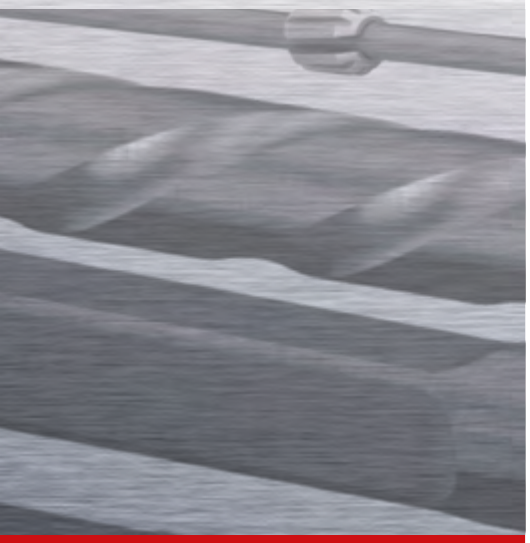
MOTOVILIKHA PLANTS

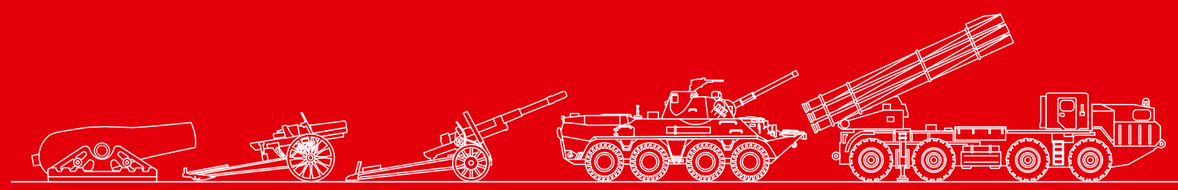


OILFIELD AND DRILLING EQUIPMENT

CATALOGUE

MOTOVILIKHA PLANTS

OUR TRADITION IS TO CREATE FUTURE



13 January 1941
The Order of Lenin

3 June 1942
The Order of the Red Banner of Labour

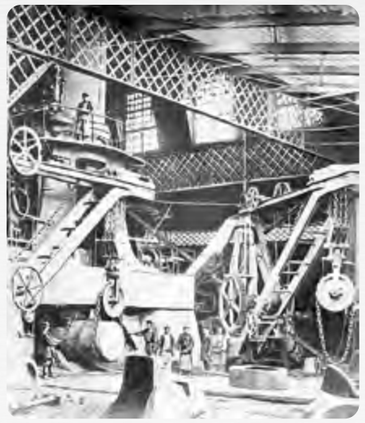
15 October 1944
The Order of the Red Banner

28 June 1945
The Order of the Patriotic War, 1st class

18 January 1971
The Order of the October Revolution

1736 – the year of establishment

The Perm Tsar Cannon is a 20-inch combat gun weighting 45,864 kg which is by 4,914 kg more than the Kremlin one weights. It was casted in 1868.



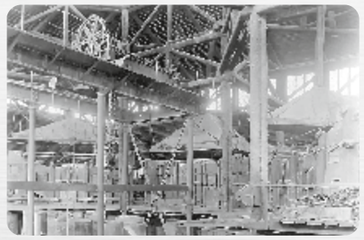
The world's largest 50-ton steam hammer. It forged ingots as heavy as 48 ton and more. The hammer was constructed in 1875 under the supervisio of N. V. Vorontsov, Mining Officer. At that time, the 600-ton hammer anvil was the largest one-piece casting in the world.

The electrical machine of N. G. Slavyanov's design is the first power station in the Ural region. It was built in 1886.

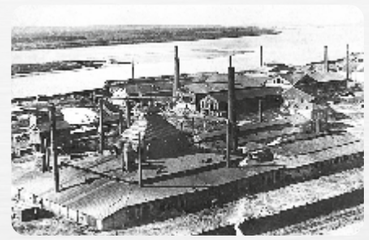
1871. Pushkar' steamboat manufactured by the works. They made over 60 steamboats.

Nikolay Gavrilovich Slavyanov was the Mining Officer of Perm Cannon Works from 1891 to 1897. In 1888, he invented a method of arc welding. In 1893, his method for joining different types of metals by electric welding (see Slavyanov's glass on the right picture) received the medal of Chicago World Fair for scientific and technological revolution.

1872. The first steam train constructed according to the project by Dmitrii Permyakov, a works' self-taught mechanic.



The Ural's first open-hearth furnace. The works constructed it in 1876.



XIX c. General view of the works.

30s of the XXth century. The first Soviet Union's steam excavator made by Motovilikha Plants.

1932. Works' management building constructed in XIX century.

Perm manufactured the best dredges in the Soviet Union. They produced 90 % of USSR gold reserve.

XVIII–XIX centuries

1736

START
Vasily Nikitich Tatishchev founded the Motovilikha Plants copper works by the directive of Empress of Russia Anna Ioannovna. The works ensured complete cycle of cooper extraction and treatment.

1863–1864

ESTABLISHMENT OF ARTILLERY PRODUCTION
The steel-cannon and iron-cannon works were established on the base of the cooper production. Output of steel guns was mastered at the level of the best world patterns.

1871

PERM CANNON WORKS
The steel-gun and iron-gun works were consolidated into Perm Cannon Works. Perm Cannon Works stamp appeared at each third gun of Czarist Russia.

1875

STEAM HAMMER – TECHNOLOGICAL WONDER
The world's largest double-acting 50 ton steam hammer was created at Motovilikha Plants. Perm gun craftsmen came out on the top in production of heavy-caliber artillery.

1876

FIRST OPEN-HEARTH FURNACE
Motovilikha Plants became the first Ural works where open-hearth furnaces were installed. The works also produced steam boats, steam engines and boilers, rolling mills, and other machinery.

1893

INVENTION OF ELECTRIC WELDING
At the World's Fair in Chicago, mining master of Perm Cannon Works Nikolay Slavyanov received the medal for yielded scientific and technical revolution. Technique of consumable electrode welding he invented forms the basis of up-to-date welding production. Electrical compaction of casting-ingots, which was also invented by Nilokay Slavyanov, gained widespread currency in production.

XX–XXI centuries

1914–1918

FIRST WORLD WAR
Motovilikha Plants manufactured each fifth cannon used by the Russian Army.

1930s

RECONSTRUCTION AND NEW PRODUCTION
After the war the general plan of works' reconstruction was implemented.The enterprise mastered manufacturing of products for non-ferrous metallurgy, roadbuilding, and petroleum and coal-mining industries. Motovilikha Plants producedthe country's first excavating machine. The works produced dredges, suctiontube dredges, coal cutters, cranes, and other machinery.

