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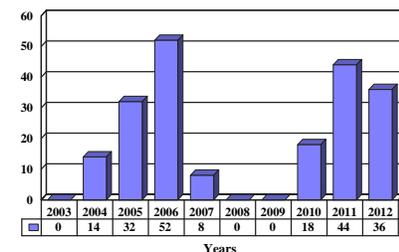
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Mehrzweckwaffe-1, Modular Dispenser System, Dispenser Weapon System 24/39, Autonomous Free Flight Dispenser, and Mehrzweckwaffe-2 - Archived 12/2004

Outlook

- Production suspended
- Additional order for the Autonomous Free Flight Dispenser Systems could be placed in the future
- No further production of the Mehrzweckwaffe-1 or Dispenser Weapon System-39 is anticipated
- Militaries are now developing powered dispenser systems with greater stand-off range
- Bar graph is for the Autonomous Free Flight Dispenser

10 Year Unit Production Forecast
2003 - 2012



Orientation

Description. Captive and free flight air-launched submunitions-dispensing systems.

Sponsor. The development and German procurement of the Mehrzweckwaffe-1 has been sponsored by the Federal Republic of Germany's Ministry of Defense through the Rüstungsabteilung (the German Ministry of Defense's armament department), the Bundeswehrverwaltungsamt (Federal Office of Defense Administration), the Bundesamt für Wehrtechnik und Beschaffung (Federal Office for Military Technology and Procurement) and the Materialamt der Luftwaffe (the equipment office of the German Air Force). These organizations are also responsible for the development of the Mehrzweckwaffe-2. The Modular Dispenser System and Autonomous Free Flight Dispenser System are private development efforts of the contractor Lenkflugkörpersysteme GmbH, while the development of the Dispenser Weapon System 39 system has been sponsored by the prime contractor, Lenkflugkörpersysteme GmbH, and the government of Sweden through the Försvarets Materielverk.

Contractors. The Mehrzweckwaffe-1 and its several derivatives have been developed and manufactured by the Lenkflugkörpersysteme GmbH component of the European Aeronautic Defence and Space Company (EADS). (Lenkflugkörpersysteme was formerly known as Daimler-Benz Aerospace and before that, Deutsche Aerospace (sometimes called DASA). Lenkflugkörpersysteme is headquartered in Munich, Bavaria, Federal Republic of Germany. The principal subcontractors are Thomson-DASA Armaments and Thomson-DASA Wirksysteme (formerly Raketen Technik Gesellschaft). The final assembly of the Dispenser Weapon System-39 was performed by FFV Aerotech (a component of the Celsius Group) at its Växjö facility in Sweden.

Licensees. Conventional Munitions Systems Incorporated of Tampa, Florida, a wholly owned subsidiary of the prime contractor Lenkflugkörpersysteme, is the licensee for the Autonomous Free Flight Dispenser System.

Hunting Engineering of the United Kingdom was teamed with Daimler-Benz Aerospace (now Daimler-Chrysler) to offer a version of the Mehrzweckwaffe-2 as

the SWAARM 2000 for the Air Staff Requirement 1238.

Status. The serial production of the Mehrzweckwaffe-1 is dormant but it is available for further orders. Four other dispensers have been developed by Lenkflugkörpersysteme GmbH and are broadly based on the Mehrzweckwaffe-1 technology: the Dispenser Weapon System 39, the Modular Dispenser System, the Dispenser Weapon System 24 (designated the Dispenser Weapon System-39 in Sweden and also being developed as the Mehrzweckwaffe-2), and the Autonomous Free Flight Dispenser System.

Serial production of the Dispenser Weapon System 39 for the Swedish order has been completed. The Modular Dispenser System is in suspended development. The development and testing of the Dispenser Weapon System 24/Mehrzweckwaffe-2 and Autonomous Free Flight Dispenser System are ongoing. The Autonomous Free Flight Dispenser System has been sold to one export customer and the production for that order has been completed. The marketing effort continues.

