



MUD MOTORS

AND TOOLS

FOR YOUR
CHALLENGING
DRILLING

ABOUT

2006

year of foundation

2008

year of opened a rental
business of drilling motors
and other drilling tools

2012

year of foundation
a service company

SOKOL was established in 2006 and right from the start our priority business area was design and manufacture of downhole drilling motors for directional, vertical and horizontal drilling.

SOKOL runs large manufacturing base and service center, equipped with advanced equipment, CNC milling and grinding machines and all the necessary testing stations and assembly sites.

Our research and engineering departments are continuously working to improve and develop new products in accordance with the highest industry requirements and bring new technical solutions to the market.

Our quality management system is certified in accordance with ISO 9001-2015 (180 9001:2015) and Russian GOST-R.

In 2008 SOKOL opened a rental business of drilling motors and other drilling tools. As of today the rental fleet of SOKOL includes the full size range of drilling motors, jars, shock tools and other equipment for the Russian and international markets.

In 2012 we established a service company specializing in measurement while drilling services for well construction.

By having a direct dialog with the drilling companies and understanding their problems and needs, we successfully developed and implemented new engineering solutions and gained the trust of our partners. All of this helped us become a leading drilling motors and tools manufacturer in Russia and outside.

PRODUCT LIST

DOWNHOLE DRILLING MOTORS

Mud lubricated motors for all types of applications like Oil&Gas, Geothermal and Horizontal directional drilling and temperatures from 130 deg C (266 deg F) to 200 deg C (392 deg F)

1 11/16" – 9 5/8"

available sizes, inch

DRILLING AND FISHING JARS

Hydraulic mechanical double acting and Hydraulic double acting drilling and Fishing jars for all applications and temperatures

3 1/2" – 8"

available sizes, inch

SHOCK TOOLS

3 1/2" – 9 5/8"

available sizes, inch

OSCILLATORS

4 3/4" – 8"

available sizes, inch

CIRCULATION SUBS

3 1/2" – 9 5/8"

available sizes, inch

TORQUE-REDUCTION ROLLER REAMERS

6 3/4", 8"

available sizes, inch

DRILLING TOOLS

Bypass valve Column filter Non-mag Drill Collars Float valve Centering elements

MANUFACTURING FACILITY

2,5 ha

there is the large
manufacturing base
of Sokol

The annual
production
of rotors,
stators and
drilling motors
of all sizes:

SOKOL runs the large manufacturing base (~2,5 hectares) equipped with advanced equipment, CNC milling and grinding machines and all the necessary testing stations and assembly sites.

We mastered new manufacturing technology of downhole motors with low friction and corrosion-resistant coatings for salt-saturated and aggressive mud.

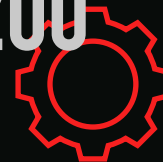
Our high-performance CNC machinery from leading global producers give new manufacturing opportunities and help us meet the highest industry requirements for variety of applications in directional and horizontal drilling.

600

motors with
adjustable bent
housing

rotors

1200



stators

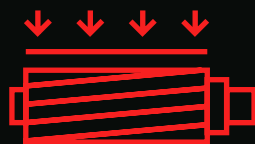
900



TECHNOLOGIES



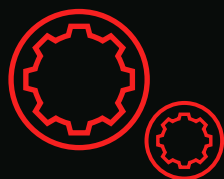
→ Long rotor production (up to 6500 mm) on CNC milling and grinding machines



→ Rotor production with low friction and corrosion-resistant coatings



→ New elastomers developed for all types of mud and temperatures



→ Long stator production (up to 6500 mm) on high-performance Desma injection machine

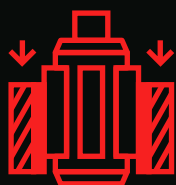


→ In cooperation with Russian Academy of Sciences we formulated new math models which help us select fit-for-purpose elastomer compounds and injection parameters



→ Rotors and stators repair technology

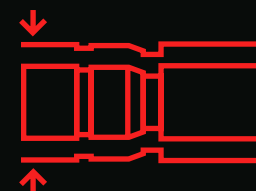
TECHNOLOGIES



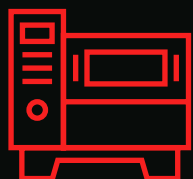
→ ID honing up to 5000 mm long



→ Jar-testing machine



→ Welding and hard facing technology for reducing wear, erosion and corrosion on all types of drilling tools



→ 4-axis machining centers from Doosan and several turn-mill centers



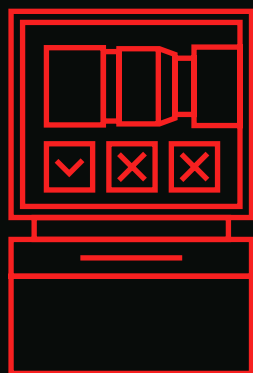
→ Machining of non-magnetic steel with manufacturing technology of non-magnetic rotary drill stem elements in accordance with the latest industry specifications



→ Deep-hole drilling machine up to 5000 mm

SERVICE CENTRE

The service center of SOKOL is equipped with advanced equipment for the repair and maintenance of mud motors, jars, shock tools, valves and other drilling tools. Here is the list of services SOKOL provides at the moment.



