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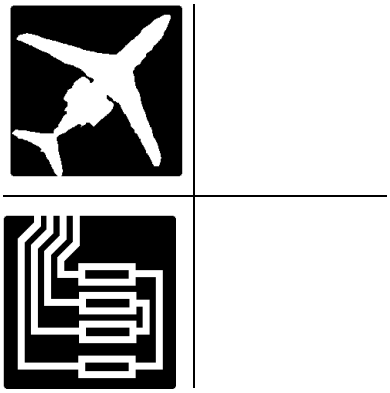
Aermacchi MB.339 Series

Outlook

- Limited opportunities, as the MB.339 is being replaced by newer trainers, including others made by Aermacchi
- AMI's midlife upgrade programs may extend the MB.339A's service life by as many as 10 years

Note: Icons indicate area(s) of current and potential retrofit/modernization activity



Orientation

Description. Two-seat, single-engine jet trainer; single-seat attack variant on offer.

Status. Still offered by Aermacchi, but production largely concluded.

Total Produced. Through 2009, approximately 230 aircraft were produced.

Application. Basic/advanced flying, armament trainer, close air support. Single-seat attack variant available.

Price Range. MB.339CD estimated at $7 million in 2003 U.S. dollars.

Contractors

Prime

Alenia Aermacchi	http://www.aleniaaermacchi.it, Via Ing. Paolo Foresio, Venegono Superiore, 21040 Italy, Tel: + 39 0331 813111, Fax: + 39 0331 827595, Email: communication@alenia.it, Prime

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Contractors are invited to submit updated information to Editor, International Contractors, Forecast International, 22 Commerce Road, Newtown, CT 06470, USA; rich.pettibone@forecast1.com

Aermacchi MB.339 Series

Technical Data

(MB.339FD)

Design Features. Much-enhanced derivative of MB.326, mating the wing of the MB.326K variant with a new forward fuselage section for improved forward visibility. Pressurized cockpit fitted with jettisonable canopy and Martin Baker ejection seats.

	Metric	U.S.
Dimensions		
Length overall	11.24 m	36.87 ft
Height	3.86 m	12.66 ft
Wingspan	11.22 m	36.8 ft
Weight		
Empty, equipped	3,414 kg	7,545 lb
Max gross weight, with external stores	6,350 kg	14,000 lb
Performance		
Max speed, sea level	920 kmph	495 kt
Max climb at sea level	2,100 mpm	6,890 fpm
Service ceiling	14,020 m	46,000 ft

Propulsion

MB.339A/CD	(1)	Rolls-Royce Viper Mk 632-43 turbojet engine rated 17.8 kN (4,000 lbst).
MB.339C/FD	(1)	Rolls-Royce Viper Mk 680 turbojet engine rated 19.57 kN (4,400 lbst); produced under license by Industrie Aeronautiche e Meccaniche Rinaldo Piaggio SpA, Genoa, Italy.
MB.339 T-Bird II	(1)	Viper Mk 582 turbojet rated 17.79 kN (4,000 lbst).

Armament. MB.339C can carry air-to-air IR AIM-9L and Matra Magic, air-to-surface AGM-65 Maverick, or Marte Mk II sea-skimming anti-ship missiles. Marte II is now qualified on the modified MB.339AM.

MB.339K carries two DEFA 30mm cannons; six underwing hardpoints accommodate up to 1,815 kilograms (4,000 lb) of external stores, including 50mm, 68mm, 81mm, 100mm, 2.75-inch, and 5-inch rockets; 500-pound bombs; and 120mm close air support bombs. Aermacchi considering provisions for two additional, pod-mounted 30mm cannon and AIM-9 missile installation.

Crew. MB.339CD/FD are two-seaters.

Program Review

Background. The Italian Air Force solicited Aermacchi proposals in 1973 for a follow-on to the latter's MB.326 trainer aircraft, the standard advanced jet trainer of the 1960s. The MB.339 design was selected in 1975. The first prototype flew in August 1976. The uprated MB.339B was introduced in 1985, incorporating enhanced light attack capability. The dual-purpose MB.339C, with an updated nav/attack system, first flew in December 1985. The MB.339 Veltro 2 single-seat, dedicated attack variant flew in 1980, featuring increased maximum gross weight and two DEFA 30mm cannon.

Aermacchi laid down the initial batch of 10 MB.339Cs in 1987, in anticipation of future orders. The Italian government approved the purchase of this batch as well as another 10. All 20 are in service with the Italian Air Force. Production of a third batch of 18 was begun in 1990 to fill the latest order from the Royal New Zealand Air Force.

