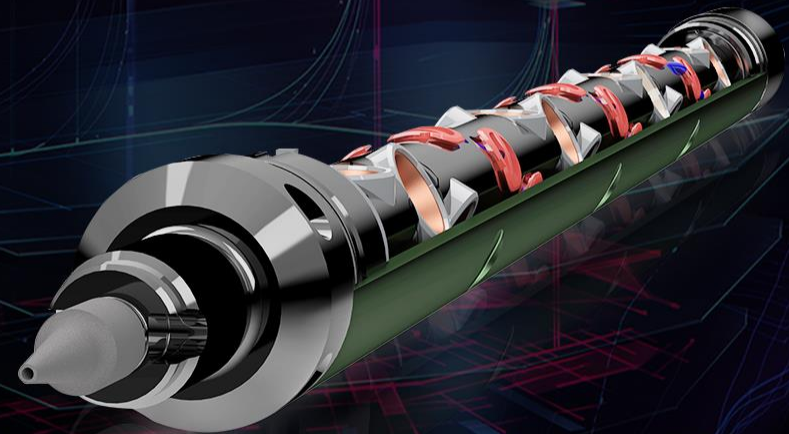




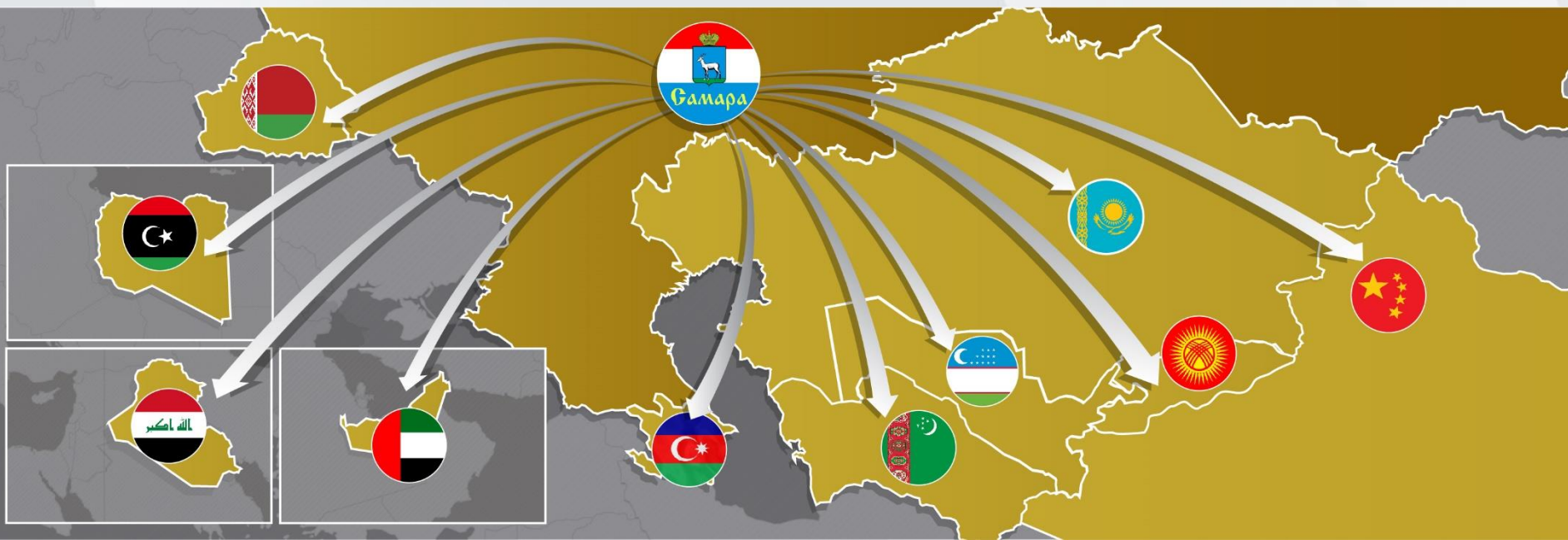
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2024