Total Produced. As of 2003, a total of 3,038 Mehrzweckwaffe-1 systems, 19 Modular Dispenser

Systems, 409 Dispenser Weapon System-39 systems, 11 Mehrzweckwaffe-2 systems, and 452 Autonomous Free Flight Dispenser Systems had been manufactured.

Application. Aircraft-mounted/launched submunitions dispensers for the neutralization and/or destruction of a variety of hostile targets, including massed formations of armor and airfields. The Mehrzweckwaffe-1 and Modular Dispenser System are captive-type systems. The Dispenser Weapon System-39, Mehrzweckwaffe-2, and Autonomous Free Flight Dispenser System are unpowered, glide-type systems designed for essentially the same missions.

Price Range. A basic, unloaded Mehrzweckwaffe-1 dispenser had a unit price of \$53,200 in quantity buys in equivalent 1992 United States dollars. The fully loaded Dispenser Weapon System-39 had a unit price of \$310,000 in equivalent 1993 United States dollars, and the loaded Mehrzweckwaffe-2 dispenser has a projected unit price of \$515,000 in equivalent 2001 United States dollars. The Autonomous Free Flight Dispenser System has a unit price of \$502,000 in 2003 United States dollars.

Technical Data

Mehrzweckwaffe-1

The following data are for the latest production-standard Mehrzweckwaffe-1 captive-type dispenser.

Launch/Carrier Vehicle. Tornado, F-4, similar tactical aircraft of Western origin.

Dimensions. The following data are for the latest production standard.

	<u>SI units</u>	<u>U.S. units</u>
Length:	5.33 meters	17.49 feet
Width:	1.32 meters	4.33 feet
Height:	65.0 centimeters	25.59 inches
Empty weight:	1.20 tonnes	1.32 tons
Maximum weight:	4.70 tonnes	5.18 tons

Dispensing Tubes. Twenty-eight per segment, or 112 per system.

Munitions per Dispenser. Vary according to loading; see below.

Dispenser Weapon System-39

The following data are for the Dispenser Weapon System-39; the Mehrzweckwaffe-2 and the Autonomous Free Flight Dispenser are essentially the same.

Launch/Carrier Vehicle. The Dispenser Weapon System-39 is designed for the Swedish JAS 39 aircraft; there are indications that it is also being used on the JAS 37 aircraft. The Mehrzweckwaffe-2 is designed for

the Tornado strike aircraft, the F-4, and similar tactical aircraft of Western origin. The Autonomous Free Flight Dispenser is being marketed for the F-16 aircraft, but other aircraft applications are available.

Dispensing Tubes. Twenty-four per system.

Munitions per Dispenser. Vary according to loading; see below.

Dimensions. The following data are for the production-standard Dispenser Weapon System-39; the Mehrzweckwaffe-2 and the Autonomous Free Flight Dispenser are essentially the same. The width is for the airframe; the total width is 1.0 meter (3.28 feet). The height is for the airframe; the total height is 59.5 centimeters (1.95 feet).

	<u>SI units</u>	<u>U.S. units</u>
Length:	3.51 meters	11.51 feet
Width:	63 centimeters	2.07 feet
Height:	32.0 centimeters	12.6 inches
Total weight:	600 kilograms	1,320 pounds

Note: *The contractor states that the Dispenser Weapon System-39 is designed to accept all the submunitions developed for the Mehrzweckwaffe-1. The Mehrzweckwaffe-2 and the Autonomous Free Flight Dispenser use the same submunitions. In addition, the Autonomous Free Flight Dispenser has been integrated with the M42 multipurpose submunition. Besides being compatible with the original Mehrzweckwaffe-1 submunitions, the Dispenser Weapon System-39 uses Swedish-designed submunitions as required by the Swedish Air Force. The parachute-retarded MUSJAS 1 fragmentation submunition weighs 4 kilograms (8.8 pounds). The MUSJAS 2 anti-armor submunition is also parachute-retarded and weighs 18 kilograms (39.6 pounds).*

Performance. The range of the Dispenser Weapon System-39, Mehrzweckwaffe-2, and Autonomous Free Flight Dispenser is mainly a function of the altitude of the launch aircraft; the data below are for an “optimal” altitude.