JPATS Contender. The MB.339 was one of a number of serious competitors for the U.S. Air Force/U.S. Navy Joint Primary Aircraft Training System (JPATS). Aermacchi, Lockheed, and GM-Hughes joined forces in 1989 to offer an improved MB.339 powered by the derated (to 4,000 lbst) RB582-01 variant of the Rolls-Royce Viper turbojet. Under the terms of the Memorandum of Understanding (MoU), Lockheed would act as the prime contractor and system integrator, and assemble the aircraft at its Marietta (Georgia) facility. Hughes would contribute its computerized training system experience. In 1995, the Beech/Pilatus PC-9 Mk II was selected as the JPATS finalist.

Italian Air Force CD Requirement. In 1995, the Italian Air Ministry agreed to purchase 15 MB.339CD variants to serve as lead-in fighter trainers with the country's Air Force. Another 15 were ordered in 2001. An export version, designated MB.339FD (full digital), was offered but attracted no buyers.

Production Resumed. In 1996, upon receipt of a six-unit MB.339C order from Eritrea, Aermacchi once again put the aircraft back into production. This order was completed at the end of 1997.

Variants/Upgrades

MB.339X. Prototype first flown in August 1976. Two more prototypes to this standard were produced.

MB.339A. Initial production-standard aircraft first flown in July 1978. Seventy-six were delivered to the Italian Air Force. This variant is also in service with the Argentinean Navy, Peruvian Air Force, Royal Malaysian Air Force, Dubai Air Force, Nigerian Air Force, and the Air Force of Ghana. Subvariants include the **MB.339RM** calibration aircraft, 15 of which are in service with the Italian Air Force Electronic Service Group, and the **MB.339PAN**, an aerobatic aircraft. Ten of the latter were delivered to the Frecce Tricolori (the aerobatics team of the Italian Air Force). Two A models were converted to PAN standard to replace those lost in 1989. A total of 101 MB.339As were delivered to the Italian Air Force between 1978 and 1987.

MB.339AM. Modified A equipped with weapon control systems from the MB.339C. It is qualified to launch the Oto Melara Marte II anti-ship missile. Modifications included a new inertial platform, Doppler velocity sensor, and nav/attack computer.

MB.339B. Further improved version of the A, for which no orders have been received.

MB.339C. This is a dual-purpose, trainer/light strike model powered by the uprated Viper 680 turbojet. It incorporates a digital nav/attack system, an inertial navigation platform, a nav/attack computer, a laser rangefinder, and an electronic support measures (ESM) system. The C variant first flew in December 1985. The Royal New Zealand Air Force ordered 18, the last of which was delivered in 1993.

MB.339D. Proposed twin-JT15D-powered version for the USAF/USN JPATS competition.

MB.339 T-Bird II. For JPATS, Lockheed replaced the MB.339D with this improved version of the C that included an improved, more reliable derated Viper turbojet.

MB.339K. The MB.339K Veltro 2 is a single-seat attack variant, fitted with two DEFA 30mm cannon and the avionics suite from the MB.339C. No orders have been placed for this model.

MB.339CD. Developed as the lead-in fighter trainer for Italian Air Force Tornado and Eurofighter pilots, the MB.339CD features a ring-laser-gyro inertial navigation system (INS) with embedded GPS, an advanced cockpit with three-color multifunction displays, a MIL-STD-1553B databus, a mission processor that operates as the main bus controller, and hands-on throttle-and-stick (HOTAS) controls. It is powered by the Viper 632 for commonality with Italy's MB.339As. The Italian Air Force ordered 15, with first deliveries in 1996, and ordered 15 more in 2001. The aircraft is fitted with an aerial refueling system, and it can be fitted with a radar warning receiver, jamming pods, and countermeasures dispensers.

MB.339FD. Export variant of CD model described above but powered by the Viper 680. It was proposed for Australia's lead-in fighter (LIF) trainer requirement but was not successful. It was selected by Venezuela in 1998, but the order was subsequently overturned.