Maintenance, repair and testing of drilling motors, jars, shock tools, valves and drill stem elements

→ Inspection of new and repair drilling motors, jars and shock tools

→ Operational support of drilling motors, jars, shock tools and other drilling tools

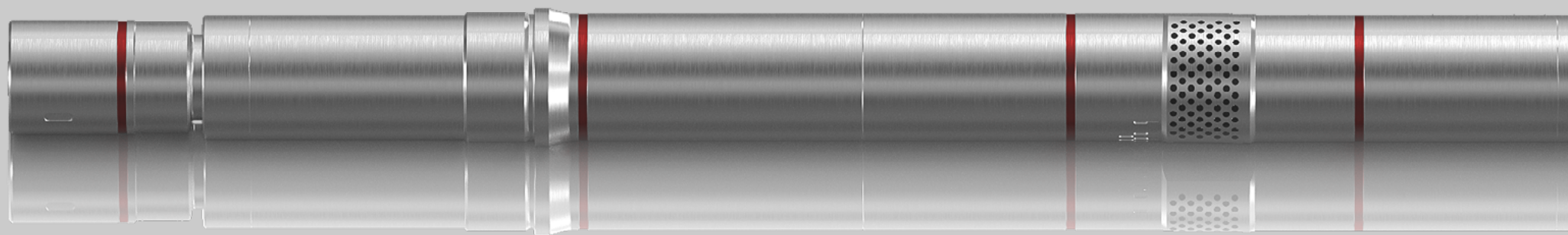
→ Visual, ultrasonic, magnetic particle and dye penetrant inspection methods

→ Repair of drill stem connections and drill pipe connections

→ Repair and inspection of non-magnetic drill stem elements and MWD

→ Repair and redress of centering elements

DOWNHOLE DRILLING MOTORS



NBR and OBM
temperatures up to

130 deg C

(266 deg F)

HR temperatures
up to

150 deg C

(302 deg F)

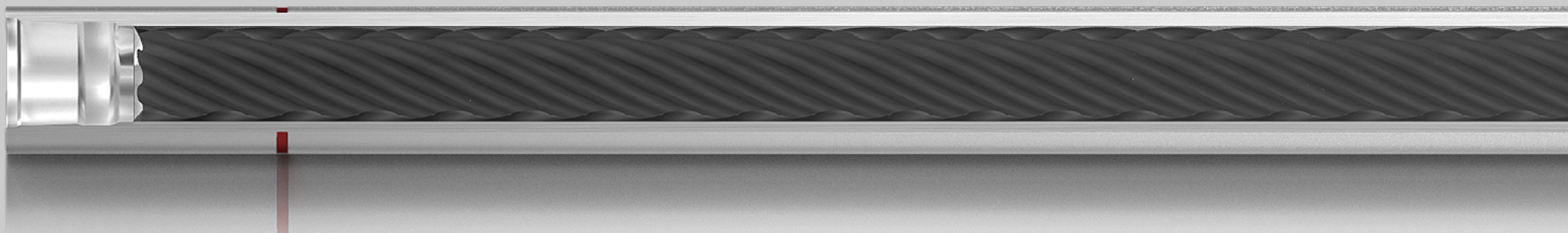
HT and OBM-HT
temperatures up to

180 deg C

(356 deg F)

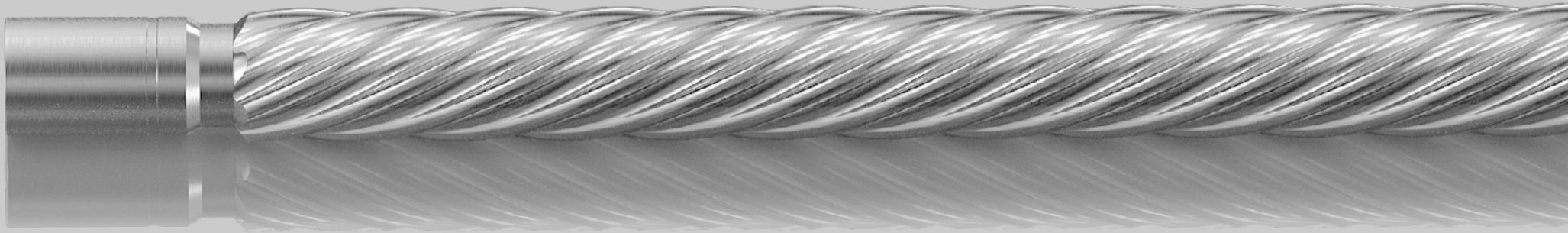
Power sections are available in a wide range of speeds and have **Nitrile Butadiene Rubber (NBR)** for standard requirements and temperatures up to 130 deg C (266 deg F), **Hard Rubber (HR)** for higher torque requirements and temperatures up to 150 deg C (302 deg F), **High Temperature Rubber (HT)** for applications up to 180 deg C (356 deg F), **Oil-Based Rubber (OBM)** for oil-based muds and temperatures up to 130 deg C (266 deg F), and **special Oil-Based/High-Temperature Rubber (OBM-HT)** for oil-based muds and temperatures up to 180 deg C (356 deg F).

