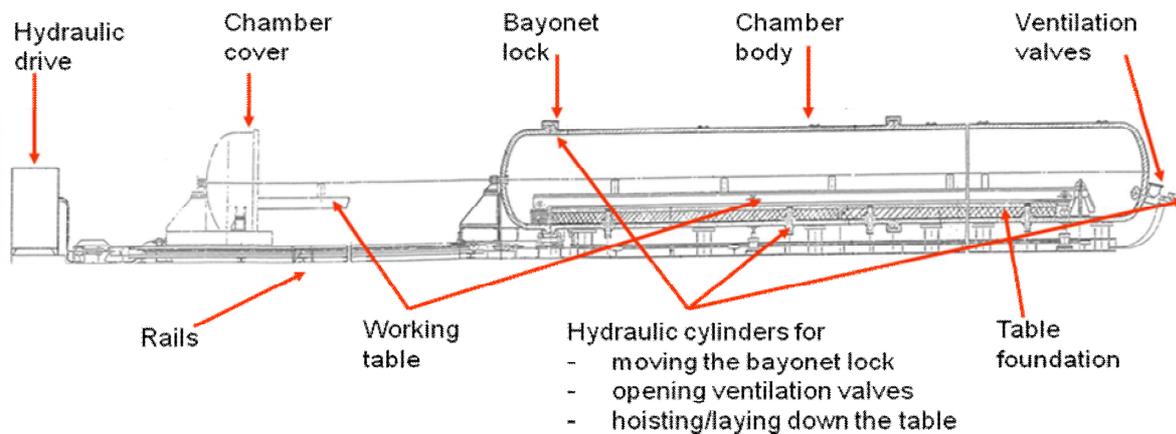


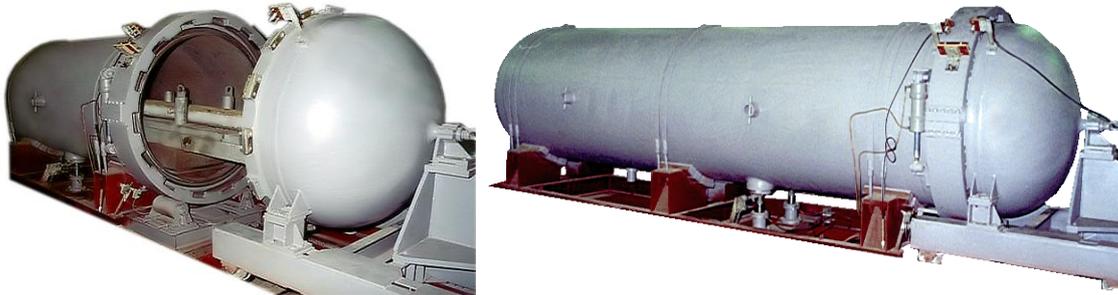
HORIZONTAL DETONATION CHAMBERS

Horizontal detonation chambers are designed for **elongated explosive charges** with length as much as 4 meters (for KVG-8 having equivalent of 8 kg TNT) or 8 meters (for KVG-16 with 16 kg TNT), limiting their **linear explosive weight to 2 kg.m⁻¹**. Horizontal detonation chambers are typically used for explosive forming of metals (long metal sheets or rail parts) but also found their application for environmentally friendly disposal of pyrotechnic munitions.



The horizontal detonation chambers use similar design and operational principles as vertical detonation chambers but instead of back-folding a copula, the chambers are closed by a **hemispherical cover moving on rails**. The static **chamber body** of the horizontal chambers is formed by **elongated tube with shock absorbing internal structure** (table foundation) on which a long working table is placed during explosion. The **working table** (5 – 10 meters long) is connected to the hemispherical cover and is pushed inside the chamber or pulled out of it by movement of the cover on rails. To assist placing the working table, the interior of the chamber is equipped with **internal rails** and hydraulic cylinders for **lowering or hoisting** the working table. Rear part of the detonation chamber is equipped with **gas-tight hydraulic ventilation valves** (one for KVG-8, two for KVG-16) closing the exhaust pipeline. Ventilating fan is connected to a pipeline leading to both the valves and is used for evacuation of the postexplosion gases to the outside atmosphere or to off-gas treatment unit.

In a closed state, the static chamber body and the moving cover are gas-tightly joined by a **rotating circular bayonet lock** with rubber O-rings positioned vertically on the neck of the chamber body. Movements of a bayonet lock, ventilation valves as well as lowering or hoisting the working table are carried out by **hydraulic cylinders** pressurized from a **hydraulic unit**. Movement of the hemispherical cover with working table on rails is carried out using a **hydraulic drive** pressurized from the same unit. Limiting positions of the moving parts are detected by **proximity limit switches**. Entries for insulated contacts of electric **firing circuit** are located in the chamber cover. Firing circuit is held open until the chamber is completely closed, using a **mechanical interrupter**. Other independent electrical and software safety locks against premature firing are included in the control panel.



KVG-8 detonation chamber (semi-open/closed positions)

Shock wave and explosion heat are rapidly absorbed by the steel chamber body weighing several dozens of tons and only stabilized post-explosion gases are steadily released to the exhaust pipeline. Explosion noise and vibration are also attenuated by the chamber body to values not exceeding limits for normal working environment, if operated from a separate room.

The **working cycle** of horizontal detonation chambers consists of a series of operations similar to vertical chambers – installation of the charge on its working table, closing the chamber by moving the cover on rails, closing the ventilation valves, lowering the working table on shock absorbing table foundation inside the chamber body, electric firing of the charge. After detonation, the post-explosion gases are released to the exhaust pipeline in regulated manner by opening the valves, the working table is again hoisted, bayonet lock opened and the chamber lid moved to its end position. At the same time, the chamber is being flushed with outside air via open valves and a fan. Solid residues are removed from the working table and another charge is prepared. The typical working cycle period is 10 – 20 minutes (without charge preparation), according to ventilation fan power.

| Detonation chamber | KVG-8 | KVG-16 |
|--|--------------|---------------|
| Maximum explosive weight [kg TNT] | 8 | 16 |
| Maximum linear explosive weight [kg.m ⁻¹ TNT] | 2 | |
| Chamber length in open state [mm] | 16 360 | 27 210 |
| Chamber length in closed state [mm] | 8 600 | 12 916 |
| Chamber width [mm] | 2 200 | |
| Chamber height [mm] | 2 460 | |
| Maximum total weight [ton] | 48 | 70 |
| Internal diameter [mm] | 1 600 | |
| Working table total length x width [mm] | 5 000 x 800 | 10 000 x 800 |
| Working table effective length x width [mm] | 4 000 x 600 | 8 000 x 600 |
| Height of the working table above ground [mm] | 1100 – 1300 | 950 – 1100 |
| Ventilation valve diameter [mm] | 1x 180 | 2x 180 |