	<u>SI units</u>	<u>U.S. units</u>
Range:	20 kilometers	12.43 statute miles

Variants/Upgrades

Variants. The contractor has developed the original basic Mehrzweckwaffe-1 dispenser system into a number of variants, one of which was the only true stand-off weapon of its type in production as this report was being written.

Modular Dispenser System. This is an early variant of the production-standard Mehrzweckwaffe-1 dispenser. It uses standard modules of four tubes each, which can be integrated side-by-side or in pairs. This system can be adapted to almost all tactical aircraft in the same manner as the Mehrzweckwaffe-1. The same submunitions used in the Mehrzweckwaffe-1 are used in the Modular Dispenser System. This weapon has been tested in the United States on F-4 and F-5 aircraft. This weapon has never been sold, although several nations had at one time expressed interest. The development of this system was completed in the mid-1980s, and it is now dormant.

Dispenser Weapon System-24. This stub-wing gliding weapon is also broadly based on the Mehrzweckwaffe-1 and more directly on the Mehrzweckwaffe-2; in fact, it has been called the export version of the Mehrzweckwaffe-2. The weapon combines features of the Mehrzweckwaffe-1 and 2 as well as the Modular Dispenser System, although this particular weapon has a stand-off capability in that, like the Mehrzweckwaffe-2, it is a stand-off gliding weapon that is released from the aircraft and overflies the target autonomously. As of this

writing, little technical information had been disclosed about the Dispenser Weapon System-24.

The range of this unpowered weapon is, of course, a function of the carrier aircraft’s release altitude, but it has been stated by most sources as being around 20 kilometers (12.43 statute miles). Fold-out wings and aerodynamic control surfaces are provided in order to extend the range and increase tactical flexibility over the original Mehrzweckwaffe-1, a captive-type system.

The development of this dispenser was partially funded by Sweden. The initial development contract was awarded in October 1986. In July 1988, the go-ahead was given for the full-scale development of this system and the production contract was awarded in April 1992. The low-rate serial production of the Dispenser Weapon System-39 (as it is called in Sweden) began in June 1995 and was completed in early 1997. Later procured by Sweden, the weapon is carried by the new JAS 39 (Gripen) multirole aircraft and used on the earlier JAS 37 Viggen. The Dispenser Weapon System-39 has no terminal guidance component; is controlled by a low-cost, digital computer-based inertial guidance navigation system that can receive updates.

Autonomous Free Flight Dispenser System. This stub-wing gliding weapon is essentially the same as the Dispenser Weapon System-24 and Dispenser Weapon System-39 described above. The principal difference is that the Autonomous Free Flight Dispenser System has

a Global Positioning Satellite (GPS) component for added tactical flexibility. The Autonomous Free Flight Dispenser System is designed for integration with the multinational F-16 aircraft. The company-funded integration and flight test program has been conducted in the United States; the relevant contractor was Conventional Munitions Systems, the (former) Messerschmitt-Bölkow-Blohm subsidiary in the U.S. The weight and performance of the Autonomous Free Flight Dispenser System are essentially the same as those of the Dispenser Weapon System-24 and Dispenser Weapon System-39. The integration and flight test program was completed in 1999, and the Autonomous Free Flight Dispenser System became available for production orders. However, even before the flight test program was completed, Greece ordered the weapon for its F-16 aircraft in 1998.

Mehrzweckwaffe-2. This dispenser weapon system was derived from and is essentially the same as the Dispenser Weapon System-24/Autonomous Free Flight Dispenser System. The basic Dispenser Weapon System-24 has been adapted to German Luftwaffe standards to provide a stand-off submunitions-

dispensing capability for the Luftwaffe's Tornado aircraft. The submunitions used in the original Mehrzweckwaffe-1 are also used in the Mehrzweckwaffe-2. The Mehrzweckwaffe-2 has essentially the same range as the Dispenser Weapon System-39 and the Autonomous Free Flight Dispenser. Flight tests of the Mehrzweckwaffe-2 began in 1994 and were completed in 1997, but some follow-on testing has been conducted. However, the Mehrzweckwaffe-2 has yet to be ordered by the Luftwaffe for its Tornado aircraft.