STATORS



- Cold drawn seamless steel tube of STA 135 / 4130
Mod. steel grades from the world leading steel mills: Tenaris and Timken
- The new "spray" rubber-to-metal bonding technology
- Rubber compounds from top producers such as Kraiburg and Hexpol with high physical and mechanical properties
- Horizontal injection machine-moulding machine Desma
- The blasting equipment from Munk + Schmitz
- State of the art Rubber Laboratory equipped with Prescott instruments

ROTORS



→ Steel grades for rotors manufacturing: AISI 420, 17-4PH, non magnetic P530

→ The new HVOF process for tungsten carbide coating with improved porosity, adhesion and hardness

→ HVOF tungsten carbide coating with ceramic sealing from Bodycote, Aswan and Trinity with achieved performance of more then 850 hours in the field

→ Milling and polishing multiaxis machines

→ Chrome plated rotors with HEEF-25 process from Swinton and Aswan

DOWNHOLE DRILLING MOTORS

**1 11/16" –
9 5/8"**

sizes from 43 mm
to 244 mm

0–3 Deg
adjustable bent

Fixed bend
housing

- Higher operating temperatures
- Operates in a wide variety of drilling fluids
- High-strength radial bearings
- Effective catcher assemblies for bearing and power sections
- Heavy-duty oil-sealed transmission shafts
- Can be equipped with stabilizers, filters, bypass and float valves
- **Nitrile Butadiene Rubber (NBR)** for standard requirements and temperatures **up to 130 deg C (266 deg F)**
- **Hard Rubber (HR)** for higher torque requirements and temperatures **up to 150 deg C (302 deg F)**
- **High Temperature Rubber (HT)** for applications **up to 180 deg C (356 deg F)**
- **Oil-Based Rubber (OBM)** for oil-based muds and temperatures **up to 130 deg C (266 deg F)**
- **Oil-Based/High-Temperature Rubber (OBM-HT)** for oil-based muds and temperatures **up to 180 deg C (356 deg F)**

DOWNHOLE DRILLING MOTORS

ENERGY CHARACTERISTICS. More details [here](#)

MOTORS TECHNICAL SPECIFICATION. More details [here](#)

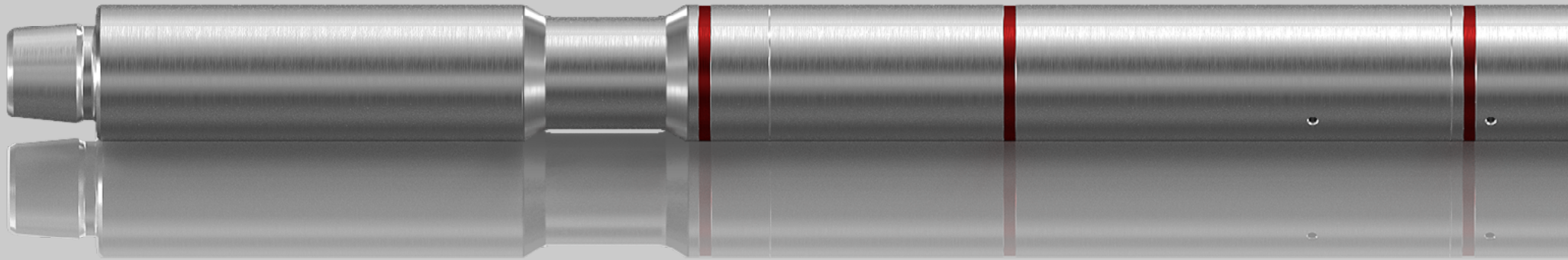
DRILLING FLUID SPECIFICATION

PROPERTIES		VALUE
DENSITY, kg/m ³ , max		2 200
SAND, %, max		1
CHLORIDES, kg/m ³ , max		50*
OIL CONTENT, %	Conventional (NBR) stator, Hard rubber (HR) stator, High-temperature stator (TH)	10
	Oil-resistant stator (OBM)	100*
TEMPERATURE (dynamic downhole), °C, max	Conventional (NBR), Hard rubber (HR) stator, Oil-resistant (OBM) stator	120**
	High-temperature stator (HT), Oil-resistant/High-temperature stator (OBM-HT)	180**

* higher chlorides content requires a special coating on the rotor (may be custom-made)

** temperature- and oil-resistant stators may be custom-made

HYDRAULIC MECHANICAL DOUBLE ACTING JARS



Hydraulic Mechanical Double Acting Jar is the drilling tool applied for the release of stuck tools. In case of drill string stuck, the jar facilitates its release.

SOKOL Hydraulic Mechanical Double Acting Jars are specially designed to deliver hydraulic delay when jarring in the up direction and mechanical release when jarring in the down direction. A latch mechanism prevents the jar from releasing accidentally during drilling and tripping operations. Jarring intensity is controlled by the amount of the drill string tension during the hydraulic delay.