Official supplier
of well completion equipment
produced in Russia

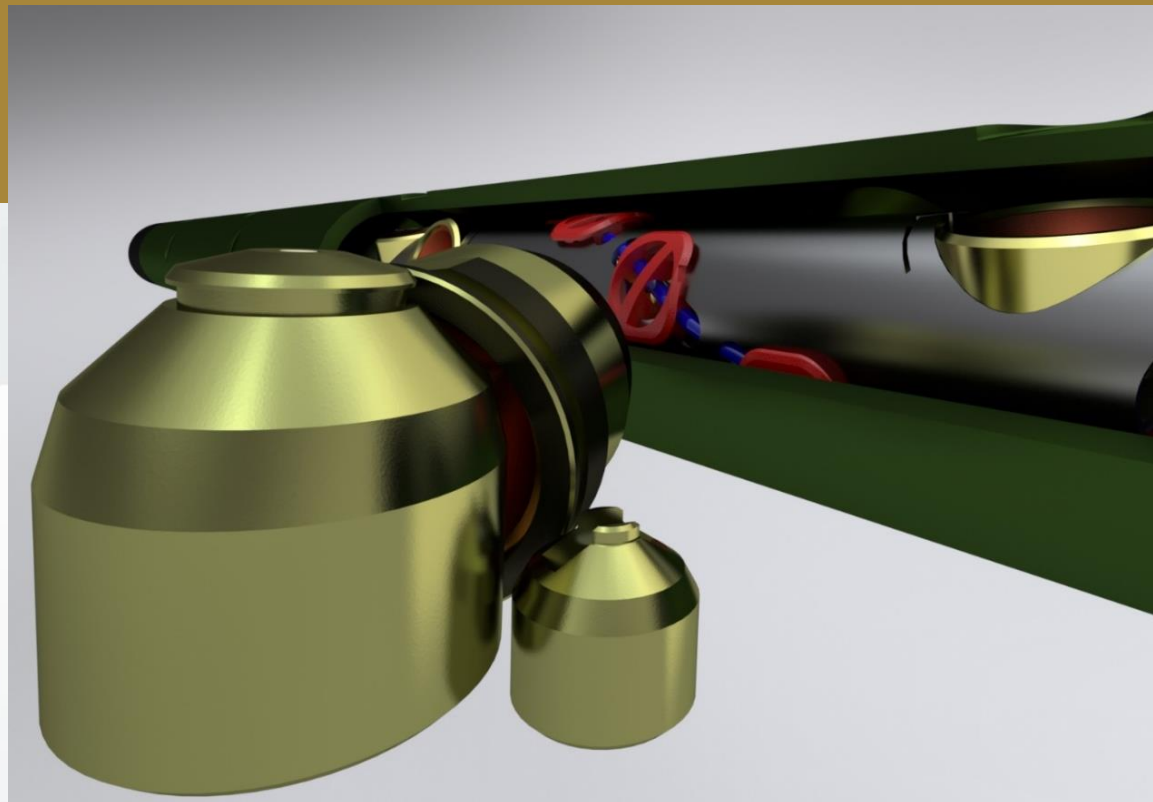


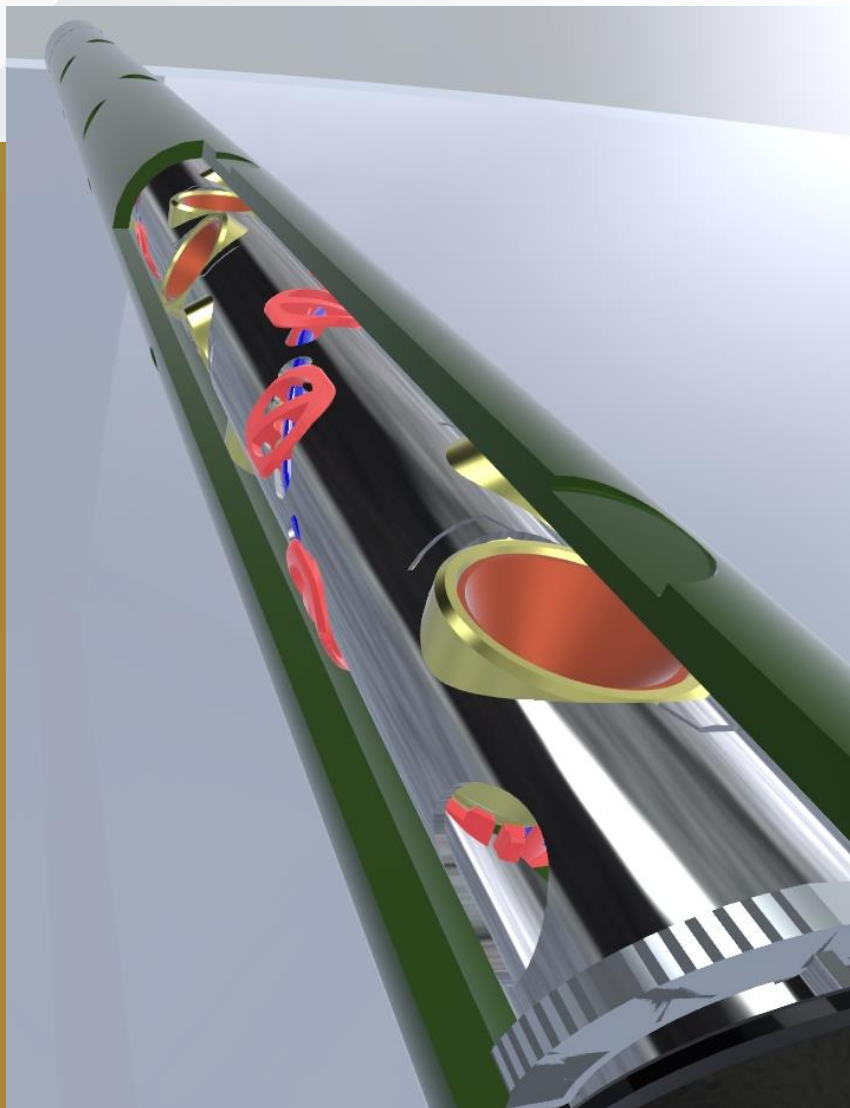
BWT-SERVICE supplies high-tech equipment for efficient blasting and perforating operations during the development and operation of oil and gas fields, and delivers products by any type of transport anywhere in the world.

BWT-SERVICE is a partner and supplier of well equipment for the largest oil and gas producing companies in Belarus, Kazakhstan, Kyrgyzstan, Turkmenistan, Azerbaijan, Uzbekistan, China, Iraq, Libya, UAE, etc.