1941–1945

GREAT PATRIOTIC WAR
In January 1941, the Order of Lenin was awarded to the works for their merit in creation and mastering manufacture of new armament patterns. During the war Motovilikha Plants increased artillery output by 8 times. Each fourth gun of the Red Army was made by Motovilikha Plants craftsmen. The work collective won the Red Challenge Banner 15 times, which thereafter was handed over to the works for eternal storage. The works were honoured by another USSR medal for contribution to victory.

1950–1960s

LENIN PLANT
Until 1992, the works bore the name after the leader of world proletariat. Motovilikha Plants assembled the country's first steel continuous casting unit. They implemented advanced technologies: electroslag remelting process, steel treatment in a ladle by synthetic slags, forward-looking types of pressure metal treatment, precision casting.

1957–1992

SWITCH OVER TO PEACEFUL FOOTING
Already in 1944, implementation of a plan for reconversion from military production was launched. The works produced harpoon guns, 0.5 cubic meter bucket excavators, mucking machines, coal-mining machines, perforators, peat presses, hydro-turbines, as well as oil pumps, turbo drill joints, beam pumps, drill collars, drill bits, downhole sucker-rods. In 1958, the USA and the Federal Republic of Germany bought licenses for Motovilikha Plants' turbo-drill manufacture. The works became a flagship company in designing and producing of dredges, which mined 90% of gold in the USSR. The works were awarded with the fifth medal for mastering new technologies and faithful serving the State.

1990s

OPEN MARKET
Ratio of military and commercial goods in the Motovilikha Plants' portfolio shifted in favour of civilian market. The works started manufacturing crane trucks, established a design office for road-building engineering. They also put into production mixing taps, springs, and vehicle springs.

2000s

NEW METALLURGY
In 2000, a ladle furnace was commissioned. Then in 2002, an arc electric steel furnace DSP-60/70 (FAI-FUCHS) was started. In 2006, Motovilikha Plants launched a program for metallurgical facilities renewal. Thus, in 2009, there were commissioned a vacuum steel degassing unit and new forging installations: 3000-ton-force hydraulic press unit with 20-ton manipulating device (Danieli). An air separation unit appeared in 2013.

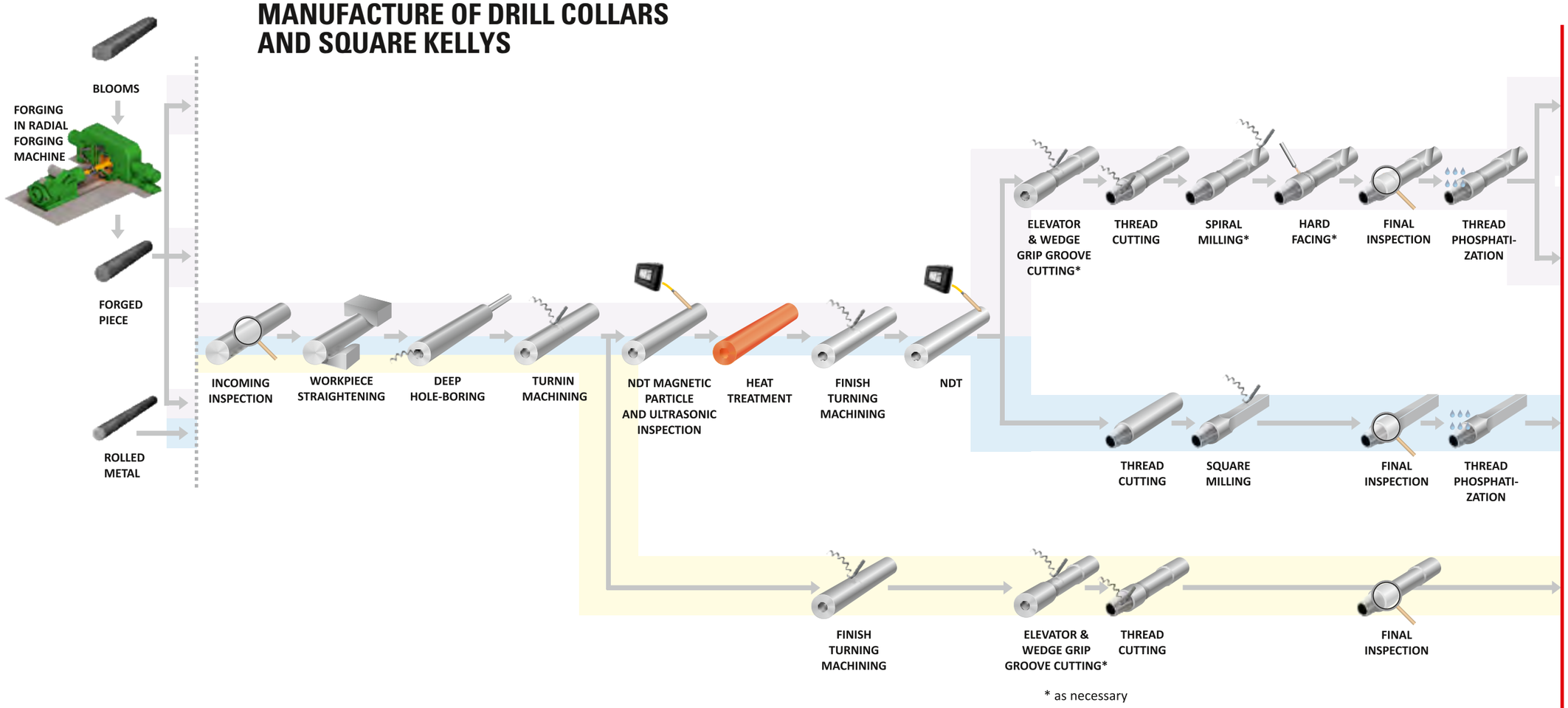
2011

NEW MACHINE BUILDING
In the year of 275th anniversary of Motovilikha Plants, they founded and opened new machinery production of special purpose equipment.

2015

PRECISION ALLOYS
The works launched a high-end manufacture of conceptually new multifunctional alloys that have different combinations of hardly compatible features.

