

AERMACCHI M-345

The next generation trainer



AIRCRAFT DIVISION

 **LEONARDO**



Aermacchi

M-345

THE NEXT GENERATION TRAINER

The new Aermacchi M-345 is the latest-generation training platform from Leonardo Aircraft, ideally-suited for the entire training syllabus, from basic to advanced phases.

The M-345 has been developed exploiting all the consolidated experience gained by Leonardo Aircraft in designing and manufacturing its wide family of trainer aircraft in the past 60 years.

The aircraft is fitted with simple, essential systems for maximum safety and reliability with minimum maintenance needs. As a result the M-345 is a turbofan powered high efficiency trainer with life-cycle costs comparable to those of heavy turboprop trainers but with better performance.



MAIN FEATURES

The tandem-seat Aermacchi M-345 has the airframe designed for reliability, short maintenance time and low life-cycle cost, its engine is the latest evolution of the proven Williams FJ44 family, cockpit and avionics ensure fighter-like environment for very high training effectiveness, with an excellent visibility from both seats.

Airframe

- › 15,000 Flight Hours fatigue life
- › Widespread use of composite material
- › No depot level airframe maintenance inspection required

Engines & Fuel System

- › A Williams FJ44-4M-34 highly efficient turbofan engine with FADEC
- › Two non-pressurized internal fuel tanks with provision for carriage of 2 external fuel tanks (265 lt each)
- › Single point pressure refueling/defueling system

Cabin

- › Designed to ensure excellent comfort, safety and ideal field of view both for student pilot and instructor
- › Two latest generation Martin Baker Mk.IT16D model with "O-O" capability Ejection Seats
- › On-Board Oxygen Generation System (OBOGS)
- › Environmental Control System (ECS)



Cockpit & Avionics

Latest generation Human-Machine Interface (HMI) with:

- › Three 5"x7" LCD Multi-Function Displays (MFD) and HUD in the front cockpit
- › Four 5"x7" LCD Multi-Function Displays (MFD) – one of which acting as HUD repeater – in the rear cockpit
- › Up-Front Control Panel (UFCP)
- › Digital Moving Map
- › Hands On Throttle And Stick (HOTAS) controls
- › NVIS compatibility
- › Get Home Display (GHD), for back up flight data
- › Integrated central Audio Warning

Embedded GPS/Inertial navigation system and Radar altimeter (EGIR)

Radio-Aided mode, based on TACAN and VOR/ILS/MB

Two V/UHF radios

IFF transponder

TAS, TCAS

Store Management System



INTEGRATED TRAINING SYSTEM

With the M-345 Leonardo Aircraft has leveraged its unsurpassed experience in pilot training to create an Integrated Training System (ITS) capable of smoothly transitioning pilots fresh from basic trainers to the latest next generation fighters.

The optimal balance of real aircraft and appropriate simulation reduces costs without compromising quality, allowing fewer M-345s to generate more sorties.

In its training role the M-345 has been conceived as the “core” of the advanced ITS which includes:

- › Aircraft with built-in Embedded Tactical Training System (ETTS)
- › Academic training (Computer Aided Instruction and Computer Based Training)
- › Synthetic Ground Based training (Full Mission Simulator and Part Task Trainer)
- › Mission Planning (Mission Support Station to support Planning, Briefing and De-briefing phases)
- › Live, Virtual, Constructive training environment
- › Training Need Analysis (TNA) and Training Management Information System (TMIS)
- › Logistic Services (from standard Integrated Logistic Support to full Performance Based Logistics)



EMBEDDED TACTICAL TRAINING SYSTEM (ETTS)

A comprehensive in-flight ETTS suite, based on that offered in the well proven M-346 Master, is a key feature of the M-345 and core element of the Integrated Training System (ITS).

ETTS enables the M-345 to offer the whole spectrum of simulated training functions in flight and provides both students and instructors with the following on-board simulations:

- › A tactical scenario (digital map with threats and targets)
- › Presence of realistic Computer Generated Forces (friend and foe)
- › On-board sensors (such as multimode Fire Control Radar, targeting pod and active/passive electronic countermeasures)
- › Weapons, including specific symbology and delivery parameters
- › Live, Virtual, Constructive enabled

ETTS functions can support Stand Alone (flying a single-ship mission) or Multi-Ship networked operations, with aircraft and simulators being networked via a dedicated Training Data Link to exchange tactical scenario data with other participants.



OPERATIONAL ROLES: A MULTI-ROLE ARMED TRAINER

The M-345, while maintaining its superior characteristics as a jet trainer, thanks to its modern avionics, high external load capacity (more than 1,000 kg, 4 under-wing pylons) and performance, is also suited for secondary operational roles, including air-to-air and air-to-ground, with the capability to employ weapons such as IR guided air-to-air missiles, gun pods, rockets and up to 500 lb class general purpose bombs.

For combat operations the back-seater can act as Weapons System Officer and the aircraft is equipped with advanced stores management and mission systems that allow great accuracy in delivering its payload, coupled with easy to manage weapons integration solution available on the market.



AFFORDABLE TRAINER

With low operating cost and an affordable price, the M-345 is the ideal basic-advanced jet based training solution for Air Forces around the world, providing the cost effective opportunity to train on a modern, real jet aircraft. The Italian Air Force is the launch customer for the M-345 aircraft.

Operators benefit from a two-level maintenance concept (organisational and intermediate) for aircraft, equipment and systems. Whilst an on-board Health & Usage Monitoring System (HUMS) enables data-collection and monitoring, contributing to the long life of the airframe and simplifying maintenance activities.



M-345 CHARACTERISTICS

DIMENSIONS

Wing Span	27.78 ft	8.47 m
Lenght	32.32 ft	9.85 m
Height	12.27 ft	3.74 m
Wing Area	135.6 ft ²	12.6 m ²

WEIGHTS

Take-Off (Trainer)	7,715 lb	3,500 kg
Take-Off (Maximum)	9,920 lb	4,500 kg

POWERPLANT

Engine, Turbofan		
Williams FJ44-4M-34		
Max Thrust, SLS, ISA	3,400 lb	1,540 kg
Max Internal Fuel	1,545 lb	700 kg

PERFORMANCE (Clean, ISA)

Max Level Speed (SL/20,000 ft)	380/425 KTAS	704/787 km/h
Limit Speed	400 KEAS /0.8 MN	741 km/h
Stall Speed (Landing, 20% fuel)	92 KCAS	170 km/h
Max Rate of Climb (SL)	4,700 ft/min	1,435 m/min
Service Ceiling	40,000 ft	12,190 m
Limit Load Factors	+7.0 / -3.5 g	
Max Sustained Load Factor (50% fuel, SL)	4.0 g	
Take-Off / Landing Ground Run (SL)	2,050 ft	625 m
Ferry Range, 10% reserve, Clean	720 nm	1,330 km
Ferry Range, 10% reserve, 2 Ext. Tanks	1,000 nm	1,850 km
Endurance (Clean / 2 ext. Tanks, 10% reserve)	150 min /210 min	



M-345, M-346, MB-339, MB.326: over sixty years of excellence in trainers





January 2020

This document contains information that is proprietary to Leonardo - Società per azioni and is supplied on the express condition that it may not be reproduced in whole or in part, or used for manufacture, or used for any purpose other than for which it is supplied.

Leonardo
Società per azioni

Registered Head Office:
Piazza Monte Grappa, 4
00195 Rome - Italy
T +39 06 324731

Leonardo Aircraft

Head Office:
Strada del Malanghero
10072 Caselle Torinese
(TO) - Italy
T +39 011 9960080

leonardocompany.com