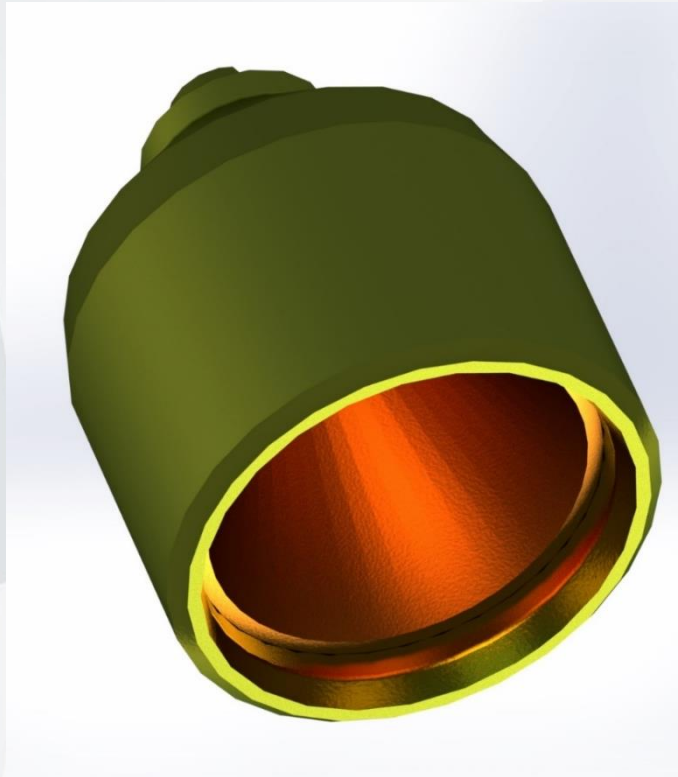
A wide range of Russian-made perforation systems and shaped charges that are in line with market requirements and have international quality certificates





Our perforation systems provide:

- effective secondary drilling of productive formations of oil and gas wells;
- opportunity to work in wells with different outer diameters of the production string;
- opportunity to run on cable, tubing and coiled tubing;
- availability of cased and uncased solutions of various standard sizes with an outer diameter from 43 to 178 mm;
- availability of technical and technological solutions for wells of complex design;
- combined use of charges of various types (Big Hole, Good Hole, Deep Penetration) in the same perforator body;
- opportunity to operate blasting and perforating equipment in HTHP conditions: high temperatures (up to 204°C) and high pressure (up to 140 MPa);



Our shaped charges ensure:

- high efficiency of blasting and perforating operations;
- low explosiveness;
- wide range of charge types, different in penetration depth, inlet diameter and other parameters;
- availability of specialized charges for the operation in HTHP conditions: high temperatures (up to 204 °C) and high pressure (up to 140 MPa).

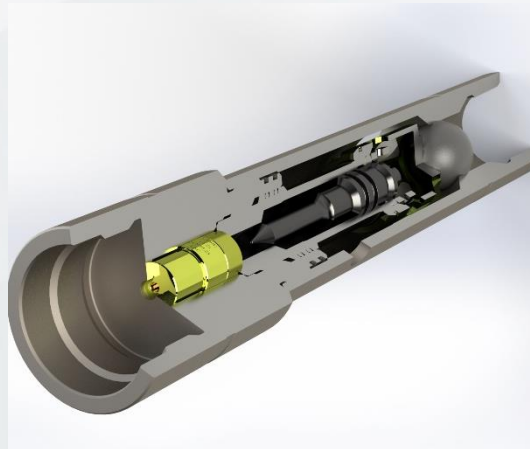
| Charge type | Explosive weight, g | Concrete penetration depth as per API RP 19B (mm) | Hole diameter as per API RP 19B (mm) | Concrete penetration depth as per TU, at least (mm) | Hole diameter as per TU, at least (mm) |
|---|---------------------|---|--------------------------------------|---|--|
| <u>Shaped charges for single-use hollow carrier perforation systems PKO</u> | | | | | |
| ZPK38-AT-M-03 | 3.5 | | | 270 | 5.5 |
| ZPK50-AT-M-03 | 5.5 | 608 | 5.56 | 610 | 5.5 |
| ZPK50-AT-M-10 | 6.5 | 154 | 12.27 | 155 | 12.0 |
| ZPK63-AT-M-03 | 11.5 | 636 | 7.97 | 630 | 8.0 |
| ZPK63-AT-M-04 | 11.5 | 753 | 7.69 | 750 | 8.0 |
| ZPK63-AT-M-10 | 14.0 | 249 | 19.93 | 250 | 19.0 |
| ZPK73-AT-M-01 | 18.0 | | | 650 | 12.0 |
| ZPK73-AT-M-02 | 19.0 | 319 | 20.83 | 320 | 21.0 |
| ZPK73-AT-M-04 | 18.0 | 785 | 9.43 | 780 | 10.0 |
| ZPK73-AT-M-07 | 17.7 | | | 350 | 15.5 |
| ZPK89-AT-M-01 | 31.7 | | | 650 | 14.5 |
| ZPK89-AT-M-03 | 27.7 | 1025 | 11.07 | 1000 | 11.0 |
| ZPK89-AT-M-04 | 27.5 | 1284 | 9.79 | 1300 | 10.0 |
| ZPK89-AT-M-07 | 29.7 | | | 360 | 18.0 |
| ZPK89-AT-M-09 | 27.2 | 356 | 18.69 | 360 | 19.0 |
| ZPK89-AT-M-10 | 22.5 | 262 | 23.42 | 260 | 23.5 |
| ZPK89-AT-M-11 | 27.7 | 151 | 23.50 | 150 | 25.0 |
| ZPK102-AT-M-03 | 28.0 | 1245 | 12.28 | 1250 | 12.0 |
| ZPK102-AT-M-04 | 28.0 | 1400 | 9.70 | 1400 | 10.0 |
| ZPK102-AT-M-07 | 28.0 | | | 360 | 18.0 |
| ZPK102-AT-M-09 | 27.2 | 366 | 18.93 | 370 | 19.0 |
| ZPK102-AT-M-10 | 27.5 | 175 | 22.35 | 200 | 23.0 |
| ZPK114-AT-M-01 | 29.0 | | | 1000 | 12.7 |
| ZPK114-AT-M-03 | 32.5 | 1348 | 12.50 | 1350 | 12.0 |
| ZPK114-AT-M-04 | 32.7 | 1620 | 10.78 | 1600 | 11.0 |
| ZPK114-AT-M-07 | 28.0 | | | 360 | 18.0 |
| ZPK114-AT-M-09 | 27.2 | | | 440 | 19.7 |
| ZPK114-AT-M-10 | 27.5 | 189 | 23.92 | 200 | 24.0 |
| ZPK114-AT-M-11 | 27.5 | | | 150 | 24.5 |
| SKIF-C-63-01 | 11.5 | | | 425 | 7.0 |
| SKIF-M-63-01 | 15.0 | | | 220 | 14.5 |
| SKIF-C-73-01 | 19.0 | | | 550 | 10.0 |
| SKIF-M-73-01 | 20.0 | | | 300 | 16.0 |
| SKIF-C-U-01 | 27.5 | | | 800 | 11.0 |
| SKIF-M-U-01 | 27.0 | | | 320 | 18.0 |