MANUFACTURE OF DRILL COLLARS AND SQUARE KELLYS



* as necessary

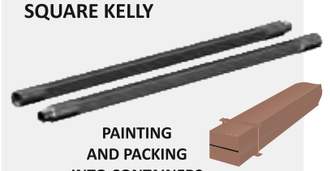
BALANCED DRILL COLLAR

PAINTING

HEAVY-WEIGHT DRILL PIPE

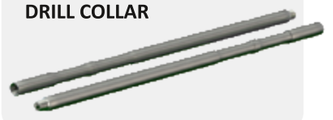
PAINTING

SQUARE KELLY

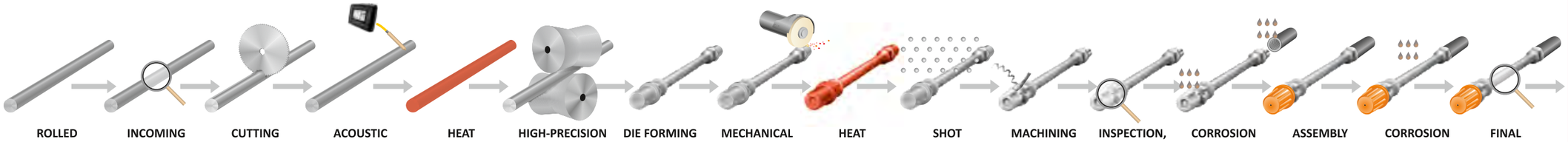


PAINTING AND PACKING INTO CONTAINERS

BALANCED NON-MAGNETIC DRILL COLLAR

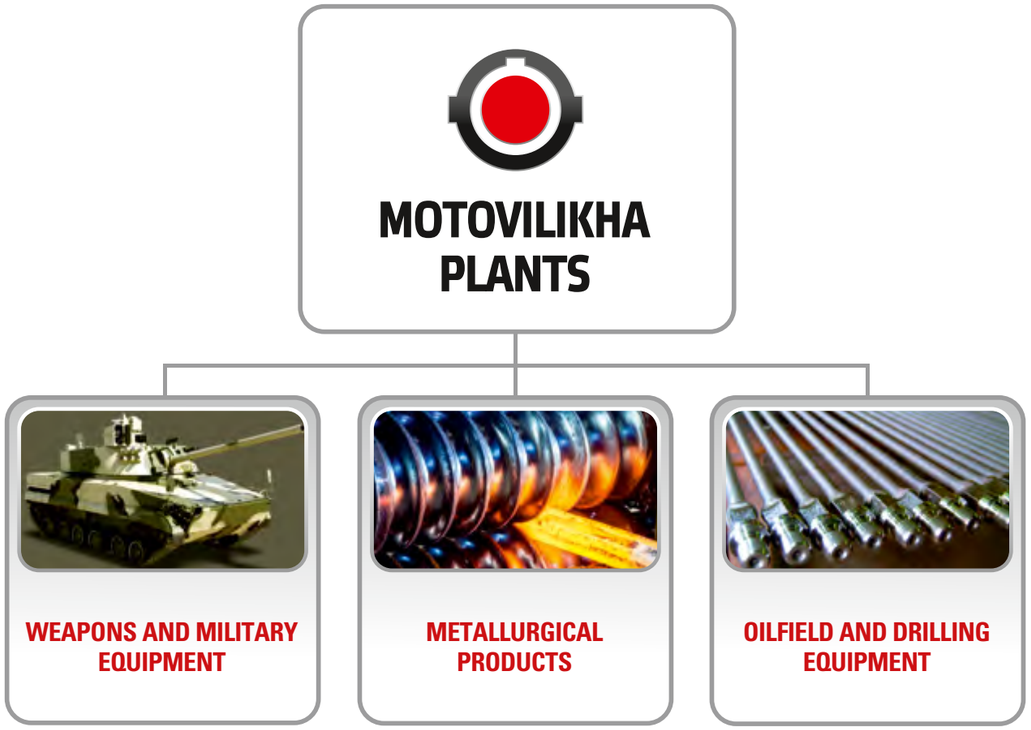


MANUFACTURE OF SUCKER-RODS



SUCKER-ROD*

* rods can be completed with scratchalizers



COMPLETE PRODUCTION CYCLE: FROM METAL SMELTING TO OUTPUT OF MACHINE-BUILDING PRODUCTS

Primary productions	Equipment
Manufacture of sucker-rods and couplings	Straightening equipment
	Band saw MEBA 260 AP
	Horizontal forging machine MF 30/600 SRA (ETCHELLS)
	Through-type furnaces CC-12321/22 (SURFACE COMBUSTION)
	Shot blasting unit ESG-DL-XS 3836
	Turret lathe
	Automated line for complete sucker-rod machining
	Machine for sucker-rod end machining EBM 40-D/KG (STEZI)
	Centerless grinding machine
	Turning CNC lathe 2 SP-150H (OKUMA)
Manufacture of drill collars and square kelly	Radial forging machine SXP-55 (GFM)
	Induction heat treatment plant INT 3000/1
	Band saw MEBA 800x600, 1000x1800
	Cold straightening press
	Turning external lathes
	Thread-cutting machines
	Drilling-and-boring machine for deep drilling and boring
	Special NC milling machines (for spiral and plane milling)
Manufacture of well-servicing equipment	Planning and milling machines
	Planning machines
	Horizontal boring machines
	Sandblasting chamber
	Welding area
	Turning lathes (including NC ones)
	Drilling machines
	Grinders
	Vertical milling machines (including NC ones)

SUCKER-RODS

DRILL COLLAR AND SQUARE KELLY

DRILL COLLARS AND SQUARE KELLYS

DRILL STEM SUBS, CONNECTIONS

WELL-SERVICING EQUIPMENT

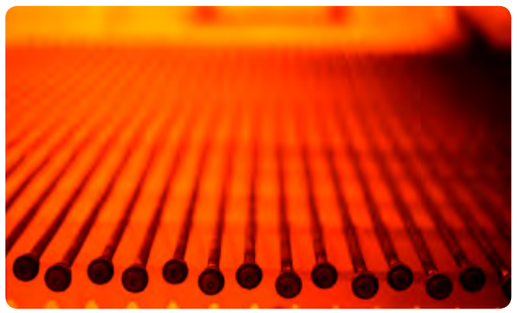
Pipe workpiece forging in the radial forging machine SXP-55 (GFM)

Pipe workpieces after heat treatment in the furnaces

Manufacture of drill collars

Sucker-rod workpieces in the rolling-mill shop

Die forming of sucker-rod heads at the ETCHELLS line



Heat treatment of sucker-rods in the furnaces

SUCKER-RODS

Sucker-rods transmit motion from surface drives to well reciprocating or screw-type pumps.

ADVANTAGES:

- Our Company is highly experienced in manufacture of sucker-rods: we produce them over 50 years.
- The equipment is API licensed and complies with the international standards.
- Manufacturing process is completely automatic (it deploys equipment of the world's leading manufacturers: SURFACE COMBUSTION furnaces, ETCHELLS forging lines, STEZI and OKUMA machining centers). Due to this, end products are of persistently high quality.
- Owing to the use of in-home high-graded rolled steel with superior performance properties, the Company execute complete production cycle of sucker-rods.
- Increased strength and corrosion resistance.
- Upon customer's request, rods can be completed with scratchalizers.
- Urgent orders can be accepted, delivery time is steady.
- Products showed themselves to advantage at oil production sites in the neighbouring countries and beyond. Lukoil PJSC, Bashneft PJSC, Tatneft PJSC, Rosneft OJSC are among constant customers of the Company.

