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Dec 23 · 5 min read

## Book Review: Russia's Air-launched Weapons: Russian-made Aircraft Ordnance Today



Few possessing an interest in Russia's military aviation and aerospace industry have yet to acquaint themselves with the name Piotr Butowski. An aviation journalist and photographer, Butowski is among today's most authoritative sources on these topics, having authored countless articles for numerous publications over a period spanning nearly four decades. His latest book, *Russia's Air-launched Weapons: Russian-made Ordnance Today*, adds to a list of over a dozen outstanding books covering Soviet/Russian military aviation. Published by Harpia Publishing in April 2017, this 96-page paperback with visually appealing front and back covers stays true to its title, offering readers insight on Russian-made aircraft ordnance with the same degree of dedication and attention to detail found in Butowski's other work.

Munitions covered in *Russia's Air-launched Weapons* include existing and prospective strategic, theater-level and tactical air-to-surface missiles; short, medium and long-range air-to-air missiles; helicopter-launched missiles; guided bombs; unguided bombs and rockets; nuclear bombs; as well as torpedoes, anti-submarine missiles and mines. Most export versions are also mentioned. Guns, gun pods and rocket pods are not forgotten either. Lastly, a short two-page section discussing Russian targeting pods—hidden away at the end of Chapter 2—serves as a welcome addition to an already comprehensive list of items. Complementing the text are numerous photographs (taken primarily by Butowski during his visits to various airshows and defense exhibitions), illustrations and tables. The latter provide the reader with essential specifications of a wide range of munitions and several rocket pods.

Readers are treated not only to an abundant amount of technical details, but also to many interesting facts surrounding the development history of various aircraft ordnance. Developers of Russia's famed R-73 infrared (IR)-guided short-range air-to-air missile, for example, initially planned for the missile to feature a moveable nozzle for thrust vector control. This, however, was not realized given that "at the time it proved too difficult to create the powerful servo-motors required by the moveable nozzle." As a result, the R-73 was fitted with thrust vectoring vanes (which are less effective) instead (p. 44).

In addition to covering each munition, gun and pod individually, *Russia's Air-launched Weapons* also offers a number of important general observations on different groups of Russian aircraft ordnance. One such observation is that guided bombs presently in service with the Russian Armed Forces come in just two weight classes: 500kg (1,102lb) and 1,500kg (3,307lb) (p. 65). This trend, however, will change with the introduction of the 250kg (551lb) KAB-250 family, which constitutes the smallest class of guided bombs to come out of Russia to date (p. 68).

As with Russia's 500kg and 1,500kg guided bombs, quite a few different variants of the KAB-250 are likely to be built. A laser-guided variant—the KAB-250LG—purportedly began state trials in 2015, while additional variants of the KAB-250 featuring other “seekers are planned in the subsequent stages” (p. 69). A satellite-aided variant known as the KAB-250S also appears to have been developed, but is omitted from the book. The export version of this weapon—the KAB-250S-E—was mentioned at the Russian Defense Ministry's Innovation Day in October 2015 [1]; however, little is known about its current status.

It should be noted that almost entirely absent from the book is discussion on the use of aircraft ordnance by Russian forces in combat. Indeed, only the employment of the KAB-500S GPS/GLONASS-aided bomb and the Kh-555 and Kh-101 air-launched cruise missiles (ALCMs) in Syria is mentioned (pp. 16–17, 66). Nevertheless, more information on the use of aircraft ordnance during Russian military operations is provided in Butowski's preceding two books, *Russia's Warplanes Volume 1* and *Volume 2* (also published by Harpia Publishing). The latter includes a comprehensive and well researched section dedicated to the employment of Russian air power in Syria.[2]

That said, these two volumes, too, offer relatively little coverage of the employment of Russian aircraft ordnance in conflicts preceding Syria. This is particularly true with respect to precision-guided weapons utilized during the First Chechen War (1994–1996). Although just 3% of all aerial munitions employed in this conflict were guided,[3] the First Chechen War nevertheless witnessed the use of quite a few different guided missiles and bombs; however, only the use of several of these can be found in the books.[4] Any mention of the employment of other precision-guided weapons during the conflict, including the Kh-25ML and Kh-29L laser-guided air-to-surface missiles, and KAB-500L and KAB-1500L laser-guided bombs,[5][6] is omitted. Hence, a brief mention of which munitions were employed in what conflicts would, in the opinion of this author, have served as a useful inclusion to the text of *Russia's Air-launched Weapons*.

The above notwithstanding, *Russia's Air-launched Weapons* is a well-organized, highly informative, and thoroughly researched guide that a wide range of audiences can appreciate. It is particularly well suited for those specializing in Western air power who are seeking to expand their understanding of Russian-made aircraft ordnance, as well as for those already well acquainted with Russian air power and military aviation, who will nevertheless find plenty of new and often difficult to find details on the subject matter. Though *Russia's Air-launched Weapons* works well as a stand-alone guide, it is in the opinion of this author that the book works best as a complement to *Russia's Warplanes Volume 1* and *Volume 2*. Put together, these three superb and exceptional books allow the reader to gain a more holistic understanding of Russian military aviation.

[1] Nikolai Novichkov, “Russia's KAB-250 guided bomb to complete trials this year,” *Jane's Defense Weekly*, October 8, 2015.

[2] See Piotr Butowski, *Russia's Warplanes Volume 2: Russian-made Military Aircraft and Helicopters Today* (Houston, TX: Harpia Publishing L.L.C, 2016), pp. 31–34.

[3] Alexander Yavorsky, “Летчикам не дали развернуться [Pilots Were Not Given Room],” *Nezavisimoye Voennoye Obozreniye*, December 10, 1999.

[4] For example, see Piotr Butowski, *Russia's Warplanes Volume 1: Russian-made Military Aircraft and Helicopters Today* (Houston, TX: Harpia Publishing L.L.C, 2015), pp. 47–48.

[5] Alexander Mladenov, *Su-25 “Frogfoot” Units in Combat* (Osprey Publishing, 2015), p. 76.

[6] Timothy L. Thomas, “Air Operations in Low Intensity Conflict: The Case of Chechnya,” *Airpower Journal* 11, no. 4 (Winter 1997), p. 57.