| Charge type | Explosive weight, g | Concrete penetration depth as per API RP 19B (mm) | Hole diameter as per API RP 19B (mm) | Concrete penetration depth as per TU, at least (mm) | Hole diameter as per TU, at least (mm) |
|--|---------------------|---|--------------------------------------|---|--|
| <u>Shaped charges for single-use hollow carrier perforation systems SKIF</u> | | | | | |
| SKIF-AT-27-DP | 28.7 | | | 1050 | 11.5 |
| SKIF-AT-27-SDP | 31.5 | | | 1350 | 11.2 |
| SKIF-AT-27-GH | 22.7 | | | 420 | 18.0 |
| SKIF-AT-27-BH | 28.7 | | | 270 | 24.0 |
| SKIF-AT-34-DP | 30.7 | | | 1150 | 11.5 |
| SKIF-AT-34-SDP | 32.7 | | | 1450 | 11.5 |
| SKIF-AT-34-GH | 34.0 | | | 450 | 18.0 |
| SKIF-AT-34-BH | 34.0 | | | 250 | 24.5 |
| SKIF-AT-36-DP | 34.2 | | | 1200 | 11.5 |
| SKIF-AT-36-SDP | 34.2 | | | 1650 | 11.0 |
| SKIF-AT-36-GH | 36.0 | | | 450 | 18.5 |
| SKIF-AT-36-BH | 36.0 | | | 285 | 24.0 |
| <u>Shaped charges for single-use expendable perforation systems PKO</u> | | | | | |
| ZPK43-AT (Link) | 9.7 | 510 | 6.31 | 500 | 5.5 |
| ZPK54-AT (Link) | 12.7 | 761 | 8.55 | 700 | 6.5 |
| ZPK43-AT (Strip) | 9.7 | 518 | 6.73 | 500 | 5.5 |
| ZPK54-AT (Strip) | 12.7 | 659 | 8.47 | 700 | 6.5 |