Powered Versions. An effort to integrate a solid-fuel rocket with the Autonomous Free Flight Dispenser System and the Mehrzweckwaffe-2 was begun in 1993. This powered weapon, tentatively designated Dispenser Weapon System-39-R, has a range of 30 kilometers (18.64 statute miles). The German version is called the Mehrzweckwaffe-2R.

A further effort involves the integration of a guidance system with the powered weapon. As this would result in what we define as a missile, it is out of the scope of this report. In any event, like the basic Mehrzweckwaffe-2, the Dispenser Weapon System-39-R has yet to be ordered.

Program Review

Background. In the early 1970s, the Federal Republic of Germany began to examine the feasibility of using weapons incorporating emerging technology. Later in the decade this plan gained favor as a major component of the overall "Assault Breaker" concept of attacking second- and third-echelon targets and targets at the forward edge of battle in order to blunt a massive armored attack. This overall concept remains a key point of NATO strategy today.

The development of a weapon system of this type, which is generally known as a Strüwaffen (dispensing weapon), began in 1971 under the auspices of Messerschmitt-Bölkow-Blohm. The actual weapon was called STREBO and the application was intended to be the F-104G aircraft, then a mainstay of the Federal Republic's armed forces. The STREBO program fell by the wayside because dispensing the weapon's submunitions resulted in damage to the F-104's fuselage. However, the development of the basic technology continued, and the first major weapon system of its type to be brought to operational reality was the Mehrzweckwaffe-1, or multipurpose weapon 1.

This weapon system was developed by the combined efforts of two firms with long experience in this area of sophisticated military technology. The first was Messerschmitt-Bölkow-Blohm. (It was later integrated as a major component of the Deutsche Aerospace [DASA] firm, and subsequently absorbed into the

Daimler-Benz Aerospace organization. More recently, it has been reorganized under Lenkflugkörpersysteme GmbH, a component of EADS.) The second firm involved with the development was Diehl Wehrtechnik. Teamed with Messerschmitt-Bölkow-Blohm, this firm jointly owned Raketen Technik Gesellschaft, which was responsible for the new submunitions that were to be developed for the Mehrzweckwaffe-1. This firm, too, has gone through some name changes, and it has now been split into two firms: Thomson-DASA Armaments and Thomson-DASA Wirksysteme.

Development of the new weapon system began in June 1977, and the initial contract specifically for a STREBO variant was awarded to Messerschmitt-Bölkow-Blohm. In May 1978, the weapon received its current name. Development continued through 1984, when the first production deliveries were made. The development of some of the submunitions and of variants of the dispenser is ongoing.

Description. The Mehrzweckwaffe-1 weapon is a first-generation dispensing system in which the dispenser is captive until after use; at that time it is discarded, allowing the aircraft to exit the target area at high speed. The Mehrzweckwaffe-1 is *not* reloadable; it is supplied as a complete unit, loaded with the appropriate submunitions per the description below. The actual dispenser consists of four sections, each with 28 transversely mounted tubes or 112 tubes with 224

exit holes. Four different pyrotechnic charges are employed to ensure a uniform lateral distribution pattern (the distribution pattern is vertical for the similar JP233 dispenser from the United Kingdom). The dispensing pattern can vary in length between 200 and 2,500 meters (218.72 and 2,734 yards), and in width between 55 and 500 meters (60.15 and 546.8 yards). Changes in the pattern can be made in flight. The aircraft can dispense the submunitions at a very low altitude at a high subsonic speed.

Submunitions. The Mehrzweckwaffe-1 employs two families or “Hauptzielgruppe” (target groups) of submunitions. Each target group is optimized for a particular target as described below.

Main Target Group I. This submunition loading is designed for attack against armored and mechanized units. The relevant submunitions are the Kleinbombe-44 (KB-44), Mine Flach Flach (MIFF) and Multisplittermine mit Activem Sensor (MUSA). This was the first loading of the Mehrzweckwaffe-1 to enter service.

