



TECHNICAL PROPOSAL

MSC-R1 Cement stage collar

MSC-R1 collar is intended for well cementing process in two stages, both with and without the lag time.

The scope of using cement stage collar applies for the following cases:

- 1) when it is impossible to rise the cement slurry above the casing string at a required height in a single action due to hydraulic fracturing and fluid absorption;
- 2) when the expected operating pressure in a single action cementing exceeds cementing outfit technical capabilities.
- 3) in cementing gas and gas-condensate wells, and also wells subject to oil and gas showing.
- 4) in cementing wells using two cementing slurries different in composition for isolation of layers that differ in temperature or corrosive attack on the support;
- 5) when it is provided for the production zone to remain uncemented or to avoid displacing cementing slurry through the casing shoe;
- 6) when a single action cementing is not possible for organizational and technical reasons (in case if its impossible to trigger or simultaneous arrangement of a large quantity of cementing equipment at the drilling site, for instance, in off-shore drilling).

Technical characteristics

	Collar code						
	MSC-140R1	MSC-146R1	MSC-168R1	MSC-178R1	MSC-194R1	MSC-219R1	MSC-245R1
Nominal diameter	140	146	168	178	194	219	245
Cargo capacity	750 (585*)	900 (700*)	1200 (935*)	1500 (1160*)	2000 (1150*)	2000 (1150*)	2000 (1150*)
Allowable drop in pressure on the collar, MPa, max.:							
In cementing	23,0	23,0	21,0	21,0	21,0	19,0	19,0
In operating	60,0 (43,0*)	58,5 (42,0*)	50,0 (36,0*)	48,0 (35,0*)	46,0 (33,0*)	43,0 (31,0*)	40,0 (29,0*)
Outer collar diameter, mm	168	176	196	210	226	257	283
Inner collar diameter, mm	120	125	146	156	172	195	224
Collar length, mm	665	665	665	665	665	665	680
Item weight, kg	60	62	75	80	96	104	125
Weight of details drilled out within the collar, kg	15	15	25	35	35	43	48

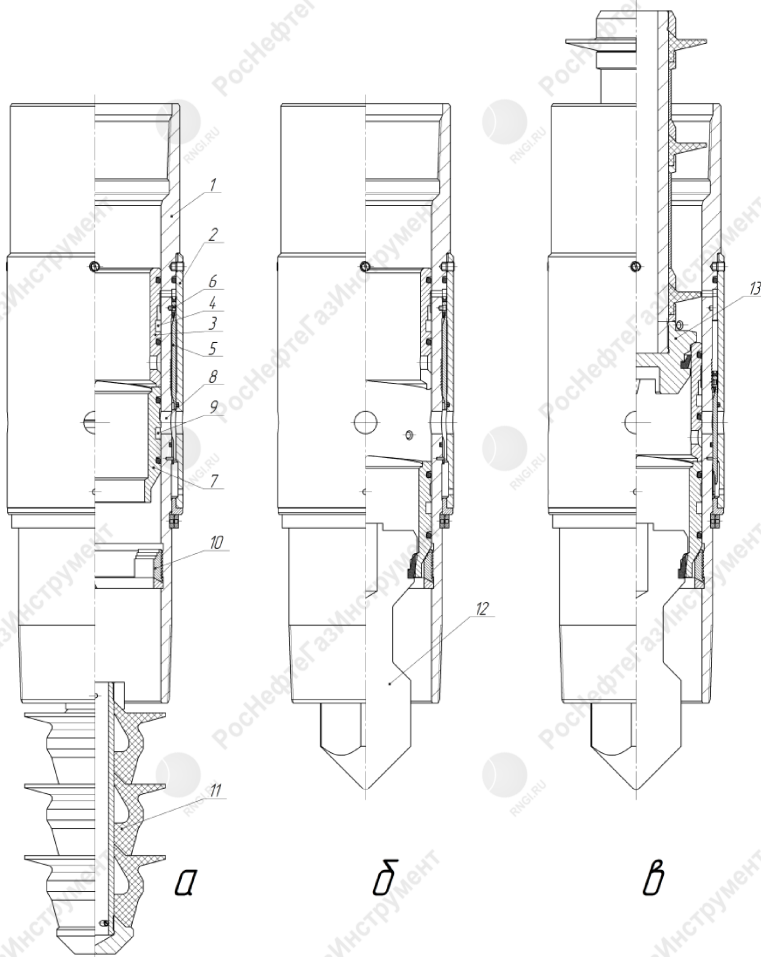
A range of nominal collar diameters corresponds to a range of pipe casing as per GOST 632-80 with a diameter of 140-245 mm.

Maximum allowable operating temperature is not more than 373 K

Manometric pressure, needed for cutting off lower and upper plug screws (opening and closing circulating openings) 3-5 MPa

The values indicated within brackets related to parameters in manufacturing the housing and the casing (annex 1, fig. 1a, pos. 1, 2) using steel 45 are agreed with the customer taking into account specific cementing conditions.

Supply package includes the cement stage collar itself and three control plugs: bypass, opening and closing, and a stopper ring.



Bill of material

Name	Pos. No.	Number of pcs.
Housing	1	1
Holder	2	1
Upper plug	3	1
Sheer screw	4	2
Damper	5	1
Sheer screw	6	4-9
Lower plug	7	1
Circulating opening	8	4
Cutoff screw	9	4-9
Stopper ring	10	1
Displacement plug	11	1
Opening plug	12	1
	13	1

Fig. 1 MSC-R1 Cement stage collar

a - in first stage cementing;

b - in second stage cementing;

c - upon completion of cementing process.