Specifications	
Normative documents	Technical Specifications TU 3665-020-48416997-2003, 11B API
Nominal diameter, mm (size, inch)	16 (⅝), 19 (¾), 22 (⅞), 25 (1)
Grade	K, C, D D_{super} – strength is 1.4 higher than of D grade. D_{spec} – for operation in the most severe conditions. Rods have increased fatigue resistance to strong corrosion. Hardening type – heat treatment followed by shot blasting in machine.
Length, mm	600 to 9,140
Steel grade	42CrMo4V, 4340, and other high-quality alloy steels. 100% workpieces pass ultrasonic incoming inspection.

Upon customer's request we can deliver:

- sinker bars that are used to form collar and to increase resistance of rod strings in crooked holes and in wells with viscous oil;
- sucker-rods of high alloy corrosion resistant mill steels;
- sucker-rods with centralizers (Technical Specifications TU 3665-203-35796774-2001).

SUCKER-RODS WITH SCRATCHERS AND CENTRALIZERS

The rods are used for oil production by sucker-rod reciprocating-type and screw-type pumps.

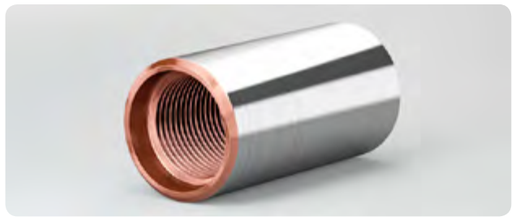
Advantages of sucker-rods fitted with scratchers and centralizers:

- Protection of tubing, rods, and rod couplings from excessive wear.
- Cleaning of sucker-rods and tubing from asphalt, resin, and paraffin deposits.
- Rod centering in the well.

Specifications of Centralizers	
Normative documents	ТУ 3665-203-35796774-2001
Design types	– fixed scratchalizers – floating scratchalizers – centralizers for screw-type pumps – inter-collar centralizers for screw-type pumps
Technology	Canada-Russia (manufactured by KANAROSS CJSC, Perm)
Material	Heavy duty glass filled polyamide
Corrosion resistance	In any formation conditions including media with hydrogen sulfide and with temperature up to +110 °C
Friction coefficient: – static – dynamic	 0.15 0.11
Shear strength of fitting, tn	2... 2.2
Scratcher compression strength, tn	8.8... 12.7

COUPLINGS FOR SUCKER RODS

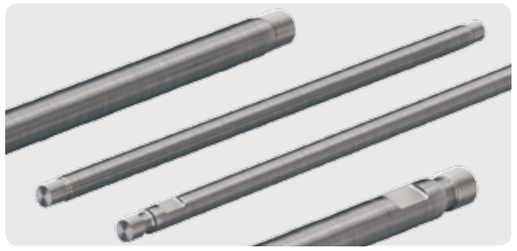
The couplings are used to join sucker-rods to each other.



Specifications	
Normative documents	Technical Specifications TU 3665-020-48416997-2003
Outside diameter, mm	– Full-size: 60.3; 55.6; 50.8; 46; 41.3; 38.1 – Slimhole 50.8; 41.3; 38.1; 31.8
Wear resistance coating at outer surface	– Heat treated without coating – T – High frequency current hardened – S
Steel grade	Structural carbon alloy steel

POLISHED RODS

Rods transmit motion from surface drives to well reciprocating or screw-type pumps.



Technical performances	
Normative documents	Technical Specifications TU 3665-020-48416997-2003
Nominal diameter, mm	25, 32, 38
Length, mm	2,438 – 10,976
Nominal diameter of joined rod, mm (size, inch)	16 (⅝), 19 (¾), 22 (⅞), 25 (1), 29 (1⅛)

The polished rods are hardened by heat treatment. They may have additional corrosion resistant coating as an option.

POLISHED ROD HOLDER

The items grip polished rod bodies and hold sucker-rod string in suspension.

Specifications	
Normative documents	Technical Specifications TU 3665-020-48416997-2003
Nominal diameter of gripped rods, mm	25, 32, 38
Load-lifting capacity, kN (tf)	100 (10)
Overall dimensions, mm	107 x 115
Weight, kg	4.5

ROD ROTATORS

Rod rotators turn sucker rod string during sucker rod pump running. Rotating ensures more uniform wear of rods, couplings, and plungers as well as continuous cleaning inside tubing by scratchers fastened at rod.

SHCH 8000

Specifications	
Normative documents	Technical Specifications TU 3665-260-07500243-2010
Maximum load-lifting capacity, kN (tf)	80 (8)
Maximum allowable axial load, kg	8,000
Overall dimensions, mm	226x246x155
Weight, kg	14

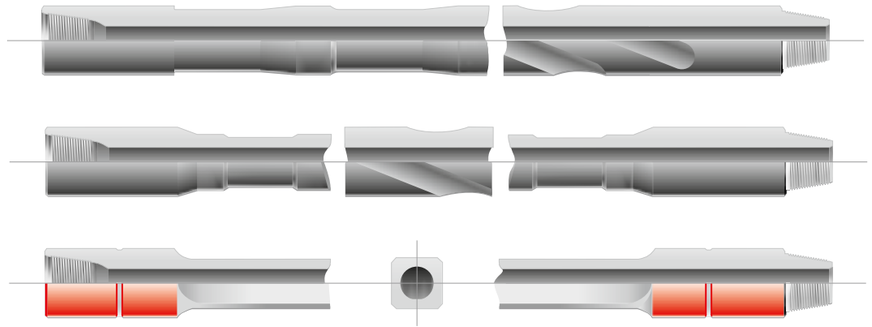
SH 81-170

Specifications		
Normative documents	Technical Specifications TU 3665-260-07500243-2010	
Maximum axial load at rotary mechanism table, kN (tf)	80 (8)	
Operating handle stroke, degree	90	
Rotation angle of a rotary mechanism table per operating handle stroke, degree, at: – Z = 37 of a ratchet wheel – Z = 29 of a ratchet wheel	19 13	
Maximum overall dimensions of rotary mechanism (with a handle in the horizontal), mm:	230x155x312	
Rotary mechanism weight, kg	17	
At rope length L:	Safety balance clamp weight, kg	Maximum rod rotator weight, kg
3 090	2.1	19.2
4 920	2.3	19.4
7 660	2.6	19.7
Minimum operation life, years	3	

MOTOVILIKHA PLANTS

DRILL COLLARS AND KELLYS

BDC | BNMDC | HWDP | NMHWDP | SK | STSK



BDC – balanced drill collar
BNMDC – balanced non-magnetic drill collar
HWDP – heavy-weight drill pipe
NMHWDP – non-magnetic heavy-weight drill pipe
SK – square kelly
STSK – split-type square kelly

- API certificates confirm high quality of the products.
- The in-home forged workpieces of high quality steel grades: 42CrMo4V, 4340, 4145, 36CrNiMo6, 34CrNiMo6 or 40NiCrMo6.
- Upon request, products can be manufactured from customer's drawings for non-standard operation conditions.
- Hard-facing reinforcement.
- Perfect balance (ensuring best results of rotary and horizontal drilling), strength and concentricity of connections.
- Upon request, pipes can be completed with premium thread connections.