Main Target Group II. This submunition loading is optimized for attack against airfields and includes the Startbahnbombe (also called STABO) submunition, the Multisplittermine mit Passivem und Activem Sensor (also called MUSPA) submunition, the MUSA submunition, and the MIFF submunition. The development of a third submunition, the Anti Shelter Waffe, was suspended in the 1980s.

An airfield or staging depot sown with the Main Target Group II submunition mix would be extremely difficult to clear. The MUSA submunitions would detonate almost immediately, the MUSPA at odd intervals, and the MIFF when disturbed. If the target is an airfield, the airfield may well be out of action for some time if an additional pass with another Mehrzweckwaffe-1 dispensing the Startbahnbombe anti-runway munition is made.

About 65 percent of the overall production for the Federal Republic of Germany has been fitted with the Main Target Group I submunitions. The Italian Air Force production is solely the Main Target Group II loading of the Mehrzweckwaffe-1.

Funding

The development and German procurement of the Mehrzweckwaffe-1 dispenser and submunitions is funded by the Federal Republic of Germany’s Ministry of Defense through the Bundesamt für Wehrtechnik und Beschaffung. The initial funding for the Dispenser Weapon System-24 was provided by the contractor. Subsequently, the Dispenser Weapon System-39 funding has been provided by the government of Sweden through the Försvarets Materielverk. Funding for the Mehrzweckwaffe-2 version of the Dispenser Weapon System-24 has been provided by the German Ministry of Defense. The development of the Modular Dispenser System and the Autonomous Free Flight Dispenser System has been funded by the contractor.

Recent Contracts

Not available, as contractual information is not released.

Timetable

The following timetable relates only to the Mehrzweckwaffe-1 and its variants.

<u>Month</u>	<u>Year</u>	<u>Major Development</u>
	1971	Development of STREBO system for F-104G begun
	1974	Initial STREBO system for F-104G abandoned
	1974-1977	Development of STREBO technology ongoing
	1976	Raketen Technik Gesellschaft formed
April	1977	STREBO preprototype demonstrated on F-4
June	1977	STREBO (Mehrzweckwaffe-1) contract for development of the Modular Weapon System completed
May	1978	Program transferred to Raketen Technik Gesellschaft
August	1981	First full-scale dispensing of Kleinbombe-44 submunition
January	1984	Start of full-scale dispensing testing of Main Target Group I submunitions
July	1984	Full-scale dispensing testing of Main Target Group I submunitions concluded
August	1984	Initial contract awarded for Main Target Group I version of Mehrzweckwaffe-1
November	1984	IOC for Main Target Group I version of Mehrzweckwaffe-1
Mid	1980s	Development of Modular Dispenser System completed
May	1986	Mehrzweckwaffe-1/Startbahnbombe demonstrated in the United States

<u>Month</u>	<u>Year</u>	<u>Major Development</u>
October	1986	Developmental contract for Dispenser Weapon System-24 awarded by Sweden
November	1987	IOC for Main Target Group II version of Mehrzweckwaffe-1
July	1988	Go-ahead given for full-scale development of Dispenser Weapon-24 (as Dispenser Weapon-39)
April	1992	Production contract for the Dispenser Weapon System-39 awarded by Sweden
	1992-1995	Development, integration, and testing of Autonomous Free Flight Dispenser System
	1992	Development of the Dispenser Weapon System-24 as the Mehrzweckwaffe-2
June	1995	Serial production of the Dispenser Weapon System-39
	1998	Autonomous Free Flight Dispenser System purchased by Greece
	2002-2003	Development of the Mehrzweckwaffe-2 and Autonomous Free Flight Dispenser System continues; manufacture of the Mehrzweckwaffe-1 dormant

Worldwide Distribution

Export Potential. Despite its proven effectiveness, the Mehrzweckwaffe-1 has not had much of an impact on the export market. Most potential customers were waiting for a true stand-off weapon of this type to be developed. Such a weapon is now available in several forms from the Mehrzweckwaffe-1 contractor.

Italian Procurement. For some years, Italy had expressed an interest in the Mehrzweckwaffe-1 for its fleet of Tornado aircraft. In 1986, an agreement was signed for the procurement of 100 systems; only the Startbahnbombe submunition has been procured. Italy also has expressed interest in the new Mehrzweckwaffe-2.