| Charge type | Explosive weight, g | Concrete penetration depth as per API RP 19B (mm) | Hole diameter as per API RP 19B (mm) | Concrete penetration depth as per TU, at least (mm) | Hole diameter as per TU, at least (mm) |
|------------------|---------------------|---|--------------------------------------|---|--|
| ZPK38-AT-M-03 T | 3.5 | 257 | 5.62 | 270 | 5.5 |
| ZPK50-AT-M-03 T | 5.5 | 645 | 6.12 | 640 | 6.0 |
| ZPK50-AT-M-10 T | 6.5 | | | 155 | 12.0 |
| ZPK73-AT-M-02 T | 18.2 | 279 | 20.68 | 280 | 21.0 |
| ZPK73-AT-M-04 T | 18.0 | 896 | 11.24 | 850 | 11.0 |
| ZPK73-AT-M-07 T | 17.7 | | | 360 | 16.5 |
| ZPK89-AT-M-01 T | 32.5 | 638 | 13.77 | 650 | 15.0 |
| ZPK89-AT-M-03 T | 29.0 | | | 1050 | 11.0 |
| ZPK89-AT-M-04 T | 28.0 | 1226 | 10.12 | 1300 | 10.0 |
| ZPK89-AT-M-07 T | 29.7 | | | 370 | 18.5 |
| ZPK89-AT-M-10 T | 22.5 | 197 | 20.24 | 270 | 24.0 |
| ZPK102-AT-M-03 T | 28.0 | | | 1300 | 12.3 |
| ZPK102-AT-M-04 T | 28.0 | 1712 | 11.15 | 1450 | 10.0 |
| ZPK102-AT-M-07 T | 27.5 | | | 370 | 18.5 |
| ZPK102-AT-M-09 T | 27.2 | | | 370 | 19.0 |
| ZPK102-AT-M-10 T | 27.5 | | | 220 | 25.0 |
| ZPK114-AT-M-01 T | 29.0 | | | 1000 | 12.7 |
| ZPK114-AT-M-03 T | 32.5 | | | 1350 | 12.0 |
| ZPK114-AT-M-04 T | 35.5 | 1813 | 11.60 | 1600 | 11.0 |
| ZPK114-AT-M-07 T | 27.5 | | | 370 | 18.5 |
| ZPK114-AT-M-09 T | 27.5 | | | 450 | 23.0 |
| ZPK114-AT-M-10 T | 28.5 | 246 | 24.33 | 250 | 25.0 |
| ZPK114-AT-M-11 T | 27.5 | | | 150 | 24.5 |
| SKIF-AT-27-DP T | 28.7 | | | 1050 | 11.5 |
| SKIF-AT-27-SDP T | 31.5 | 1511 | 11.20 | 1350 | 11.2 |
| SKIF-AT-27-GH T | 22.7 | | | 420 | 18.0 |
| SKIF-AT-27-BH T | 28.7 | | | 270 | 24.0 |
| SKIF-AT-34-DP T | 30.7 | | | 1150 | 11.5 |
| SKIF-AT-34-SDP T | 32.7 | | | 1450 | 11.5 |
| SKIF-AT-34-GH T | 34.0 | | | 450 | 18.0 |
| SKIF-AT-34-BH T | 34.0 | | | 250 | 24.5 |
| SKIF-AT-36-DP T | 34.2 | | | 1200 | 11.5 |
| SKIF-AT-36-SDP T | 34.2 | 1879 | 11.67 | 1650 | 11.0 |
| SKIF-AT-36-GH T | 36.0 | | | 450 | 18.5 |
| SKIF-AT-36-BH T | 36.0 | 280 | 24.50 | 285 | 24.0 |

Specialized equipment:

actuates cumulative perforators run in hole on tubing in oil and gas wells filled with water, oil or other drilling fluid



UNIVERSAL FIRING HEAD

Hydromechanical initiation by dropping a ball/rod into the tubing body



HYDRAULIC FIRING HEAD FOR ABSOLUTE PRESSURE

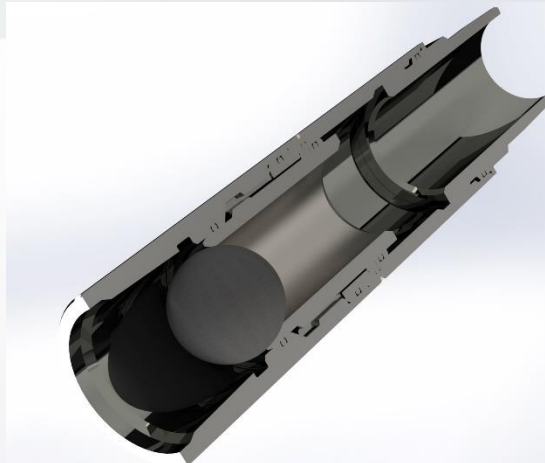
Hydraulic initiation by applying external hydrostatic pressure

Specialized equipment:



AUTOMATIC RELEASE FIRING HEAD

Hydromechanical/hydraulic initiation method. Ensures assembly detachment after triggering.