HYDRAULIC MECHANICAL DOUBLE ACTING JARS

Nominal OD, inch	Length, ft	Thru Bore, inch	Approx. Weight, lbs	Pump Open Area, in ²	Torsional Limit, ft lbs	Nominal Up Latch Setting, lbs	Nominal Down Latch Setting, lbs	Max Pull During Delay, lbs	Tensile Yield, lbs
4.17	15.1	1.19	420	6.0	11 300	35 000	15 000	65 000	214 000
4.75	17.0	2.25	670	11.80	20 000	55 000	30 000	85 000	391 000
6.50	18.0	2.25	1 400	19.6	52 400	90 000	40 000	160 000	777 000
6.75	17.9	2.75	1 500	23.8	48 800	95 000	42 000	190 000	907 500
8.00	18.2	2.81	2 200	30.7	98 000	100 000	45 000	240 000	949 000

HYDRAULIC DOUBLE ACTING JARS



Hydraulic Double Acting Jar is hydraulically controlled and works in both directions, with impact force controlled by the operator. The jar does not incorporate a mechanical section. Up jarring force is controlled by the amount of the drill string tension during the hydraulic delay, and down jarring force — by the slack of weight during the hydraulic delay.

Hydraulic Double Acting Jar is operated by a simple up and down motion and is unaffected by right- or left-hand torque. Standard seals are suitable for use up to 120 deg C (248 deg F). **Optional high temperature seal kits are available suitable for service up to 200 deg C (392 deg F).** External sealing surfaces are tungsten carbide-coated to enhance wear and corrosion resistance.

HYDRAULIC DOUBLE ACTING JARS

Size	Max OD, mm	Length, mm	Stroke, mm	Pump open area, cm ²	Min thru bore, mm	Max pull during delay, kgf	Tensile yield, kgf	Torsional limit, kgf*m	Tool joint (may be customized)
89 mm (3 3/8")	86	5 400	533	38	38	22 600	63 900	600	NC 26
108 mm (4 1/4")	110	6 400	635	57	50	31 700	81 900	1 000	NC 31
121 mm (4 3/4")	124	5 800	635	76	57	38 500	100 900	1 400	NC 38
172 mm (6 3/4")	176	5 900	635	153	70	86 100	325 300	3 900	NC 50
203 mm (8")	207	6 400	635	198	70	108 800	352 100	6 200	6 5/8 Reg

HYDRAULIC SINGLE ACTING FISHING JARS

Hydraulic Single Acting Fishing Jar is designed to apply an upward impact force. Left-hand and right-hand jars are available. Up jarring force is controlled by the amount of the drill string tension during the hydraulic delay, and down jarring force is controlled by the slack of the drill string weight during the hydraulic delay. Fishing activities with tool rotation do not affect the jar efficiency.

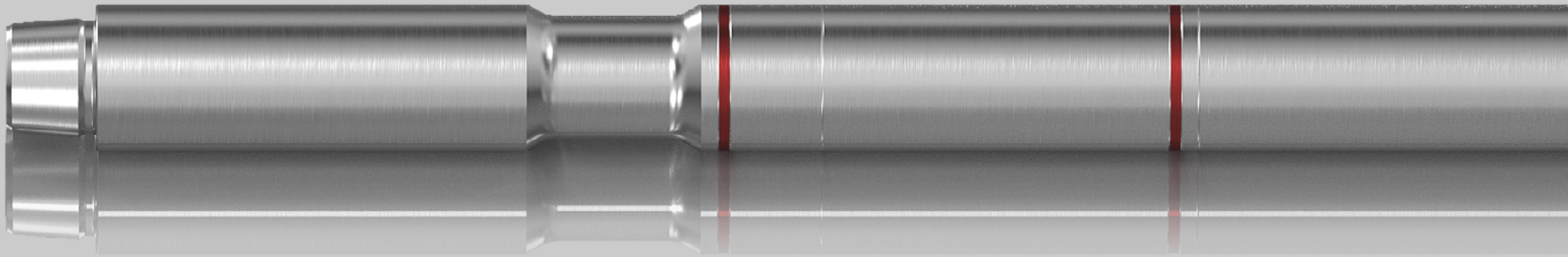
Size	Max OD, mm	Length, mm	Stroke, mm	Pump open area, cm ²	Min thru bore, mm	Max pull during delay, kgf	Tensile yield, kgf	Torsional limit, kgf*m	Tool joint (may be customized)
79 mm (3 1/8")	79	3 600	279	26	25	18 600	55 500	500	NC 23
108 mm (4 1/4")	110	4 000	218	58	50	31 700	81 900	1 000	NC 31

HYDRAULIC DOUBLE ACTING FISHING JARS

Hydraulic Double Acting Fishing Jar is designed to jar both up and down. Only left-hand jars are available. Up jarring force is controlled by the amount of the drill string tension during the hydraulic delay and down jarring force is controlled by the slack of the drill string weight during the hydraulic delay. Fishing activities with tool rotation do not affect the jar efficiency.

