

Pakistani nuclear weapons capability

[Overview]

As of May 2019, Pakistan is estimated to possess a total of approximately 150 nuclear warheads (**Kristensen, Hans M. & Korda, Matt 2019**). Pakistan's nuclear warheads are on the rise. By 2025, according to some forecasts, its arsenal will reach 220-250 warheads, in excess of the U.K. stockpile (**Kristensen, Hans M., Norris, Robert S. & Diamond, Julia 2018**). Pakistan is also enhancing capability to produce fissile material that is required, in turn, to manufacture nuclear weapons. As of late 2016, They had approximately 280 kg of weapons-grade plutonium and 3,400 kg of high enriched uranium (HEU) (**IPFM 2018**). Since it takes 12 kg to 18 kg of HEU or 4 kg to 6 kg of plutonium to manufacture a nuclear warhead (though these amounts may differ according to the level of their technology), Pakistan has enough fissile material to make 215 to 350 nuclear warheads. With higher levels of technical sophistication, however, it is possible to obtain a bomb from 2-4kg plutonium, in which case the same Israeli stockpile would suggest an arsenal of 260-420 warheads (**Union of Concerned Scientists 2004**). Kristensen and Norris suggest that Pakistan has not converted all its fissile material into nuclear warheads, and estimate the number of warheads in conjunction with the intelligence on their nuclear weapons delivery capabilities (**Kristensen, Hans M. & Norris, Robert S. 2011**). It is thought that the warheads are unloaded and in storage at a central storage facility (**Kristensen, Hans M. & Norris, Robert S. 2018**).

Pakistan is also developing and deploying nuclear-capable means of delivery. Currently, Pakistan deploys eight ground-launched ballistic missiles (five short-range, three intermediate range) capable of carrying nuclear warheads and is thought to be developing three more ballistic missiles. Pakistan is also actively developing cruise missiles with nuclear/conventional capability. The ground-launched Babur I (Hatf 7) is already in deployment and tests are repeatedly under way for anti-ground and anti-ship as well as submarine-launched variants.

Furthermore, Pakistan is developing, in addition to its traditional strategic nuclear arsenal, shorter-range tactical weapons. This is primarily to check its neighbor, India, which is superior to Pakistan in conventional weaponry. The country is poised to establish and maintain full spectrum deterrence at all levels of the threat from India (**ISPR 2017-2**).

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● Nuclear warheads ~150

● Nuclear weapons delivery vehicles ¹⁾

Type / designation	Missile/bomb	No. of warheads per weapon	No. of warheads	Range (km)	Payloads (kg)	Year first deployed	Remarks
Ground-launched ballistic missile			~102				
Abdali (Alias : Hatf 2)	10	1	10	200	200-400	2015?	2)
Ghaznavi (Alias : Hatf 3)	~16	1	~16	300	500	2004	3)
Shaheen-1 (Alias : Hatf 4)	~16	1	~16	750	750-900	2003	4)
Shaheen-1A (Alias : Hatf 4)	?	1	?	900	1,000	2018?	5)
Ghauri (Alias : Hatf 5)	~24	1	~24	1,250	700-1,000	2003	6)
Shaheen-2 (Alias : Hatf 6)	~12	1	~12	1,500	~1,000	2014	7)
Shaheen-3	3	1	?	2,750	~700-1,000	2018?	8)
Nasr (Alias : Hatf 9)	~24	1	~24	60-70	400	2013	9)
Aababeel	?	multiple numbers	?	2,200	?	In development	10)
Ground-launched cruise missile			~12				
Babur-1 (Alias : Hatf 7)	~12	1	~12	350	400-500	2014?	11)
Babur-2	?	1	?	700		In development	12)
Submarine-launched cruise missile							
Babur-3	?	1	?	450	?	In development	13)
Airborne bomb			~36				
Loading machine : F-16A/B	~24	1	~24	1,600	4,500	1998	14)
Loading machine : Mirage III/V	~12	1	~12	2,100	4,000	1998	15)
Air-launched cruise missile							
Ra'ad (Alias : Hatf 8)	?	1	?	350	~400	2017?	16)
Ra'ad-2	?	1	?	>350	~400	2018?	17)

[Notes]