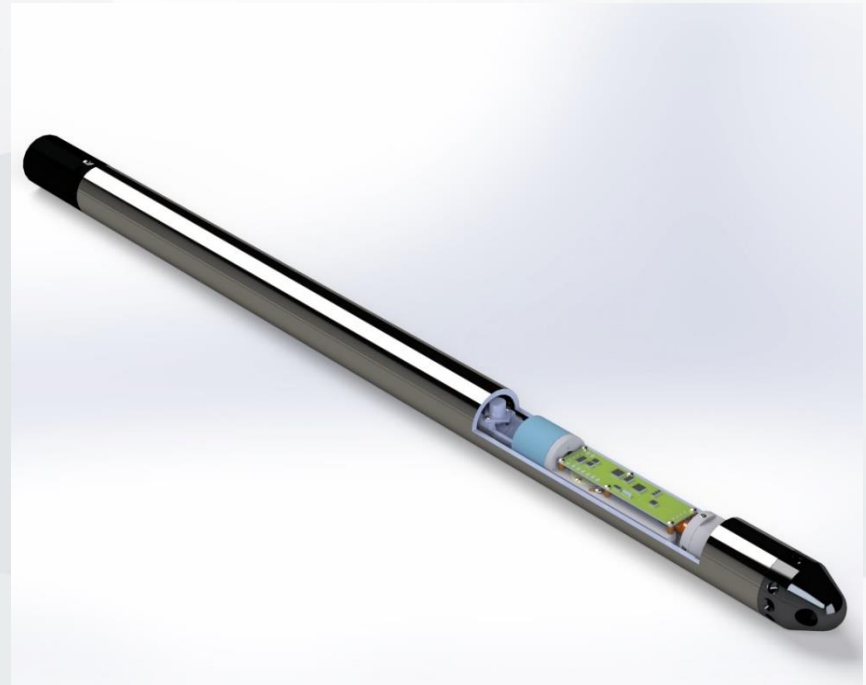
HYDROMECHANICAL RELEASE DEVICE

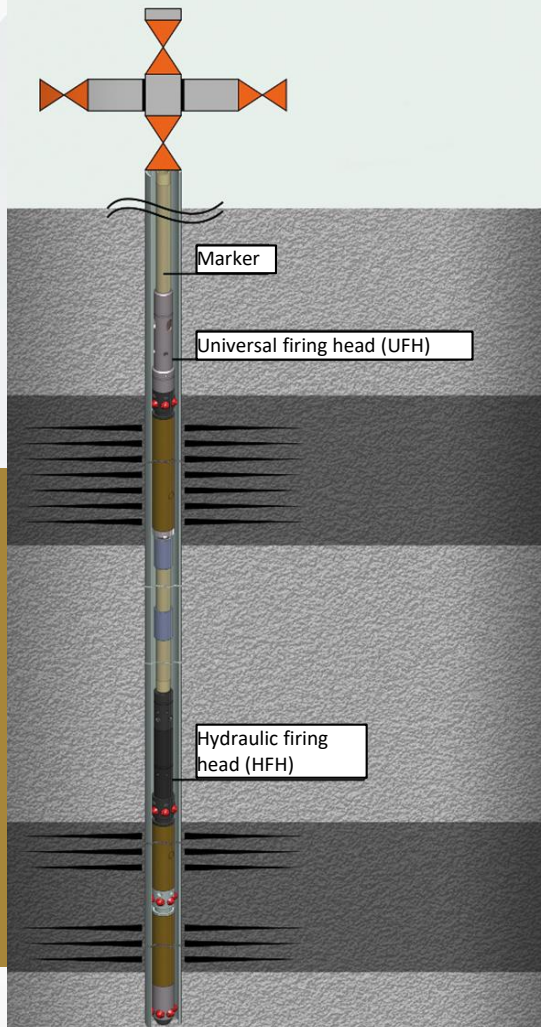
Hydromechanical method of initiation by a ball. Ensures uncoupling of tubing pipes in case of emergency/scheduled work.

Specialized equipment:

The intelligent firing head provides:

- intelligent programmable control of initiation of blasting and perforating equipment;
- possibility of separate initiation of perforators tripped simultaneously (selective perforation) using a set of heads;
- possibility of canceling initiation by a pressure pulse;
- reliability of operations under varying pressure in wells of any profile;
- possibility of recording process parameters (pressure and temperature) during one trip operation.

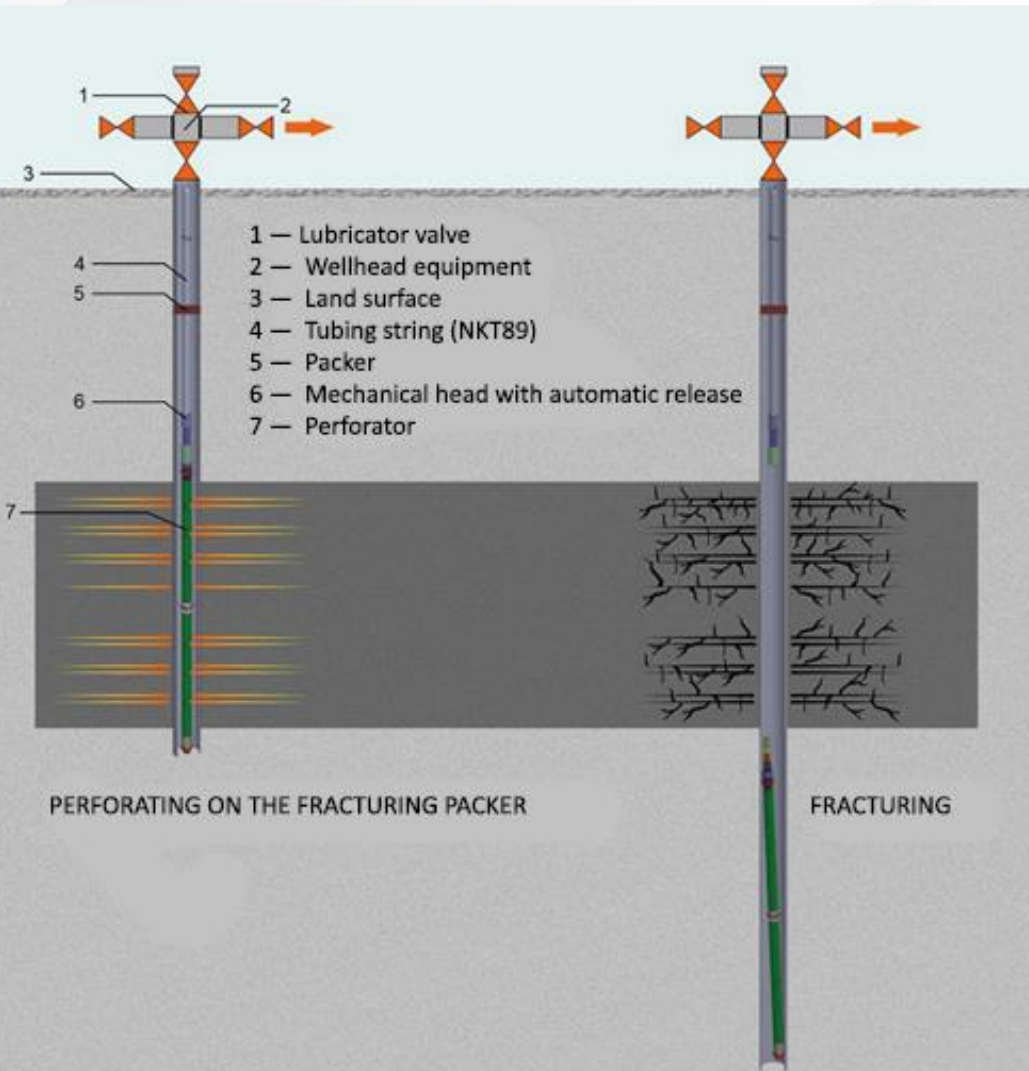




Simultaneous perforation of two intervals using a combined firing system (with a hydraulic and a universal head)

Perforation technology with two initiating heads provides:

- optimization of time and operating costs during the perforation using a universal initiating head and a head for absolute pressure in the assembly in the wells with two development objects, as well as sidetracking wells where double density is required;
- reducing the time required for 1 BPO on average up to 24 hours;
- reducing the costs for well-killing fluid and well workover.