United States Air Force Procurement. In May 1986, the Mehrzweckwaffe-1 was demonstrated at the (then) United States Air Force Systems Command Armament Division facilities at Eglin Air Force Base in Florida. However, this demonstration was apparently for familiarization purposes only, although it did allow the Germans to further test the STABO against runways. No United States Air Force procurement is expected.

The 1993/94 testing of the Autonomous Free Flight Dispenser system by the U.S. Air Force was funded by the contractor. There is no requirement for this weapon in the United States. However, Greece, a major user of the F-16, followed the development of the Autonomous Free Flight Dispenser system and placed an order for it in 1998.

Countries. The Mehrzweckwaffe-1 is in service in the **Federal Republic of Germany** and **Italy**. Some Mehrzweckwaffe-2 dispensers have been tested by **Germany**. In addition, 19 Modular Dispenser Systems, a few Dispenser Weapon System-24 weapons and a few Autonomous Free Flight Dispenser systems are held by the contractor in Germany. Some Dispenser Weapon System-24 dispensers are held by Conventional Munition Systems in the United States. The Dispenser Weapon System-39 is in service with **Sweden** and the Autonomous Free Flight Dispenser is in service in **Greece**.

Forecast Rationale

The world's militaries no longer appear interested in submunition dispensers that require a combat aircraft to overfly an intended target. Operation Desert Storm proved that advances in air defense technologies had made it far too dangerous for combat aircraft to directly attack installations such as airfields.

Production of the Mehrzweckwaffe-1 has been concluded. Germany has taken delivery of its final MW-1 units, as has Italy. While the Mehrzweckwaffe-1 production line remains available to meet new orders, none are anticipated. Nor are any orders likely to be

placed for the Modular Dispenser System variant of the Mehrzweckwaffe-1.

Also, fabrication of the Dispenser Weapon System-39 for Sweden and the Autonomous Free Flight Dispenser System for Greece has been completed. Due to the strong marketing effort and the wide distribution of the F-16, the AFDS could win a moderate number of sales over the next 10 years.

Still, development energies in this area are now focused on designing *stand-off* dispenser systems.

Ten-Year Outlook

ESTIMATED CALENDAR YEAR PRODUCTION

Munition	thru 02	High Confidence Level				Good Confidence Level			Speculative			Total 03-12
		03	04	05	06	07	08	09	10	11	12	
LENKFLUGKOERPERSYSTEME GMBH MEHRZWECKWAFFE-1 (a)	3038	0	0	0	0	0	0	0	0	0	0	0
Total Production	3038	0	0	0	0	0	0	0	0	0	0	0

(a) The through 2002 production figure includes approximately 45 prototype and developmental systems. The production for service deliveries includes the sale to Italy.

ESTIMATED CALENDAR YEAR PRODUCTION

Munition	thru 02	High Confidence Level				Good Confidence Level			Speculative			Total 03-12
		03	04	05	06	07	08	09	10	11	12	
LENKFLUGKOERPERSYSTEME GMBH MODULAR DISPENSER SYSTEM (a)	19	0	0	0	0	0	0	0	0	0	0	0
Total Production	19	0	0	0	0	0	0	0	0	0	0	0

(a) Production is for the initial prototype and contractor test and demonstration systems.

ESTIMATED CALENDAR YEAR PRODUCTION

Munition	thru 02	High Confidence Level				Good Confidence Level			Speculative			Total 03-12
		03	04	05	06	07	08	09	10	11	12	
LENKFLUGKOERPERSYSTEME GMBH DISPENSER WEAPON SYSTEM 39 (a)	409	0	0	0	0	0	0	0	0	0	0	0
Total Production	409	0	0	0	0	0	0	0	0	0	0	0

(a) Through 2002 production includes no developmental or operational test weapons. All production is for the Swedish DWS-39 requirement only.