Pipe workpiece forging in the radial forging machine SXP-55 (GFM)

BALANCED DRILL COLLARS (BDC)

The item generates axial load at bit and improves strength of drilling strings. Spiral wall balanced drill collars are used to prevent sticking of tools during deep-well drilling that can result from contact area reduction between drill collar string and walls of well.

Specifications	
Normative documents	Technical Specifications TU Z RG 200-2003, API Spec 7-1
Length, mm	4 500... 9 450
BDC types	A – smooth wall without grooves B – with elevator & wedge grip grooves L – with elevator groove S – with elevator & wedge grip grooves and spiral wall SL – with elevator grooves and spiral wall SM – with wedge grip grooves and spiral wall ES – without grooves and with spiral wall /1 – mastered technology of hard-facing reinforcement

Collar Designation	Outer Ø		Internal Ø		Elevator Groove Ø	Wedge Grip Groove Ø	Thread Type	
	mm	inch	mm	inch	mm	mm	GOST R 50864	API Spec 7-2
BDC-79	79	3⅛	32	1¼	65	73	3-65	NC23
BDC-89	89	3½	38	1½	73	82	3-73	NC26
BDC-95	95	3¾	32	1¼			3-86	NC31
			38	1½				
BDC-105	105	4⅛	32	1¼	89	102		
			38	1½				
			46	1 13/16				
			51	2				
			57	2¼				
BDC-108	108	4¼	32	1¼				
			38	1½				
			46	1 13/16				
			51	2				

MOTOVILIKHA PLANTS

Collar Designation	Outer Ø		Internal Ø		Elevator Groove Ø	Wedge Grip Groove Ø	Thread Type	
	mm	inch	mm	inch	mm	mm	GOST R 50864	API Spec 7-2
BDC-121	121	4¾	46	1 13/16	102	114	3-94 3-102	NC35 NC38
			51	2				
			57	2¼				
BDC-127	127	5	51	2	114	114	3-102	NC38
			56	2¼				
			57	2¼				
BDC-133	133	5¼	51	2				
			56	2¼				
			57	2¼			3-102 3-108	
			68	2⅔				
BDC-146	146	5¾	56	2¼	130	140	3-118 3-121 3-122	NC44 4½ FH NC46
			57	2¼				
			68	2⅔				
			71	2 13/16				
			75	3				
BDC-152	152	6	56	2¼				
			71	2 13/16				
BDC-159	159	6 ¼	57	2¼	143	146	3-118 3-122	NC44 NC46
			71	2 13/16				
BDC-165	165	6½	56	2¼	146	152	3-121 3-122 3-133	4½ FH NC46 NC50
			57	2¼				
			71	2 13/16				
			75	3				
			76	3				
BDC-171	171	6¾	57	2¼	152	159	3-122 3-133	NC46 NC50
			71	2 13/16				
BDC-178	178	7	57	2¼	159	168	3-133 3-147	NC50 5½ FH
			71	2 13/16				
			80	3⅓				
			90	3 17/32				
BDC-184	184	7¼	71	2 13/16	168	178	3-133 3-147	NC50 5½ FH
			76	3				
			80	3⅓				
BDC-197	197	7¾	71	2 13/16	178	189	3-149 3-163	NC56 NC61
			76	3				
			80	3⅓				
BDC-203	203	8	71	2 13/16		194	3-147 3-149 3-152 3-163 3-171	5½ FH NC56 6⅝ REG NC61 6⅝ FH
			76	3				
			80	3⅓				
			90	3 17/32				
			100	3 15/16				

Collar Designation	Outer Ø		Internal Ø		Elevator Groove Ø	Wedge Grip Groove Ø	Thread Type	
	mm	inch	mm	inch	mm	mm	GOST R 50864	API Spec 7-2
BDC-210	210	8¼	71	2 13/16	178	194	3-152 3-149 3-163 3-171	6⅝ REG NC56 NC61 6⅝ FH
			76	3				
			80	3⅛				
			90	3 17/32				
			100	3 15/16				
BDC-216	216	8½	71	2 13/16	194	203	3-163 3-177	NC61 7⅝ REG
			76	3				
			80	3⅛				
			90	3 17/32				
			100	3 15/16				
BDC-229	229	9	71	2 13/16		219	3-152 3-163 3-171	NC61 6⅝ FH
			76	3				
			80	3⅛				
			90	3 17/32				
			100	3 15/16				
BDC-241	241	9 1/2	76	3		229	3-171 3-177	6⅝ FH 7⅝ REG
			80	3⅛				
			90	3 17/32				
			100	3 15/16				
BDC-248	248	9 3/4	76	3	219	235	3-152 3-185	6⅝ REG NC70
			80	3⅛				
			90	3 17/32				
			100	3 15/16				
BDC-254	254	10	76	3		245	3-171 3-185	6⅝ FH NC70
			80	3⅛				
			90	3 17/32				
			100	3 15/16				
BDC-279	279	11	76	3	245	273	3-171 3-201	6⅝ FH 8⅝ REG
			80	3⅛				
			90	3 17/32				
			100	3 15/16				

* Other size and thread combinations are possible.

BALANCED NON-MAGNETIC DRILL COLLARS (BNMDC), NON-MAGNETIC HEAVY-WEIGHT DRILL PIPES (NMHWDP (FLEX))

A solution for telemetric systems. Pipes are manufactured in accordance with strength properties that take into account geologic and physical characteristics of a field being developed following to customer's requirements. Assortment is similar to BDC and HWDP pipes.

Technical performances	
Normative documents	Technical Specifications TU Z RG 200-2003, API Spec 7-1; Technical Specifications TU 1324-236-07500243-2006, API Spec 7-1
Length, mm	8 300... 9 450
Maximum magnetic permittivity	1.010
Maximum magnetic field deflection	0.05 mcTl

HEAVY-WEIGHT DRILL PIPES (HWDP)

The item is designed to generate axial load to the rock destruction tools, to increase strength, stability of the drill strings and to transfer torque from the rotors when drilling difficult horizontal wells. The pipes are manufactured from allow steels with heat treatment throughout the full length. The products are intended for operation in frigid and moderate macroclimatic areas as per GOST 15150 at temperature from - 40 to +40 °C.

Technical performances	
Normative documents	Technical Specifications TU 1324-236-07500243-2006, API Spec 7-1
Length, mm	8 300... 9 450
HWDP types	I – with one central thickened part; II – with two central thickened parts; III – with central thickened part and spiral wall; К – tapered (18°) shoulders; П – right (90°) shoulders; Т – mastered technology of hard banding.