Milestones

Month	Year	Major Development
	1973	IAF solicits design proposals from Aermacchi
	1974	Full-scale engineering mockup completed
Feb	1975	MB.339 selected as MB.326 replacement
Aug	1976	Prototype first flight
Jul	1978	First flight of first production-standard aircraft
Aug	1979	Initial production deliveries
May	1980	Veltro 2 prototype first flight
Dec	1986	MB.339C first flight

Aermacchi MB.339 Series

Month	Year	Major Development
Jun	1987	MB.339C production
Oct	1989	New Zealand Air Force selects MB.339 to replace Strikemaster
	1989	Lockheed and Aermacchi sign MoU to bid MB.339 for USAF/USN; JPATS-Hughes joins a month later
May	1990	Aermacchi and New Zealand sign contract for 18 MB.339 trainers
Late	1993	Final RNZAF deliveries
Late	1994	Final deliveries to Ghana Air Force
	1995	Development of MB.339CD announced
	1996	MB.339CD production begun; Eritrea orders MB.339Cs
	1998	Venezuela selects MB.339FD as new trainer
	2001	Italy orders 15 more MB.339CDs
	2006	Malaysia orders 8 MB.339CDs

Worldwide Distribution/Inventories

Operator	Designation	Quantity	Average Age
Eritrea Air Force	MB.339C	3	17.00
Italy Air Force	MB.339A	16	28.50
Italy Air Force	MB.339CD	28	17.00
Italy Air Force	MB.339PAN	19	32.00
Malaysia Air Force	MB.339C	8	10.00
Nigeria Air Force	MB.339C	6	27.00
Peru Air Force	MB.339AP	13	30.50
United Arab Emirates Air Force	MB.339A	10	29.00

Identified Retrofit & Modernization Contractors

Electronics

Alenia Aermacchi	http://www.aleniaaermacchi.it, Via Ing. Paolo Foresio, Venegono Superiore, 21040 Italy, Tel: + 39 0331 813111, Fax: + 39 0331 827595, Email: communication@alenia.it, (Avionics Upgrade)

Opportunities

While Aermacchi is promoting its newer trainer aircraft, the M-346, more heavily than the MB.339, it still offers the aircraft and modifications. Though the MB.339CD remains a viable trainer for the Eurofighter and Tornado, the appeal of the MB.339 to primary customers continues to wane. However, the potential remains that some of these aircraft will be purchased by or donated to nations with weaker economies and militaries, and maintenance or retrofit may well accompany these transfers.

Venezuela has expressed an interest in the MB.339 but has yet to place any orders.

Malaysia selected the MB.339CD – of which it purchased eight – in November 2006 as a lead-in trainer for its new Su-30MKM fighters. Deliveries concluded in 2009.

The most recent order came from the United Arab Emirates, which asked for six of its own aircraft to be converted to an aerobatic configuration, along with four additional aircraft.

AIRFRAME

Aerobatic Conversion. The United Arab Emirates contracted Alenia Aermacchi for 10 MB.339A aircraft for the National Aerobatic Team (NAT). The contract includes modifications to the aircraft's wing-tip tanks and provisions for releasing smoke trails of varying colors.

The order includes conversion of six of the nation's own aircraft as well as four additional aircraft to be supplied and converted by Aermacchi.

No contract value was announced; deliveries concluded in 2011.

ELECTRONICS

Midlife Update. The MB.339A MLU was an Italian program costing an estimated ITL110 billion ($55.2 million). The upgrade, begun in 2001, extends the service life of these aircraft by approximately 10 years, and featured a number of airframe, avionics, and other capability improvements. Structural changes for improved maintainability included the addition of corrosion-resistant materials, inspection panels in more critical areas, a nose landing gear spray deflector, and a load measurement system. New safety and recovery features included external formation lights, a new crash data recorder, and a crash beacon. A 1553B databus, an integrated navigation system, attitude direction indicators (ADIs), horizontal situation indicators (HSIs), and an Attitude and Heading Reference System (AHRS) with GPS compatibility rounded out the avionics upgrades. Also, some controls may have been repositioned within the cockpit. This program also included an increase in power generation and qualification for the SECAPEM towed banner AA gunnery target.

The program is believed to have concluded in 2008.

Batch 2 Upgrade. In mid-2006, the Italian Ministry of Defense began looking for qualified companies to participate in an MB.339 upgrade program aimed at converting Italian MB.339CD Batch 1 aircraft to the Batch 2 standard. Additional requirements would include inspection and repair work.

In October 2007, Italy selected Alenia Aermacchi to perform the work on 14 aircraft, including full installation of embedded simulation systems, digital maps, night-vision-goggle compatibility, and an autonomous air combat maneuvering instrumentation (AACMI) pod. Deliveries were scheduled for completion by year-end 2009 and the program is now believed concluded.

No future activity is forecast at this time.

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