

# PRAKLA-SEISMOS GMBH



## Airgun Equipment



## Airgun Operation

The most important parts of a gun are the chamber ①, piston ② and cavity ③ in the top housing.

In the chamber the high pressure air is stored, which produces the seismic signal by its sudden release. The different gun types are distinguished by the volume of their chambers. Guns with a chamber volume from 1/6 l to 2.5 l are used.

Piston and cavity serve only for start and control of the whole releasing process of the compressed air.

Through the air supply ④, shown in the upper part, and the central bore of the piston, the cavity and chamber are filled with high pressure air by a compressor. Generally, a pressure of 150 bar is applied. The mobile piston is exposed to pressure from both sides. Since, however, the surface of the upper flange of the piston is larger than that of the lower flange, a resulting force is obtained, which presses the piston downwards and seals the chamber.

In the firing moment, the solenoid valve ⑤ opens so that high pressure air is pressed below the upper piston flange. By this pressure pulse, the piston is slightly lifted off its seat. The upward and downward forces acting on the upper piston flange are now nearly compensated, as the same pressure acts on nearly the same surfaces. The only resulting force is that affecting the lower piston flange by the pressure in the chamber. By this force the piston is highly accelerated, moves upwards and finally releases the ports ⑥ through which the pressure in the chamber is radiated as seismic signal into the surrounding water.

The result of the piston movement during its first part is a relatively low increase of the air volume in the chamber, and, consequently, a relatively low decrease of the "storage pressure". If the ports are opened, the stored air can freely expand. As the corresponding volume now certainly increases faster than during the first part of releasing, the pressure decay in the chamber will be essentially faster from the moment the ports are released by the piston than until this time.

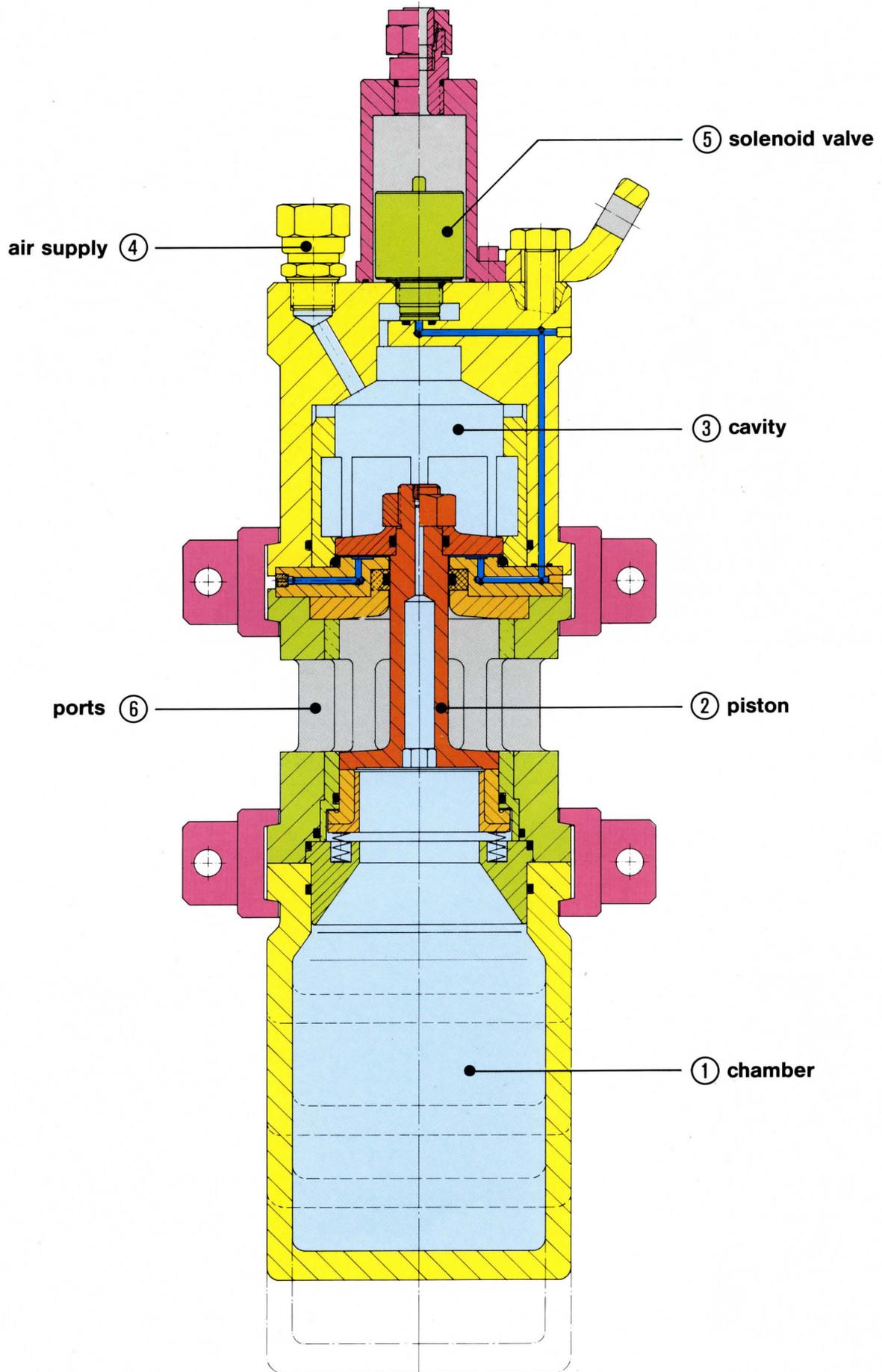
When reaching the upper part of the piston stroke, the remaining air in the cavity is highly compressed. The generated force is at this moment the only force acting on the piston. Thus the piston is accelerated downwards, reverses its movement, and finally reaches as resting position the starting point of its movement. At this point the chamber is again closed.

After the pressure in the chamber has again reached its initial value by refilling of air, the whole process can start anew.

### Available Airguns:

Type	Chamber Volumes in Litres					
VLA	0.16	0.25	0.33	0.45	0.50	
VLF	0.60	1.20	1.60	2.00	2.30	2.50
VLS (mudgun)	0.60	1.20	1.60	2.00	2.30	2.50
	other chamber volumes upon request					

# PRAKLA-SEISMOS Airgun





**Airgun Synchronizer VZAD**

## Airgun Synchronizer VZAD

The control system **Airgun Synchronizer VZAD** developed by PRAKLA-SEISMOS is a fully automatic marine energy source fire system. The VZAD equipment provides the capability to fire and control continuously up to 20 airguns.

Eight VZAD Airgun Synchronizers at maximum can be used in parallel in case that more than twenty airguns have to be synchronized.

Even after a gun array has been tuned, the individual guns will drift from their offset points. Manual monitoring and correction of this condition is difficult, if not impossible. Therefore an integrated microprocessor enables continuous control and adjustment of the individual guns.

## Solenoid Valve Power Stages VZAC

For power supply of the airgun's solenoid valves the **PRAKLA-SEISMOS VZAC SYSTEM** has been developed. It enables to control up to 40 airguns. The VZAC system consists of the following units:

- Power stage
- Power supply
- Crossbar distributors
- Distribution field
- Monitor



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