Size	Max OD, mm	Length, mm	Stroke, mm	Pump open area, cm ²	Min thru bore, mm	Max pull during delay, kgf	Tensile yield, kgf	Torsional limit, kgf*m	Tool joint (may be customized)
89 mm (3/3/8")	86	5 400	533	38	38	22 600	63 900	600	NC 26 LH
108 mm (4 1/4")	110	6 400	635	57	50	31 700	81 900	1 000	NC 31 LH
172 mm (6 3/4")	176	5 900	635	153	70	86 100	325 300	3 900	NC 50 LH

SHOCK TOOLS



Shock tool is engineered to dampen drill string vibrations caused by drilling. The shock tool design guarantees efficient operation under various combinations of impact loads on the bit and pressure drops in a drilling fluid.

→ Reliable belleville disk springs are used to reduce the vibration and ensure optimum tool rigidity and allow high impact loading to be applied to the shock tool

→ Splined connection between the housing and the shaft effectively transmits torque during rotary drilling

→ For maximum effectiveness, the shock tool should be placed above the mud motor during sliding and above the bit during rotary drilling

SHOCK TOOLS

suitable for use
in temperatures to

120 deg C

(248 deg F)

with optional
seals available for
temperatures up to

180 deg C

(356 deg F)

- Reduces impact loading on the bit to extend bit life and enhance reliability of drilling tools
- Suitable for use in temperatures up to 120 deg C (248 deg F), with optional seals available for temperatures up to 180 deg C (356 deg F)
- Shorter well construction period
- Reduces wear and tear on rig and equipment
- Reduces fatigue failures on drill collars and drill pipe
- Reduces torsional and lateral drill string vibrations

SHOCK TOOLS

Size	Max OD, mm	Length, mm	Tensile yield during normal tripping, kgf	Tensile yield during emergency tripping, kgf	Min thru bore, mm	Torsional limit, kgf*m	Torsional limit, kgf*m
89 mm (3 ½")	89	2 700	45 000	65 000	25	600	NC 26
121 mm (4 ¾")	124	3 200	110 000	150 000	38	1 400	NC 38
165 mm (6 ½")	166	3 600	200 000	280 000	57	3 300	NC 50
172 mm (6 ¾")	176	3 600	195 000	275 000	70	3 900	NC 50
203 mm (8")	207	4 200	290 000	410 000	70	6 200	6 5/8 Reg
229 mm (9")	233	4 100	320 000	440 000	76	7 600	6 5/8 FH
241 mm (9 ½")	246	4 500	250 000	350 000	76	10 000	6 5/8 FH
254 mm (10")	258	4 500	250 000	350 000	76	10 000	7 5/8 Reg
286 mm (11 ¼")	290	4 600	240 000	340 000	76	16 000	8 5/8 Reg

OSCILLATOR



Oscillator is designed to generate low-amplitude axial oscillations in the drill string and to decrease the downhole friction. As a result it improves transmission of WOB and decreases directional stress especially during directional drilling.

Oscillator enables extended reach drilling with significant increase of ROP, extended bit life, decrease of POOH and chance of differential sticking

→ Enables drilling of directional and horizontal sections without reciprocation or wiper trips

→ Reduces downhole friction during directional drilling

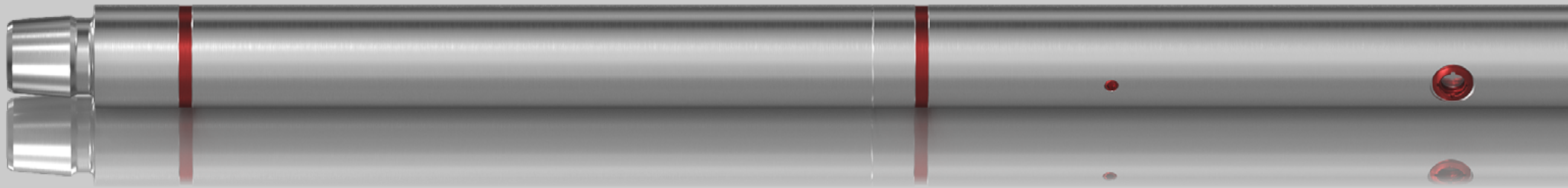
→ Improved WOB transmission without excessive drill string compression

→ Can be installed at any place in the drill string

OSCILLATOR

Property	Requirement
Recommended flow range, l/s	25,2-37,8
Pressure drop generated, atm	42-49,2
Operating frequency	16...17 at 31,5 l/s
Threads as per GOST 50864-96	NC 50 (3-133)
Oscillator power section OD, mm	172
Oscillator OD, mm	172
Power section length, mm	2055
Oscillator length, mm	2570
Overall length, mm	5862
Weight, kg	708

CIRCULATION SUB



Circulation sub is a multiple-opening circulation sub used to protect the downstream BHA components during pumping of drilling fluids. It switches drilling fluid flow path from the ID of the string to the annulus.

