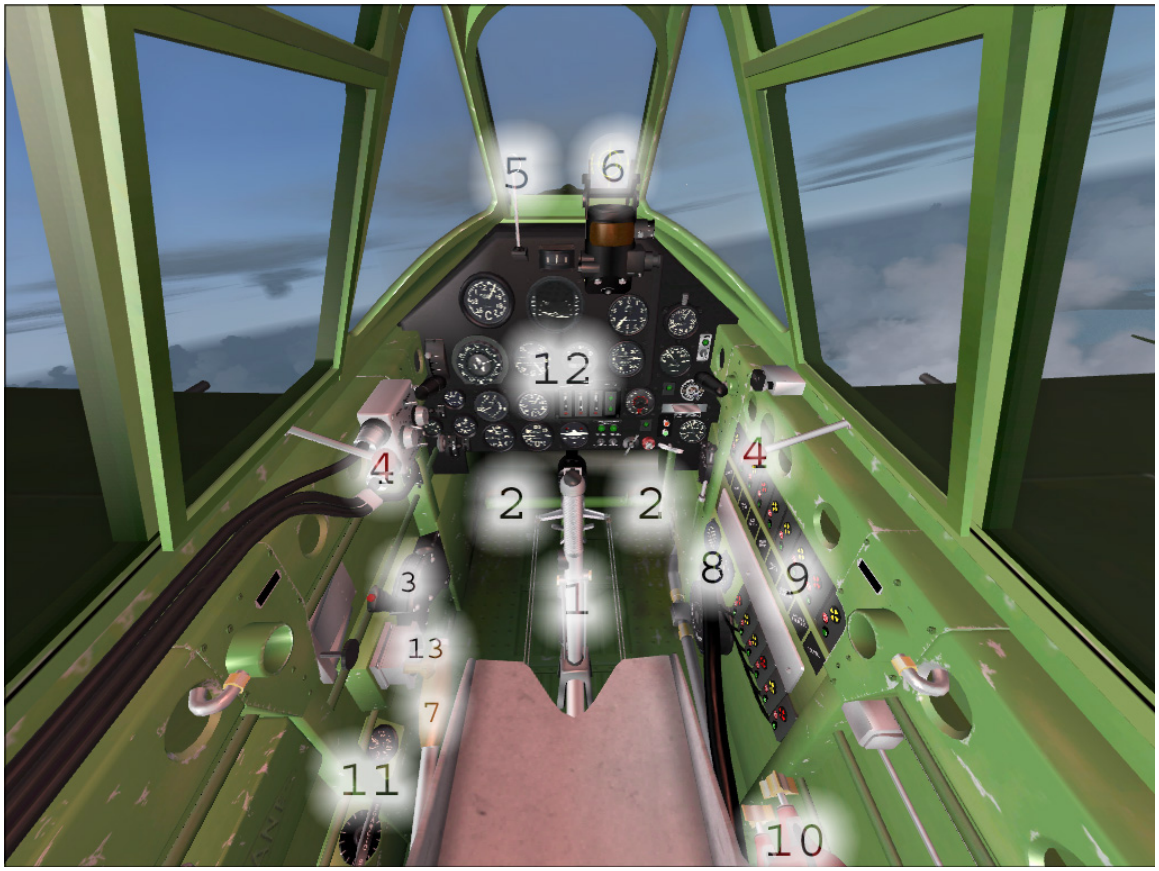
Shift-1: 2D Panel
Shift-2: Engine Controls
Shift-3: Navigation Equipment

a.throttle b.mixture c.starting d.fuel
e.manifold pressure f.tach g.gear lever
h. flap lever

Shift-4: Radio Stack
Shift-5: Gps Equipment
Shift-6: Switch Panel

The virtual Cockpit

The virtual cockpit is a 3D representation of the cockpit and its instruments. The instruments are essentially the same as those in the 2D panel. However the virtual cockpit has some additional functions like the canopy latch lever and the parking break lever.



1. Yoke
2. Rudder Pedals
3. Throttle
4. Canopy Latches
5. Auxiliary Gunsight
6. Primary Gunsight
7. Parking Brake
8. Oxygen System Gauges
9. Radio
10. Oxygen Bottles
11. Additional Engine Gauges
12. Main panel and gauges – See 2D panel for information
13. Elevator trim knob

Engine Detail and Pilot Animation

The engine detail can be seen by activating the wing-fold command. You may need to go into your controls to set the key command for this function. Shift-F is a good command to use. Since the engine details use the wing fold command to function the aircraft must be on the ground and not flying to view the animations.

The pilots in these aircraft are fully animated. The right hand controls the yoke, the left the throttle and the feet move the pedals. The head moves based on bank and pitch adjustments.

Effects

Each of these aircraft comes with many new effects not native to the default Fs2004 aircraft. These effects include, machine gun effects, wing-tip contrails, and high altitude vapor contrails. The only effect that requires the user to do anything extra to enjoy is the machine gun effects. The machine gun effects use the fs2004 afterburner command to operate. Users must define their own custom key to work this command. Many people find it useful to tag this command to their joystick trigger. However, if one does this they must set the repeat on the button to the maximum, otherwise the machine guns will only fire short bursts. To view the other effects certain requirements need to be met while flying.

Machine Gun Effects with tracers and shell casings

Contrails appear when pulling over 2.6 g

Vapor trail appears above 20,000ft

Credits:

- Aircraft Model: Luca Festari
- Aircraft Textures: Alessandro Biagi
- Aircraft Engine: Jesse Lambert
- Flight Dynamics: Jerry Beckwith
- Panel: Jesse Lambert
- Gauges: Mark Gipson, Giovanni "Nanni" Cignoni, Jesse Lambert
- Aircraft Sounds: Jesse Lambert
- Gun Effects: Rob Barendregt, Douglas Dawson
- Beta Testing: Death_Eagle_571, William Ortis, Andrew Patterson

Historical Information: - http://www.aldini.it/re2005/index.htm -