ESTIMATED CALENDAR YEAR PRODUCTION

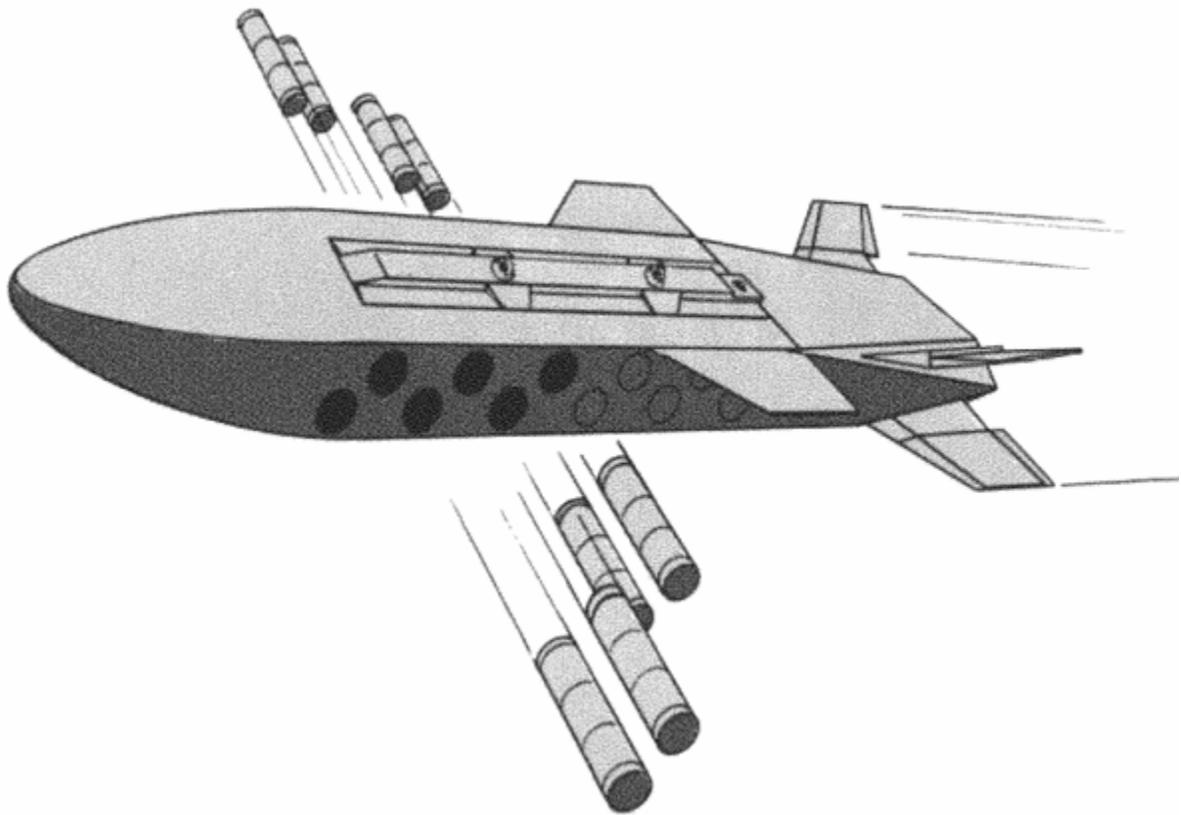
Munition	thru 02	High Confidence Level				Good Confidence Level			Speculative			Total 03-12
		03	04	05	06	07	08	09	10	11	12	
LENKFLUGKOERPERSYSTEME GMBH AUTONOMOUS FREE FLIGHT DI (a)	452	0	14	32	52	8	0	0	18	44	36	204
Total Production	452	0	14	32	52	8	0	0	18	44	36	204

(a) Production through 2002 includes dispensers for the F-16 integration and flight tests, some follow-on tests and the contractor demonstration weapons (36 dispensers in all). Also included is the export order for Greece. NO developmental prototypes for the Mehrzweckwaffe-1, Modular Dispenser System or the basic Dispenser Weapon System/DWS-9 for Sweden are included on this line.