Manufacture of pipes with drill pipe thread connections of Premium – TMK TDS rate has the certificate issued by TMK-Premium Servis LLC.

TMK TDS connections for drill strings are made as a tool joint ensured by alignment of internal bearing faces. They are applicable for operation in difficult geological conditions of well construction when drilling requires increased torques. Connections allow performing assembly with standard tool joints made in accordance with the GOST R 50864 and API Spec 7-2.

ADVANTAGES OF TMK TDS CONNECTIONS:

- Improved reliability of the drill pipes in difficult operation conditions due to special design.
- Contribution to faultless operation during drilling lateral holes, deviated and directional wells, and horizontal.

Pape Designation	Outer Ø		Internal Ø		Box and pin upsets Ø		Tool Joint Thread	
	mm	inch	mm	inch	mm	inch	GOST R 50864	API Spec 7-2
HWDP-89	89.9	3½	50.8	2	105	4 1⁄7	3-86	NC31
			52.4	2 1⁄16	108	4¼		
				2¼	120.7	4¾	3-102	NC38
			57.2		123.8	4⅞		
					127	5		
HWDP-102	101.6	4	57.2	2¼	133.4	5¼	3-108	NC40
			63.5	2½				
			65.1	2 9⁄16				
HWDP-114	114.3	4½	68.3	2 11⁄16	158.8	6¼	3-122	NC46
			69.9	2¾				
			71.4	2 13⁄16				
HWDP-127	127	5	76.2	3	165.1	6½	3-133	NC 50
			88.9	3½	168.3	6⅝		
HWDP-140	139.7	5½	80.2	3⅛	177.8	7	3-147	5½ FH
			82.6	3¼				
			85.7	3⅜	184.3	7¼		
			92.1	3⅝				
			98.4	3⅞	190.7	7½		
			101.6	4				
HWDP-168	168.3	6⅝	101.6		203.2	8	3-171	6⅝ FH
			114.3	4½	209.6	8¼		
			127	5	215.9	8½		

MOTOVILIKHA PLANTS

SQUARE KELLYS (SK)
SPLIT-TYPE SQUARE KELLYS (STSK)

Kellys transfer torque from rotors to drill strings. Upon customer's request, kellies can be manufactured with counterclockwise rotation.

Specifications	
Normative documents	Technical Specifications TU 1324-034-48416997-2005, API Spec 7-1
Length, mm	11,300... 16,460 **We are the exclusive Russian manufacturer of split-type kellys with 28-meter length!**

Kelly Designation	Square Side		Channel Ø		Outer Ø						Tool Joint Thread					
					Box End				Pin End		Box End				Pin Connection	
					Var. 1		Var. 2				Var. 1		Var. 2			
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	GOST	API	GOST	API	GOST	API
SK-63	63.5	2½	31.8	1¼	104.8	4⅛	120.6	4¾	85.7	3⅜	3-86Л	NC31 LH	3-102Л	NC38 LH	3-73	NC26
SK-76	76.2	3	44.4	1¾					104.8	4⅛					3-86	NC31
SK-80	80	3⅛	50	2												
SK-89	88.9	3½	57.2	2¼	120.6	4¾	146	5¾	120.6	4¾	3-102Л	NC38 LH	3-121Л	4½ FH LH	3-102	NC38
							139.7	5½			3-117Л	4½ REG LH	3-118Л	NC44 LH		
SK-108	108	4¼	71.4	2 15⁄16	146.1	5¾			139.7	5½	3-121Л	4½ FH LH	3-118Л	NC44 LH	3-118	NC44
SK-133	133.4	5¼	82.6	3¼	196.8	7¾			177.8	7	3-152Л	6⅝ REG LH			3-147	5½ FH
SK-140	139.7	5½													3-149	NC56
									184.2	7¼					3-147	5½ FH
															3-149	NC56

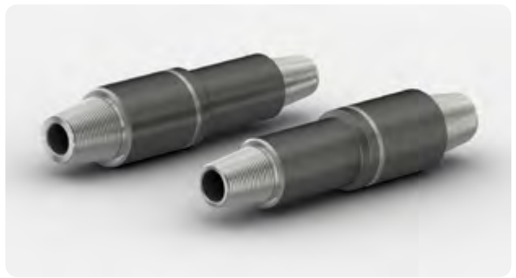
- Upon customer's request, threads of pin and box ends can be changed to other types of equal strength.
- Upon customer's request, kellies can be of hexahedral type.

NEW!

The Company mastered repair of split-type square kellys ensuring that square sides will fit after thread recutting.

DRILL STEM SUBS AND CONNECTIONS

The items join separate parts of drill pipes with different threads.



Specifications	
Normative documents	Technical Specifications TU 3668-263-07500243-2011, API Spec 7-1
Sub types	P – bottleneck 1 – cylindrical M – with box ends 2 – stepped N – with pin ends
Tool joint threads	3 – 65... 3 – 177. Thread connection of Premium Class – TMK TDS
Threads	right-hand and left-hand
Types according to API	– lifting sub with tapered shoulders; – lifting sub with straight shoulders; – subs for drill strings of A, B, C type for rotary drilling

	Subs P – bottleneck		Subs N – with pinends
			Subs for API drillstrings of A typefor rotary drilling
	Subs M – with box ends		Subs for API drillstrings of B typefor rotary drilling
			Subs for API drill
	API lifting sub withtapered shoulders		API lifting subwith straightshoulders

Upon request, fitting and lifting connections for drill pipes, HWDP, and BDC can be manufactured.

MOTOVILIKHA PLANTS

Motovilikha Plants manufacture a wide range of tools for well repair. For tool manufacture the Company use in-home die formed, forged, and cast workpieces and this ensures complete production cycle and 100% quality control at all production stages.

POWER TONGS OF KMB SERIES

The item torques and releases thread connections at drill and heavy-weight drill pipes, casing pipes, and tubing on pipe tripping during drilling oil and gas wells.

- The Russia's most reliable and popular power tongs with wide range of changeable jaws.
- They have long service life, are easy and comfortable in operation and due to it they can be used both for drilling and for well repair.
- KMB tongs are commercially viable as compared to foreign-made equivalents and are in demand of Russian and foreign customers.

Specifications	
Normative documents	Technical Specifications TU Z-07500243-083-93
Maximum torque, kN-m (kgf-m)	88.3 (9,000)
Allowable force at the lever end, kN (tf)	98 (10)
Nominal diameter of spined up and spined out pipes (tool joints), mm	73–114, 102...299, 324–351, 340–432, 426–451, 473–533
Maximum overall dimensions, mm	1 600 x 750 x 1 090
Power tong weight without SPTA and replacement part kit, kg	155
Delivery scope, set	Power tong KMB 00.00.000, 1 piece Replacement parts kit: – Jaw 140 – 178, 1 piece – Jaw 176 – 212, 1 piece – Jaw 73 – 114, 1 piece – Jaw 324/351, 1 piece – Jaw 426/451, 1 piece SPTA kit: – Bushing, 2 pieces – Anvil, 4 pieces – Bolt, 8 pieces – Spring, 2 pieces

POWER TONGS OF KMT-M SERIES

The items torque and release thread connections at drill pipes, casing pipes and tubing on pipe tripping during well drilling and repair. They are featured by almost ideal combination of load capability throughout entire clamp range and of compact dimensions, low weight, and reliability. It is an optimal solution for well repairing companies.

