Downhole pressure pulse generator consists of housing with threaded connections, power unit, and pressure pulse generation unit. To develop effective device for generating pressure pulses in downhole section of well with the possibility of their propagation in annular space of well by implementing power unit based on screw motor principle and introducing significant design changes to pulse generation unit, ensuring the possibility of adjusting the rotational speed of power unit's rotor within technologically justified limits to achieve the required frequency parameters of pressure pulses, as well as incorporating pulsator into well-drilling tool assembly to enhance the efficiency of rock fragmentation within bottom hole and ensure the propagation of low-frequency pressure pulsations in annular space of well, thereby improving the well-cleaning process, reducing the likelihood of various complications and generally increasing the efficiency of its construction; power unit is designed as volumetric screw motor, and pressure pulse generation unit contains stationary disc located in recess of housing's internal cavity and secured by locking sleeve. Stationary disc features central shaft hole and through channels, at least three of which have a larger diameter and are located at vertices of imaginary equilateral triangles, while at least three through channels of smaller diameter are located at vertices of another imaginary equilateral triangle. Through channels of smaller diameter are offset relative to through channels of larger diameter both circumferentially and in terms of distance from the center of disc. Each through channel of larger diameter is covered by circular rotary shutter, the diameter of which exceeds the diameter of corresponding channel. Each shutter is installed with the possibility of rotation around an axis passing through shutter's eye and stationary disc, and is equipped with spring, the lower end of which is connected to shutter's axis of rotation, and the upper end to stationary disc. In the central opening of stationary disc, shaft is located, the upper end of which is connected to power unit rotor. Collar with lever is fixed to shaft, and each shutter is equipped on the upper side with semicircular eccentric support that interacts with collar's lever to periodically rotate shutters and generate pressure pulses.