→ Original design allows pumping of aggressive fillers and increasing circulation

→ Effective during horizontal and extended-reach drilling

→ Enables multiple pumping of all types of lost-circulation and plugging materials in areas of lost circulation

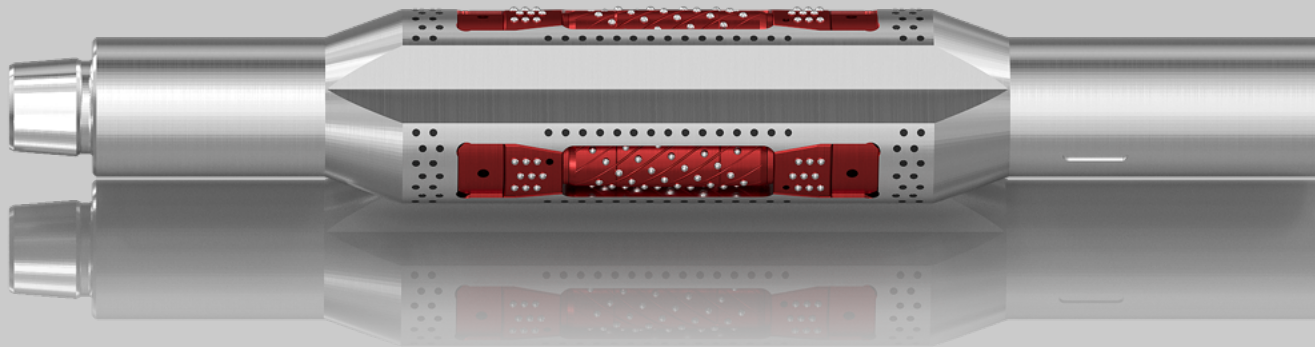
→ Compatible with salt-saturated muds

→ Improved hole cleaning

CIRCULATION SUB

Parametr size	KC105-S	KC120-S	KC172-S	KC178-S	KC210-S
Outside diameter D, mm	105	121	172	178	210
Inside diameter, mm	31	32	32,5	32,5	38
Overall length, mm	1864	2532	3014	3027	3127
Body length, mm	1775	2430	2900	2900	3000
Threads as per GOST R 50864-96 (pin)	3-86 (NC 31)	3-102 (NC 38)	3-133 (NC-50)	3-147 (5 1/2 FH)	3-152 (6 5/8 Reg 3-171 (6 5/8 FH)
Threads as per GOST R 50864-96 (box)	3-86 (NC 31)	3-102 (NC 38)	3-133 (NC-50)	3-147 (5 1/2 FH)	3-152 (6 5/8 Reg 3-171 (6 5/8 FH)
Activation ball, diameter, mm (inch)	31,8 (1 1/4")	38,1 (1 1/2")	50,8 (2")	50,8 (2")	63,5 (2 1/2")
Activation ball, diameter, mm (inch)	28,575 (1 1/8")	35,719 (1 13/32")	34,9 (1 3/8")	34,9 (1 3/8")	44,4 (1 3/4")
Deactivation ball, diameter, mm (inch)	147,6	147,6	147,6	147,6	155±20
Number of ports	2	2	2	2	2
Dia of ports, mm	17,3	27,9	27,9	27,9	34
Max. flow rate of drilling fluid, l/s	12	20	38	38	56
Drilling fluid density, kg m ³ , max	1600	1600	1600	1600	1600
Drilling fluid sand content, %, max	1	1	1	1	1
Drilling fluid viscosity, sec, max	45	45	45	45	45
Number of cycles	4	4	5	5	5
Max. tensile load, kgf	100 000	125 000	250 000	300 000	450 000 (3-171) 350 000 (3-152)
Weight, kg	98	165	408	438	644

TORQUE-REDUCTION SEALED BEARING ROLLER REAMER



Roller is a rotary body with screw blades and three integrated rollers that rotate continuously, minimizing surface area and associated friction, providing greater stability and reliability in the most harsh environments.

Rollers reduce the downhole torque typically experienced using fixed-blade stabilizers which have greater contact area with hole walls. Compared to standard stabilizer with stationary blades, rollers decrease well damage in brittle formations. Rollers are also less subect to wear in abrasive formations compared to standard blades.

TORQUE-REDUCTION SEALED BEARING ROLLER REAMER

Property

Requirement

Connection	6,5/8 REG (3152) pin
Connection	6,5/8 REG (3152) box
Make up torque	6 500...7 000 kgf•m
Roller OD	311.2 mm
Housing OD	210 mm
ID	70 mm
Total length	2000 mm
Qty of rollers	3 ea
Optimum flow rate	30-75 l/s
Drilling fluid specs: — sand, %, max	1
Drilling fluid specs: — oil, %, max	10, up to 100% possible
Max. Temperature of fluid	150 deg. C (high temp up to 250)
Max. Axial load	290 000 kgf
Max. Tensile load during emergency POOH	410 000 kgf
Max. torque	8 400 kgf•m
Weight	600 kg

BYPASS VALVE

Bypass valve is used to fill and dump the drill string during drilling tool round-trips. This valve can be supplied separately or together with the motor.