Specifications	
Normative documents	Technical Specifications TU 3668-030-48416997-2005
Maximum torque, kN-m (kgf-m)	34.3 (3,500)
Allowable force at the lever end, kN (kgf)	49 (5,000)
Nominal diameter of spined up and spined out pipes (tool joints), mm	40–271
Weight of item completed with jaw 60–114 with hanger, kg	78
Weight with replacement part kit with hanger, kg	106.6
Overall dimensions, mm	1 000x430x1 070
Delivery scope, set	Replaceable jaw 60–114 Possible packaging: – Replaceable jaw 40 – 85; – Replaceable jaw 114 – 166; – Replaceable jaw 245 – 271; – Replaceable jaw 168 – 198 (custom order); – Replaceable jaw 194 – 219 (custom order); – Replaceable jaw 216 – 245 (custom order); – Spring; – Anvil

LIGHT-WEIGHT POWER TONGS OF KMTO SERIES

The item torques and releases thread connections at drill pipes and tubing on pipe tripping during well drilling and repair.

Specifications	
Normative documents	Technical Specifications TU 3668-029-48416997-2005
Maximum torque, kN-m (kgf-m)	5.9 (600)
Maximum allowable force at the lever end, kN (kgf)	8.8 (900)
Nominal diameter of spined up and spined out pipes(tool joints), mm	60, 73, 89, 102
Weight with Ø 60 anvils, kg	34
Overall dimensions, mm	800x230x740
Delivery scope, set	– Ø 60 mm anvil, 3 pieces (in a tong) – Ø 73 mm anvil, 3 pieces – Ø 89 mm anvil, 3 pieces – Ø 102 mm anvil, 3 pieces
Life time, years	3
Operation conditions	Frigid and frigid-moderate climatic areas as per GOST 15150-69 at temperature from –40 to +40 °C

HYDRAULIC TONGS OF KTG-89 SERIES

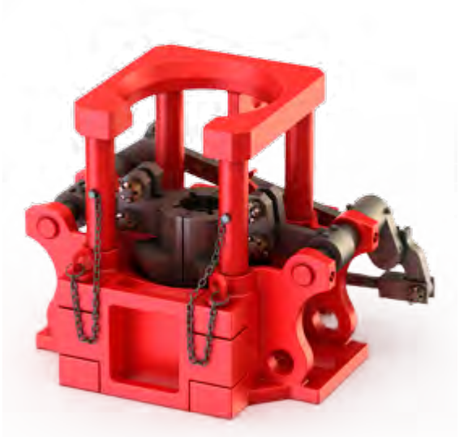
The item is designed to mechanize torque and release operations with tubing and drill pipes during repair and development of oil and gas wells.

Specifications	
Normative documents	Technical Specifications TU 3668-031-48416997-2005
Nominal diameter of spined up and spined out pipes, mm	60, 73, 89, 102, 114
Drive type	Hydraulic
Torque at pressure of 13.7 MPa, N-m (kgf-m) – with underdrive – with overdrive	 2,039.2 (208) 7,411.8 (756)
Rotation frequency of pipe clamping deviceat oil supply 95 l/min, rpm – with underdrive – with overdrive	 61.5 17
Maximum pressure in hydraulic system, MPa	15.7
Working fluid flow (theoretical), l/min	140
Working fluid	Mineral oil
Hydraulic motor	Gear type
Model	970400-5, Commercial Intertech
Rated volumentric displacement, cm^3	63
Planetary gear reducer	Gear ratio 5.5
Gearbox – overdrive gear ratio – underdrive gear ratio	2 gears 3.55 12.88
Support wrench (clamped pipes Ø), mm	60... 95, 89... 114
Overall dimensions, mm	1 130x770x1 375
Weight of tong completed with accessories andreplaceable part kit, kg	338

Specifications	
Operation conditions	Frigid and frigid-moderate climatic areasas per GOST 15150-80 at temperature from –40 to +40 °C
Delivery scope, set	Tong KTG-89 Accessories kit: – Support wrench – Hangle – Set of ø 60.3 clamps – Set of ø 73 clamps – Set of ø 88.9 Clamps Replaceable jaws for support wrench: – Ø 60 – 95 – Ø 89 – 118 – Ø 120 – 142 SPTA kit: – Drum brake – Ø 60.3 Anvil – Ø 73 anvil – Ø 88.9 Anvil – Anvil KTG-89.12.111
Additionally	Clamp set upon request: – Ø 102 – Ø 114

SPIDERS

The item grabs and holds in suspension strings of drill pipes, tubing, and casing pipes on pipe tripping.



Specifications		
Designation	SPG-50, SPGP G-80	SPG-125
Normative documents	Technical Specifications TU 3668-035-48416997-2005	
Load-lifting capacity, kN (t)	500 (50), 800 (80)	1250 (125)
Nominal diameter of hold pipes, mm	33, 42, 48, 60, 73, 89, 102, 114, 127, 129	60, 73, 89, 102, 114, 127, 40, 168
Drive type	Pneumatic or hydraulic	Pneumatic

Specifications		
Pressure, MPa (kgf/cm^2)	– pneumatic 1 (10) – hydraulic 2 (20)	0,4...1 (4...10)
Piston stroke, mm	108	200
Piston diameter, mm	60	125
Rod diameter, mm	20	32
Overall dimensions, mm	575x500x440	880x705x660
Weight of assembled spider, kg	193	447
Operation conditions	Frigid and frigid-moderate climatic areas as per GOST 15150-69 at temperature from –50 to +40 °C	

TUBING SWIVELS

The item is designed to feed drilling mud from the pump to drill pipe string and to hold drilling pipe string in suspension on drilling work at oil and gas wells.

