TECHNICAL PROPOSAL

Orifice check valve

Description and product operation

Orifice check valve is designed for the equipment of the casing string bottom in order to ensure self-filling of the descending columns with the drilling mud from the well without overflowing it from the column to the mouth. To perform the "stop" ring function and to provide the leak-proof fit of bypass plugs on it in the process of pushing the cementing slurry into the outer annulus and to prevent the backflow of liquid from the well to the column after consolidation is completed. The inclination of the borehole axis at the valve installation site should not exceed 20^0.

Technical characteristics

Conventional valve representation	Maximum working pressure MPA	External diameter, mm	Internal diameter of the valve body, mm, min.	Diameter of the ball, mm	Coupling threads	Valve height, mm, max.	Valve weight, kg, max.
CKOD – 114R1	25	133±1.3	97.1	45±0.4	□ OTTM □ Short triangle □ OTTG □ Buttress	350	13.05
CKOD – 127R1	25	146±1.4	108.6	45±0.4	□ OTTM □ Short triangle □ OTTG □ Buttress	362	14.8
CKOD – 140R1	25	159±1.5	118.7	76±0.5	□ OTTM □ Short triangle □ OTTG □ Buttress	405	20.1
CKOD – 146R1	25	166±1.6	124.7	76±0.5	□ OTTM □ Short triangle □ OTTG □ Buttress	420	21.8
CKOD – 168R1	25	188±1.8	147.0	76±0.5	□ OTTM □ Short triangle □ OTTG □ Buttress	420	26.9
CKOD – 178R1	25	198±1.9	156.0	76±0.5	□ OTTM □ Short triangle □ OTTG □ Buttress	398	34
CKOD – 194R1	25	216±2.1	172.0	76±0.5	□ OTTM □ Short triangle □ OTTG □ Buttress	405	36.3
CKOD – 219R1	15	245±2.4	195.0	76±0.5	□ OTTM □ Short triangle □ OTTG □ Buttress	420	48.9
CKOD – 245R1	15	270±2.7	225.0	76±0.5	□ OTTM □ Short triangle □ OTTG □ Buttress	430	65
CKOD – 273R1	10	299±2.9	249.0	76±0.5	□ OTTM □ Short triangle □ OTTG □ Buttress	415	70.0
CKOD – 299R1	10	324±3	274.5	76±0.5	□ OTTM □ Short triangle □ Buttress	405	75.8
CKOD – 324R1	10	351±3	300.0	76±0.5	□ OTTM □ Short triangle □ Buttress	405	92
CKOD – 340R1	10	365±3	316.0	76±0.5	□ OTTM □ Short triangle □ Buttress	415	97.4

CKOD – 426R1	5	451±3	400.0	76±0.5	□ Buttress □ Short triangle	415	158

The valve is designed to operate at descending the casing strings at a rate of up to 1.5 m/s and at presence of oil-based drilling mud and cementing slurry with a density of up to 2400 kg/m3 and a temperature of up to 130^0C in the medium during operation. Chemical activity 10 pH, sand content up to 1.5% of the volume. Maximum flow rate through the valve is 60 l/s.

Product conformation

Orifice check valve of CKOD-R1 type (Fig. 1,Fig. 2) consists of a nut 1, a rubber diaphragm 2, a set of split washers (2 pcs.) 3, a stop ring 4, a ball 5, a stopper 6, a bushing 7, a cement mortar 8, the body 9, a plate 10, a rod 11, a spring 12.

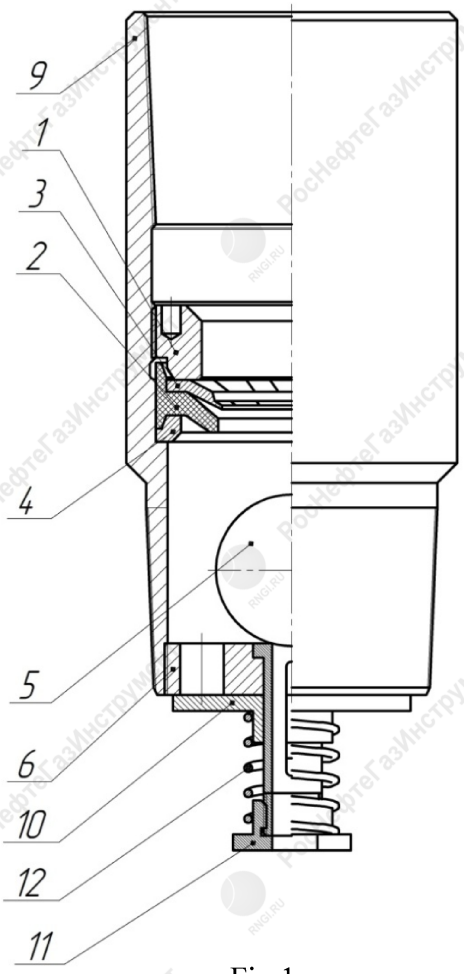

Fig.1

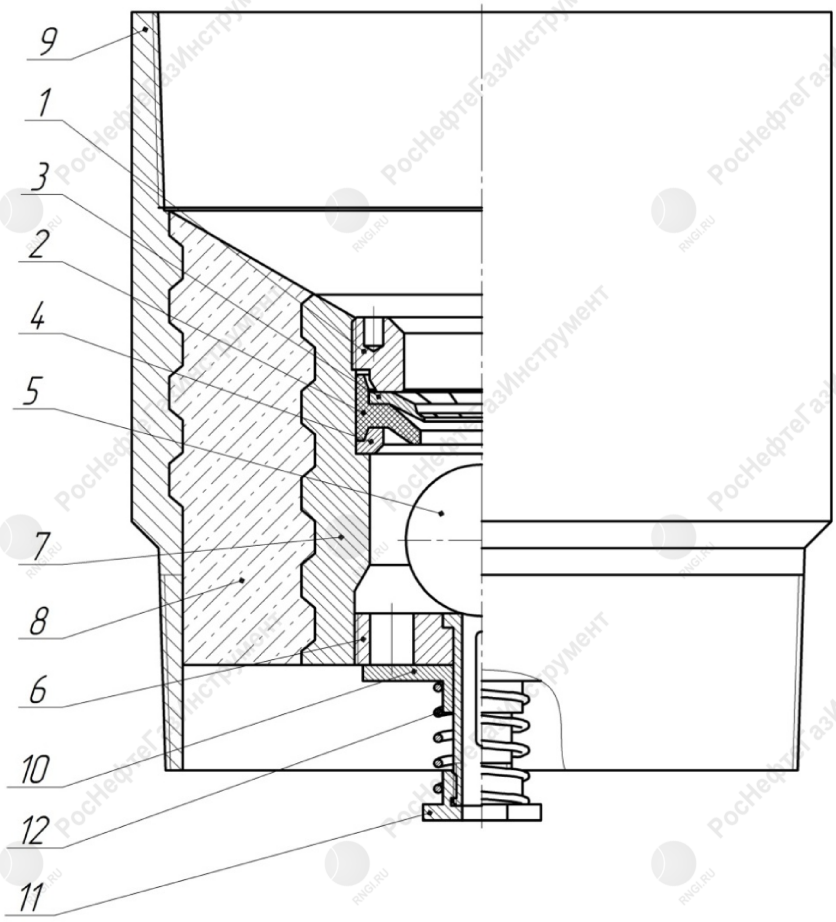

Fig.2

Materials:
Item 9 - Steel 40X GOST 4543-71 ($\sigma_T \geq 700$ MP; 30...34HRC);
Item 4,5,6,7, 10, 11 - Aluminum alloy D16;
Item 2 – Rubber RK1802.