ESTIMATED CALENDAR YEAR PRODUCTION

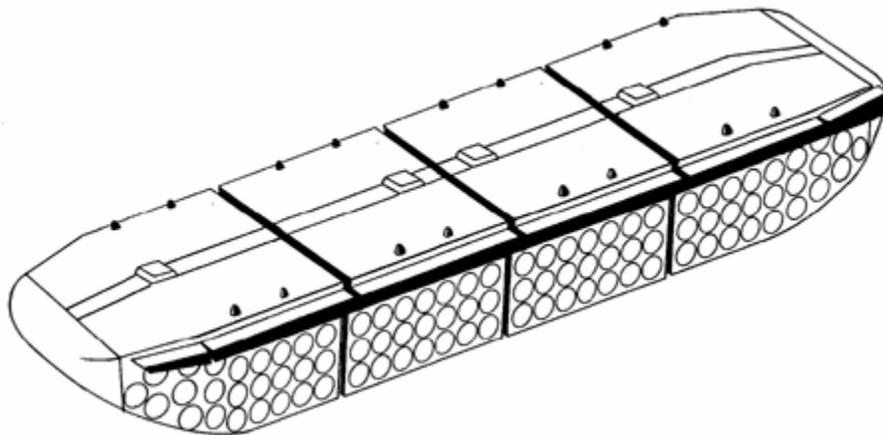
Munition	thru 02	High Confidence Level				Good Confidence Level			Speculative			Total 03-12
		03	04	05	06	07	08	09	10	11	12	
LENKFLUGKOERPERSYSTEME GMBH MEHRZWECKWAFFE-2 (a)	11	0	0	0	0	0	0	0	0	0	0	0
Total Production	11	0	0	0	0	0	0	0	0	0	0	0

(a) The through 2002 production is for the developmental and operational test and integration systems. This line is for the German-specific Mehrzweckwaffe-2 weapon only.



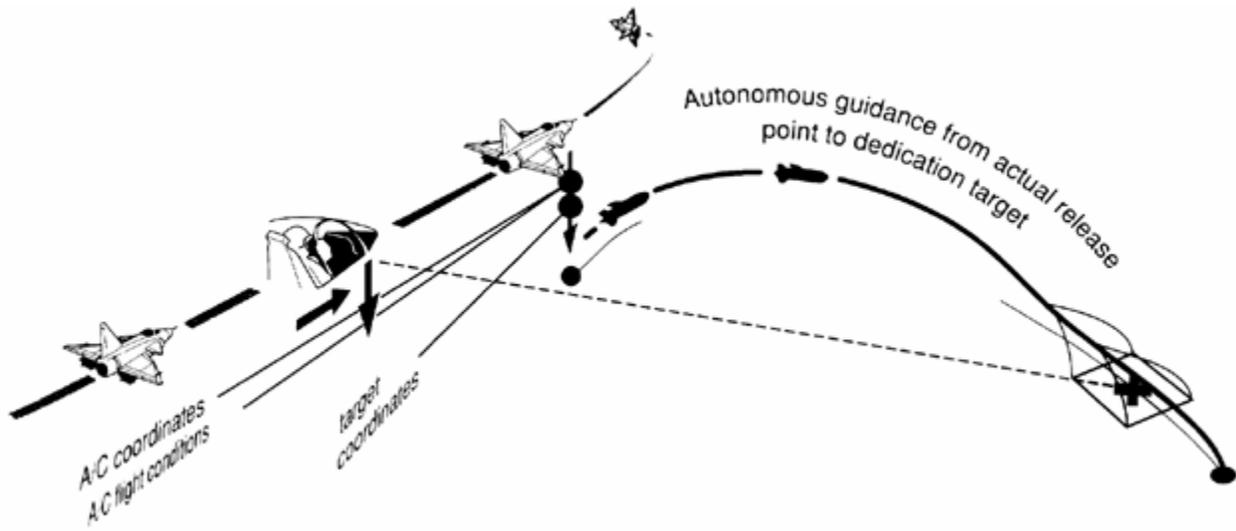
MODULAR DEFENSE SYSTEM

Source: EADS/LFK



MEHRZWECKWAFFE - 1

Source: EADS/LFK



DISPENSER WEAPON SYSTEM 24/39 - AUTONOMOUS FREE FLIGHT DISPENSER OPERATION

Source: EADS/LFK