The valve is mounted on the mud motor's top sub. If there is no pressure difference between the drill string and tubing annulus during mud motor's round trip, the valve piston is held in the upper position by spring power and the interior of the string communicates with tubing annulus via valve's hole pattern (the valve is open). During run-in-hole stage the drillstem is filled with annulus mud. When running out the mud goes to tubing annulus.

When mud is delivered to the drillstring the piston goes down due to pressure difference. The holes pattern of the piston is overlapped and annulus is isolated from the string's interior (valve is closed). The valve stays closed until there is pressure in the drill string. After pumps are turned off and the pressure lowers, the valve's piston goes up, opening the valve.

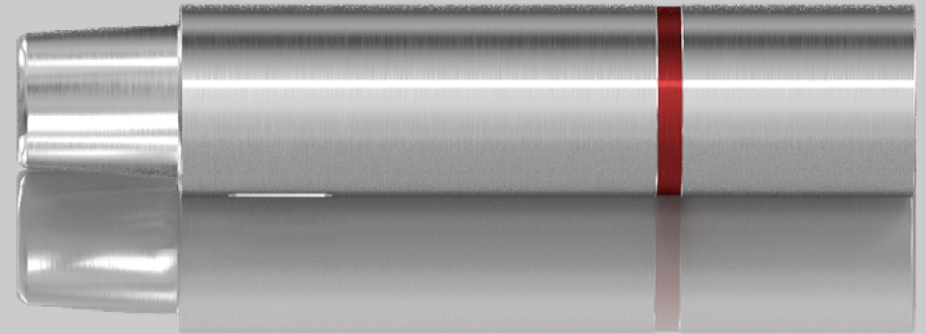
BYPASS VALVE

Valve type	KP75-SR	KP95-SR	KP106-SR	KP120-SR	KP-165SR	KP-172SR	KP-203SR
Applicability (Mud motor size), mm	75	95/96	106	120/127	165	172/195	210/240
Outside diameter D, mm	78	106	106	121	168	176	203
Minimum drift diameter d, mm	15	28	28	28	50	50	55
Total length, mm	461	676	614	477	767	567	587
Bogy length, mm	385	600	525	375	653	440	460
Box	3-65	3-86	3-86	3-102	3-133	3-147	3-171
Pin	3-65	3-73	3-86	3-102	3-133	3-147	3-171
Mud flow-rate, l/sec	3...5	5...10	5...12	10...20	14...29	25...37	30...75
Mud sand content %, max	1	1	1	1	1	1	1
Bypass opening pressure differentiation, kgf/cm ²	2.1±0.2	2.1±0.2	2.1±0.2	2.1±0.2	2.1±0.2	2.1±0.2	2.1±0.2
Weight, kg	11	25	26	28	76	76	81

FLOAT VALVE

Float valve is installed above the mud motor to rule out cuttings from entering the motor when running a drill string and to prevent oil ingress through drill pipes.

Has a proprietary design and a longer service life compared to alternatives.



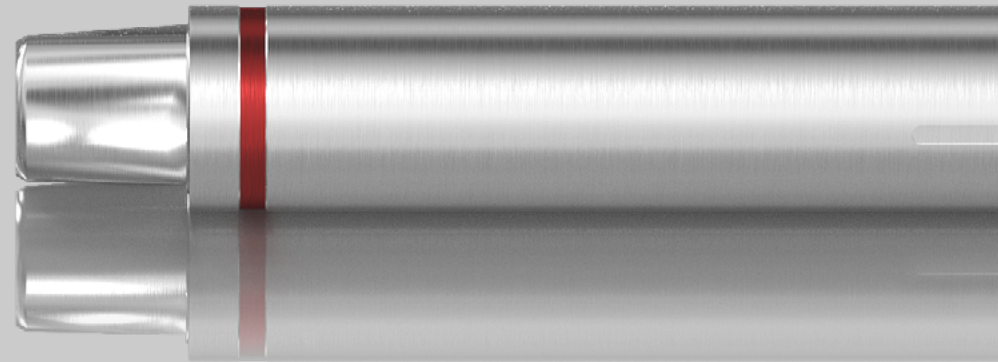
Valve type	K075-SN	K095-SN	K0106-SN	K0120-SN	K0172-SR	K0203-SR
Applicability (Mud motor size), mm	75	95/96	106	120/127	165/172/195	210, 240
Outside diameter D, mm	78	98	106	121	176	203

FLOAT VALVE

Valve type	K075-SN	K095-SN	K0106-SN	K0120-SN	K0172-SR	K0203-SR
Passage area, cm ²	3,14	7,5	7,5	7,5	30	40
Total length, mm	536	526	469	482	577	777
Bogy length, mm	460	450	380	380	450	650
Box	3-65	3-73	3-86	3-102	3-147	3-171
Pin	3-65	3-73	3-86	3-102	3-147	3-171
Mud flow-rate, l/sec	5	10	12	20	37	75
Mud sand content %, max	1	1	1	1	1	1
Bypass opening pressure differentiation, kgf/cm ²	0,6	0,6	0,6	0,4	0,4	0,4
Weight, kg	13	20	21	27	61	115

COLUMN FILTER

↓
→ **Column filter** is inserted into the column to protect a mud motor from foreign objects during the drilling process.