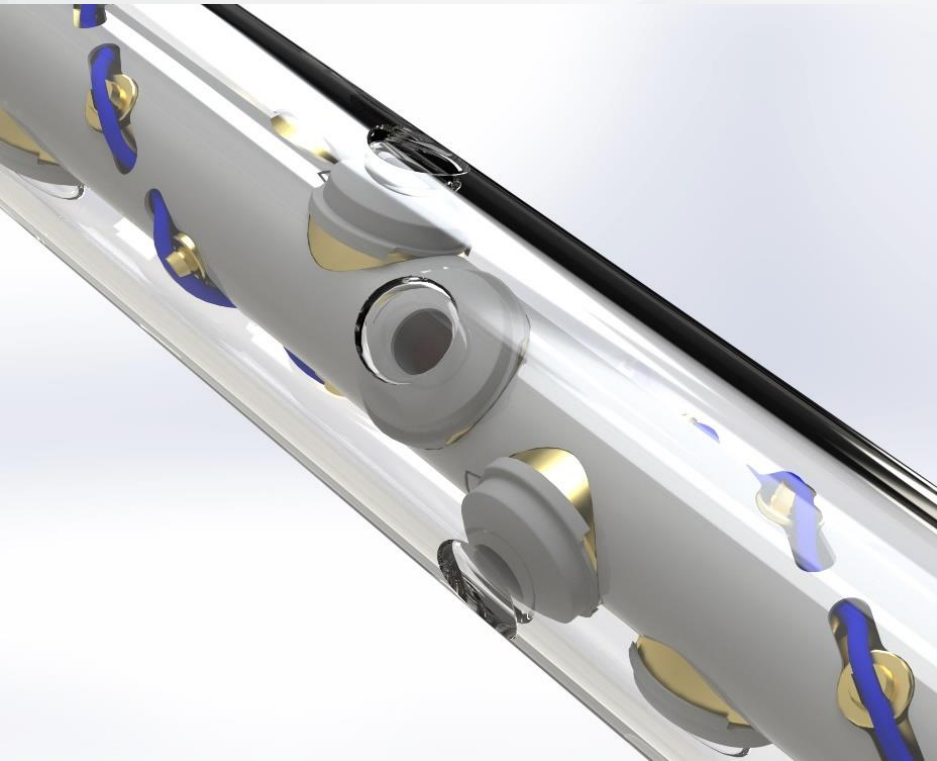
The technology of packer perforation followed by hydraulic fracturing or well logging provides:

- possibility of performing perforation and hydraulic fracturing / well logging in one trip and automatic release of the assembly into the well without its subsequent killing;
- time savings on well testing (at least 2 days);
- reducing the costs for well-killing fluid with high specific weight;
- well logging of the interval without attracting additional resources from the workover team to lift the tubing.



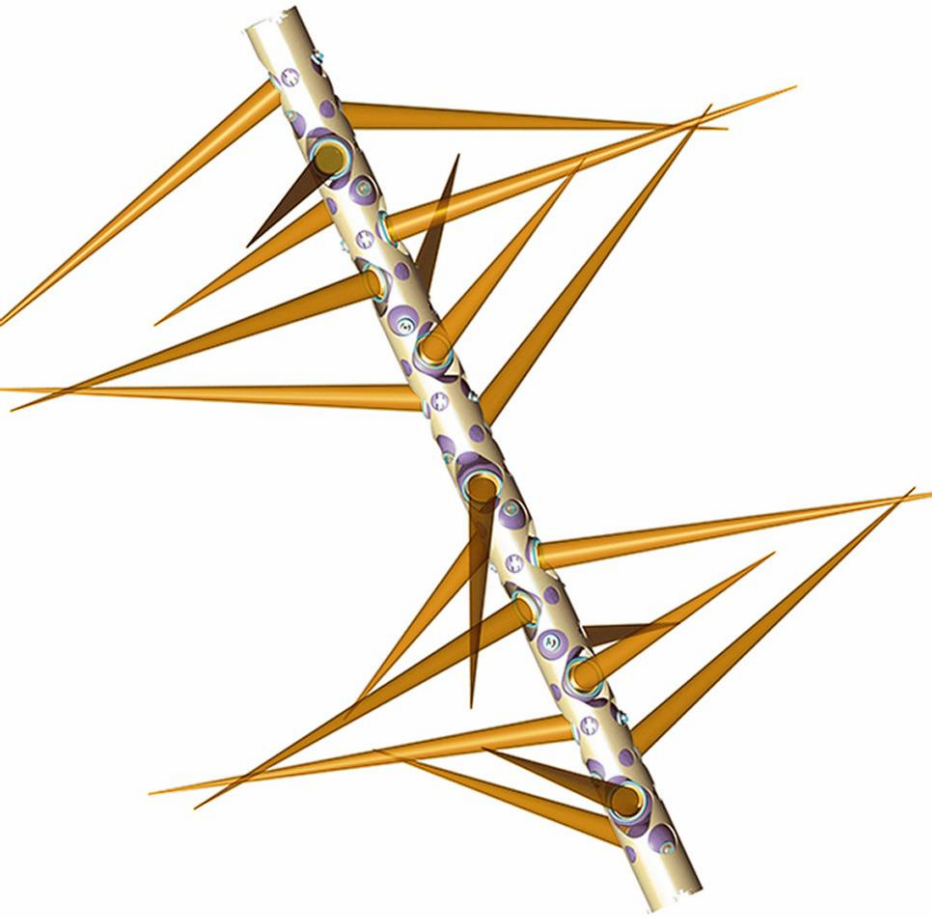
The solid fuel pressure generator provides:

- hydrogasdynamic fracturing to increase the permeability of reservoirs due to the formation of a system of microcracks, increasing the fracturing of the rock and cleaning the near-borehole zone;
- processing of medium- and low-permeability formations at various stages of development and operation of oil and gas fields;
- possibility of complex work with hydrochloric acid treatment to increase well productivity.



The complex perforating charge provides:

- simultaneous perforation and gas-dynamic treatment of the bottomhole zone due to localization of the combustion of solid fuel particles in the immediate vicinity of the perforation channel;
- reduction of operating costs due to secondary drilling of the hydrocarbon reservoir and increased oil recovery in one trip.



Segmental perforation technology provides:

- increasing the efficiency of blasting and perforating operations during the stimulated well completion due to the high density of channel concentration both in the bulk and along the length of the perforation interval.
- high efficiency of multi-stage hydraulic fracturing with perforation using the Plug&Perf technology in extended horizontal sections of wells due to a decrease in the required formation fracturing pressure and an increase in the hydrodynamic connection of the channels and the well.



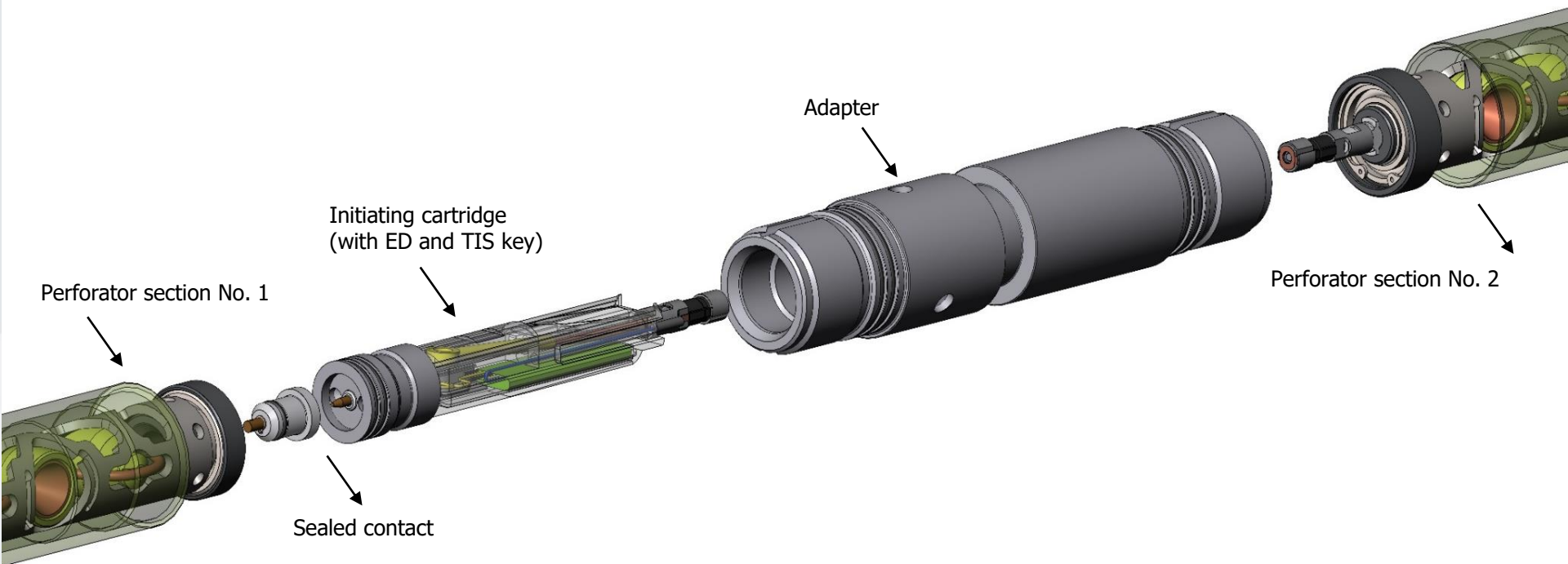
The Plug@Perf technology provides:

- cluster perforation (up to 20 sections of perforation systems) with installation of a bridge packer plug during multi-stage hydraulic fracturing;
- real-time process control using a comprehensive software;
- safe work in accordance with the requirements of the API RP 67 standard.

The Plug@Perf technology is implemented using the following set of equipment:



Operator's panel





www.bwt-service.ru

168 Leninskaya St, office 44,
Samara, Russia

info@bwt-service.ru