Specifications		
Designation	V-50	V-80
Normative documents	Technical Specifications TU 3666-240-48416997-2006	
Load-lifting capacity, kN (t)	500 (50)	800 (80)
Working pressure, MPa (kgf/cm^2)	16 (160)	20 (200)
Maximum allowable stem rotation frequency, rpm	100	120
Overall dimensions, mm	440x225x1 230	550x320x1 660
Weight, kg	160	330
Life time, years	5	
Additionally	Swivel can be manufactured as bail one	

Specifications			
Designation	B-60M	B-80M	B-125
Maximum load-lifting capacity, kN (tf)	600 (60)	800 (80)	1 250 (125)
Maximum working pressure, MPa (kgf/cm^2)	20 (200)		
Maximum stem rotation frequency, s^{-1} (rpm)	2 (120)		

Specifications			
Borehole diameter, mm	70$^{+0,74}$		
Working stem rotational direction	Right-hand		
Allowable stem rotational direction at subs installation	Left-hand		
Connecting thread: a) at gooseneck b) at stem for sub	GOST 631-75 (N-102) GOST 631-75 (L-V-102)		GOST 631-75 (L-V-127)
Maximum overall dimensions, mm: – width at gooseneck part – width at bail part – height	460 366 1,270	460 366 1,532	550 444 2,130
Maximum weight, kg	196	222	410
Lifetime	5 years		
Shelf life without represervation	1.5 year		
Warranty	12 months from the day of commissioning		

* It is designed for operation in macroclimatic conditions with moderate and frigid climate NF1 as per GOST 15150 at temperature from –45 to +40 °C.

ELEVATORS OF EKHL SERIES

The item is a tool to lift, hold in suspension and run tubing as per GOST 633-80 and drill pipes as per GOST 631-75.

Specifications					
Designation	EKhL 33-25, V	EKhL 48-25, V	EKhL 60-25, V	EKhL 73-40, V	EKhL 89-50, V
Normative documents	Technical Specifications TU 3668-242-07500243-2006				
Load-lifting capacity, kN (t)	250 (25)	250 (25)	250 (25)	400 (40)	500 (50)
Nominal diameter of clampedpipes, mm	33	48, 48B	60, 60B	73, 73B	89, 89B
Overall dimensions, mm	340x240x98		375x230x110	375x230x130	435x220x150
Weight, kg	12	11	21	24	33
Operation conditions	Frigid and frigid-moderate climatic areas as per GOST 15150-69 at temperature from –40 to +40 °C.				

V – elevator for pipes with upset ends

SINGLE-LINK ELEVATORS OF ES

The lifting device grabs pipe strings under their box or by tool joints and holds them in suspension on pipe tripping during oil and gas well repair and development. Elevators of ES series is manufactured by die-forming integrally with fabrication of clamp bodies and jaws and it allows improving item strength due to more homogenous metal structure. Reconciled technology and total quality control are implemented beginning from the workpiece stage up to the finished part receipt.

Specifications		
Designation	ES-60M	ES-80M
Normative documents	Technical Specifications TU 3668-021-48416997-2003	
Manufacturing method	Casing of die high-alloy steel (unit is more robust as compared with conventional casting)	
Rated load-lifting capacity, kN (t)	600 (60)	800 (80)
Size of clamped pipes as per GOST 633-80	89, NKM-89, V-89 73, NKM-73, V-73 60, NKM-60, V-60 48, V-48 42, V-42 33, V-33	
Overall dimensions, mm	294x250x590	
Weight, kg	48	
Delivery scope, set	Pipe clamps: – NKT 60 – NKT 73 – NKT 89	
Operation conditions	Frigid and frigid-moderate climatic areas as per GOST 15150-69 at temperature from –40 to +40 °C	
Additionally	Clamps for other pipes are available upon request: Ø 33–96 mm	

WELL-SERVICING EQUIPMENT

SUCKER ROD HOOKS

The lifting devices grab and hold in suspension sucker-rod elevators with sucker-rod string on pipe tripping. The KSHP-15 type is featured by the removable yoke, which allows grabbing KSHP hook directly by lifting hook bail.

Specifications		
Designation	KSH-15	KSHP-15
Normative documents	Technical Specifications TU 3666-023-48416997-2003	
Load-lifting capacity, kN (t)	150 (15)	
Hook stroke, mm		70
Spring return force, N (kgf)		900 (90)
Overall dimensions, mm	700x210x115	894x155x115
Weight, kg	27	46
Specific features	KSH (KSHP) hook can be hanged by two bails due to removable yoke	
		Seating of downhole sucker-rod pumps can be visually controlled

SCRAPERS

Scrapers remove sediments from interior of casing string. Scraper knife units ensure overlapping of string interior by 360 degrees.

Specifications				
Designation	SK-127	SK-140	SK-146	SK-168
Normative documents	Technical Specifications TU 3663-237-07500243-2006			
Nominal diameter of casing pipe as per GOST 632-80, mm	127	140	146	168
Connecting thread as per GOST 50864-96	3-66	3-76		
Length, mm	1 100	830		850
Diameter, mm	123	136	143	158
Weight, kg	58,5	46	48	60

MECHANICAL TOP PACKERS

Items provide a separation in tubing-casing annulus in casing pipe string on performing different process operations with oil and gas wells.

Specifications				
Designation	PVM-118-50 PVM-118-50A	PVM-122-50 PVM-122-50A	PVM-136-50 PVM-136-50A	PVM-140-50 PVM-140-50A
Normative documents	Technical Specifications TU 3665-249-07500243-2007			
Differential pressure, MPa (kgf/cm^2)	50 (500)			
Nominal diameter of casing pipeas per GOST 632-80, mm	146		168	
Connecting thread as per GOST 633-80	73		89	
Overall dimensions, mm	900x118	900x122	930x136	930x140
Weight, kg	29		40	

HYDRAULIC ANCHORS

Items hold packers in place of installation on performing different process operations with oil and gas wells.

Specifications				
Designation	YaG-118-50	YaG-122-50	YaG-136-50	YaG-140-50
Normative documents	Technical Specifications TU 3665-239-07500243-2006			
Differential pressure, MPa (kgf/cm^2)	50 (500)			
Nominal diameter of casing pipe as per GOST 632-80	146		168	
Connecting thread as per GOST 633-80	73		89	
Overall dimensions, mm	650x118	650x122	650x136	650x140
Weight, kg	40		45	

INSPECTION METHODS

Rapid analysis of smelt steel chemistry
Metal micro- and macrostructure analysis
Surface hardness test
Mechanical properties testing
Ultrasonic test
Magnetic particle inspection
Active in-process inspection at CNC lathes
Instrumental dimension checking

CERTIFICATES AND LICENSES

GOST R
GosStandart of Russia
certification system

Certificates of Compliance

TMK-Premium Servis LLC

Certificate of License Holder No. 11

Industrial Safety Inspection Service (Gospromnadzor) of the Republic of Belarus

Permission for Right to Manufacture and Use Oil Development Equipment in the Republic of Belarus

Eurasian Conformity
Customs Union

Certificates of Compliance
with the Technical Regulations of the Customs Union for drill collars & kellys, sucker-rods, swivels, tongs of KMB series, rod rotators, drill stem subs

American Petroleum Institute

Certificates of Conformance With API Spec 7-1 and 11B API for Drill Collars & Kellies, Sucker-Rods, Fitting and Polished Rods and Their Collars

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