→ **5mm**

slots in a slot-type
filter element

The filter consists of filter element and casing. Before going to mud motor the fluid is delivered into the column and goes through the filter that has a slot-type filter element with 5mm slots. All hard particles sized not more than 5 mm are trapped by the filter element.

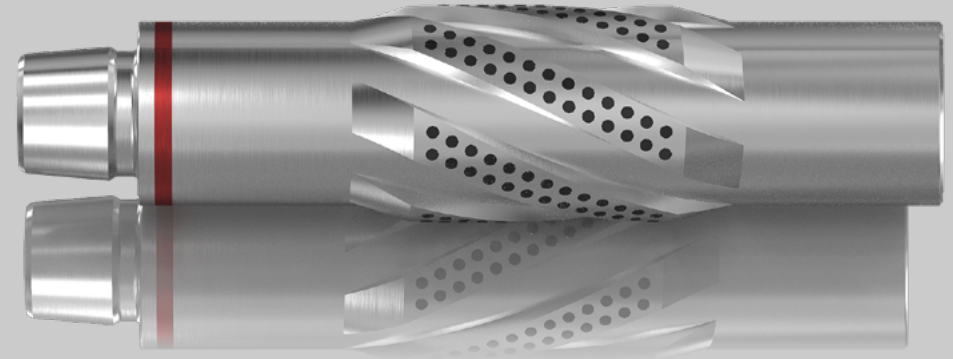
Filter design allows to do the filter element cleaning at the drillsite, without any risk of getting foreign objects and cuttings inside the motor.

COLUMN FILTER

Filter	F-95RS	F-106RS	F-120RS	F-172RS	F-240RS
Applicability (Mud motor size), mm ²	95/98	106	120/127	172	240
Outside diameter D, mm	98	106	120	176	229
Overall length, mm	819	825	902	1041	1000
Bogy length, mm	730	730	800	927	860
Box	NC-26 2 7/8 Reg	NC-31 3 1/2 Reg	3 1/2 FH NC-38	NC-50 5 1/2 FH	6 5/8 Reg NC-61 6 5/8 FH
Pin	NC-26 2 7/8 Reg	NC-31 3 1/2 Reg	3 1/2 FH NC-38	NC-50 5 1/2 FH	6 5/8 Reg NC-61 6 5/8 FH
Mesh size, mm	3,1; 5	3,1; 5	5	5	5
Max flow rate through the filter, l/s	10	12	20	38	75
Sand content in mud, %, max	1	1	1	1	1
Weight, kg	32	38	49	87	179

CENTERING ELEMENTS

Stabilizer serves to center the lower part of the drill stem and mud motor to stabilize dogleg or inclination angle. Mounted on mud motor body.



Technical
data

DV93-C3

DV106-C3

DV120-C3

DV172-C3

DV240-C1

Applicability (Mud motor size), mm ²	95/96	106	120	172	240
Outside diameter D, mm	114-120	118-143	139-151	213	291
Drift diameter, mm	32	32	34	90	76
Total length, mm	500	500	640-660	867	677
Bogy length, mm	424	411	540-560	740	550
Box	3-86	3-86	3-102	3-147	3-171
Pin	3-73	3-86	3-102	3-147	3-171
Weight, kg	25	27-30	47-52	121	155

NON-MAGNETIC DRILL COLLARS



Non-magnetic drill collars were developed to allow magnetic surveying of the well trajectory using instruments inside the drill string.

3 1/8" - 11"

available sizes as per
API Spec 7, inch



Made of special self-engineered
steel grade SKL-140HS*



Roller Burnishing treatment which
is applied on ID increases corrosion
resistance properties, guarantees
the surface hardness of bore up to
400BHN and surface finish of bore
at $Ra \leq 3.0 \mu m$.



Long service in corrosive drilling
muds with high alternative
stresses

*SKL-140HS provides significantly better performance than is required by API Specification 7

NON-MAGNETIC DRILL COLLARS

NON-MAGNETIC PROPERTIES

Magnetic permeability (ASTM A 342): Max 1.005

Magnetic Field Variation: 40 gammas Max

MECHANICAL PROPERTIES

Property	Requirement
Yield strength (0,2% offset), min, ksi	140
Y.S. for collars larger than 9.25'', min, ksi	130
Ultimate tensile strength, min, ksi	150
% elongation in 4d, min	20
% reduction in area, min	50
Charpy v-notch energy, min average, ft-lbs, 25 deg C or bellow	50
Charpy v-notch energy, single value, min, ft-lbs	40
Hardness, bin	300-425
Fatigue strength (push-pull or rotating bend)	At 100 million cycles ± 65 ksi minimum At 100 000 cycles ± 80 ksi minimum

For any requests
or questions please contact:

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