- The source for information on missile / bomb, number of warheads, range and year of deployment is **Kristensen, Hans M., Norris, Robert S. & Diamond, Julia 2018**; payloads is **Schell, Phillip Patton, Kile, Shannon N. & Kristensen, Hans M. 2015**.
- Road-mobile. Single-stage. Solid-propellant. The yield of the nuclear warhead is 5-12 kilotons. The latest test launch was conducted on February 15, 2013 (**The Nation 2013**).
- Road-mobile. Single-stage. Solid-propellant. The yield of the nuclear warhead is 5-12 kilotons. The latest test launch was conducted on May 8, 2014 (**The Times of India 2014**).
- Road-mobile. Solid-propellant. Single-stage. The yield of the nuclear warhead is 5-12 kilotons. Pakistan bases its missiles on the M-II missiles that they imported from China in the early 1990s. The latest test launch was conducted on April 10, 2013 (**The Express Tribune 2013**).
- The Shaheen IA extended the range of a Shaheen. The yield of the nuclear warhead is 5-12 kilotons. The latest test launch was conducted on December 15, 2015 (**Smith, Alexander 2015**).
- Road-mobile. Single-stage. Liquid-propellant. The yield of nuclear warhead is 10-40 kilotons. Believed to be a variant of the North Korean Rodong (Nodong). The Ghauri (Hatf-5) is Pakistan's earliest intermediate-range ballistic missile capable of carrying nuclear warheads. It will likely be replaced by Shaheen upgrades in the future (**Kristensen, Hans M., Norris, Robert S. & Diamond, Julia 2018**). The latest test launch was conducted on October 8, 2018 (**ISPR 2018-2**).
- Two-stage, solid-propellant. The yield of nuclear warhead is 10-40 kiloton. Thought to become the replacement for Ghauri. The latest test launch was conducted on November 13, 2014 (**Dawn.com 2014**).
- Two-stage. Solid-propellant. The yield of nuclear warhead is 10-40 kiloton. The latest test launch was conducted on December 11, 2015 (**Press Trust of India 2015**).
- Single-stage. Solid-propellant. Very short in range and, at a few kilotons, limited in yield, but highly accurate in targeting. Fired from a multi-tube box launcher (**Kristensen, Hans M. & Norris, Robert S. 2016**). The range was extended to 70km from 60km in 2017. To date there have been 15 test launches, the latest being January 24 (**ISPR 2019-1**) and 31 (**ISPR 2019-2**) 2019. According to the Pakistan Armed Forces' Inter-Services Public Relations, it is "capable of defeating, by assured penetration, any currently available BMD system in our neighborhood" (**ISPR 2019-2**).
- Three-stage. Solid-propellant. The first test launch was conducted on January 25, 2017. According to the Pakistani Armed Forces' joint public relations department, it is

- capable of carrying multiple warheads (**ISPR 2017-2**). Some believe this to be a Shaheen III redesign/upgrade (**Gady, Franz-Stefan 2017**). Pakistan's decision to multiply warheads is understood to be a reaction to India's Ballistic Missile Defence Program (**Kristensen, Hans M., Norris, Robert S. & Diamond, Julia 2018**).
- 11) Road-mobile. The yield of warhead is 5-12 kiloton. To date, 11 tests have been conducted, the last instance being 2014 (**Kristensen, Hans M., Norris, Robert S. & Diamond, Julia 2018**). The Babur missile is capable of stealth and precision guidance, according to the Pakistani government (**Kristensen, Hans M., Norris, Robert S. & Diamond, Julia 2018**).
 - 12) A Babur 1 variant with greater precision—owing to highly advanced aerodynamics and electronics—and an extended range of 700km, to be used for both ground and naval targets. The yield of nuclear warhead is 5-12 kiloton. The first test launch was conducted on December 14, 2016 (**ISPR 2016**). On April 14, 2018, the Babur 1B, another variant of equivalent performance, was test-fired (**ISPR 2018-1**) but this may in fact be identical as the Babur 2.
 - 13) The range of the submarine-launched Babur 2 is 450 km. The yield of nuclear warhead is 5-12 kiloton.
 - 14) Equipped with US-made missiles from 1983-87. Nuclear missions appear to be entrusted to the 9th and 11th Air Squadrons at Sargoha Air Base (**Kristensen, Hans M., Norris, Robert S. & Diamond, Julia 2018**).
 - 15) Also used in test launches of the Ra'ad ALCM (**Kile, Shannon N. & Kristensen, Hans M. 2018**).
 - 16) 6 tests have been conducted, and the latest test launch was in February 2016 (**Kristensen, Hans M., Norris, Robert S. & Diamond, Julia 2018**). It is capable of stealth mode and precision guidance, according to Pakistani government sources (**Kristensen, Hans M. & Norris, Robert S. 2016**). The source of information on payload is **IHS Jane's 2015-2**.
 - 17) Ra'ad with an extended range (**Kristensen, Norris & Diamond 2018**). The Ra'ad II made its first appearance in a military parade on March 23, 2017. According to Pakistan's Strategic Plans Division, its range is 550km (**Missile Threat 2017**).

[Source]

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