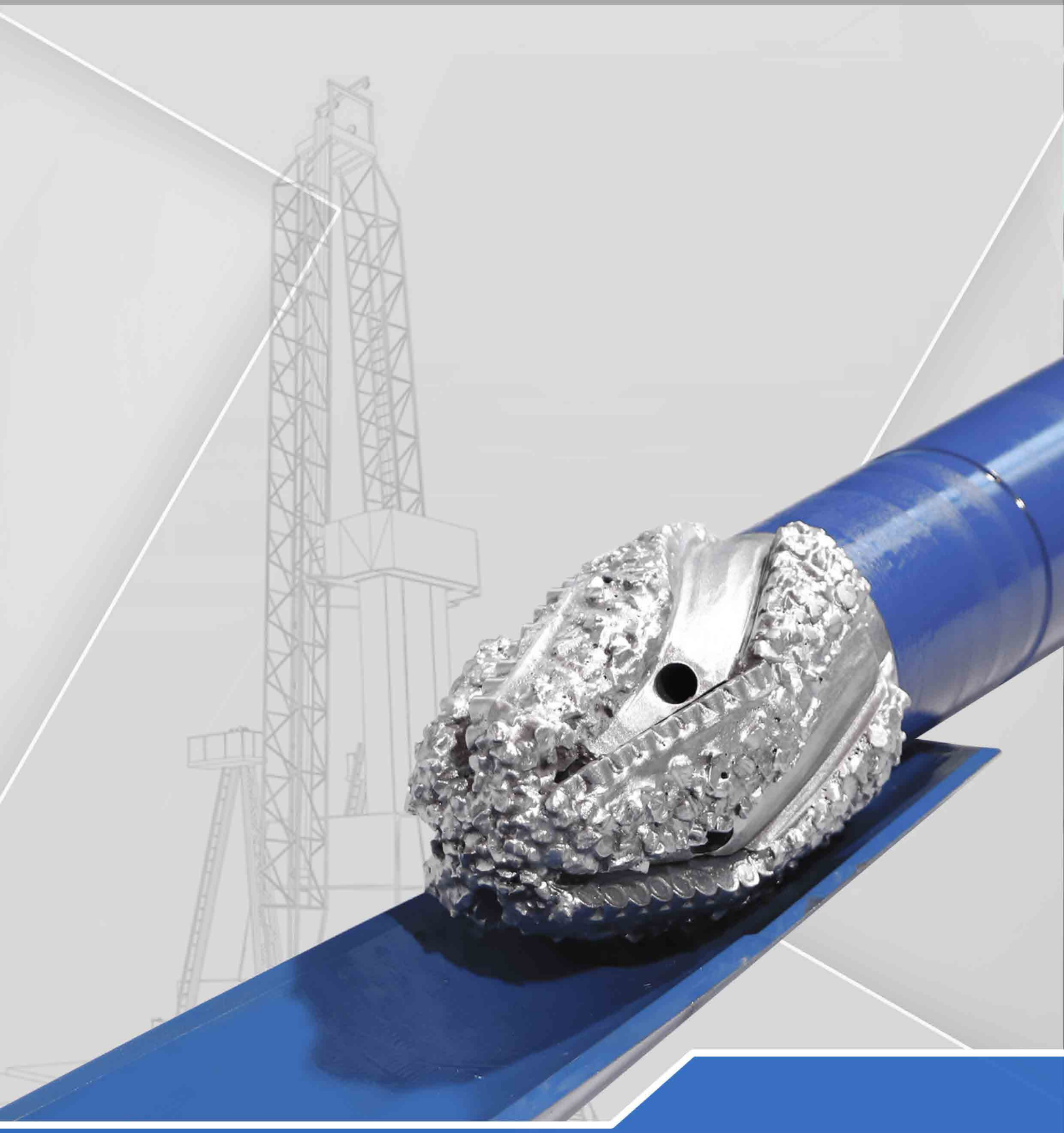
BURINTEKH

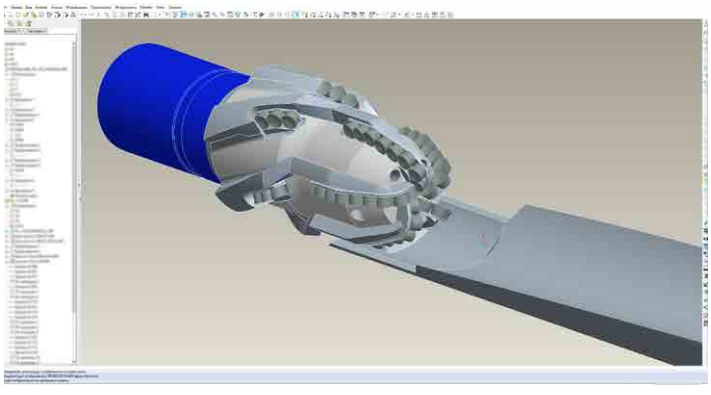


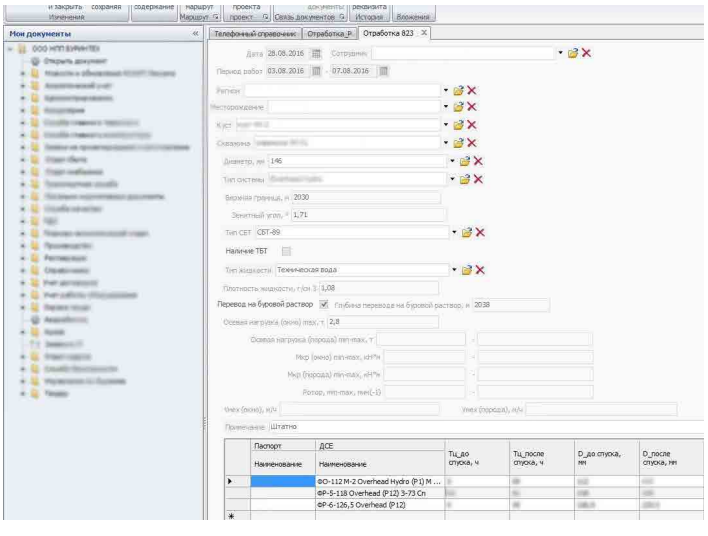
CATALOGUE
MILLING TOOLS

CONTENTS

- ABOUT PRODUCTION 6
- CASING EXIT SYSTEMS 9
- CASING EXIT SYSTEM “OVERHEAD” 11
- CASING EXIT SYSTEM “OVERHEAD-MECHANIC” 15
- CASING EXIT SYSTEM “OVERHEAD-PLUG” 18
- “OVERHEAD-HYDRO” SYSTEM FOR CASING EXIT 20
- CASING EXIT SYSTEMS USING SPECIAL DESIGN MILLS 24
- CASING EXIT AND SIDETRACKING SYSTEM “KF” IN TWO TRIPS 25
- OPEN HOLE SIDETRACKING SYSTEM 27
- UNDERREAMERS RR 29
- UNDERREAMERS RR H 32
- RL TYPE HOLE OPENERS 33
- CASING SECTION MILLING TOOLS 34
- STRING CUTTING TOOLS 36
- MILLS 38
- BOTTOM-HOLE JUNK MILLS 39
- JUNK MILLS 41
- WASHOVER MILL 42
- STRING TAPER MILL 43
- REAMER BIT 44
- DUMP SUB 45
- TRI-CONE CATCHER 46

ABOUT PRODUCTION



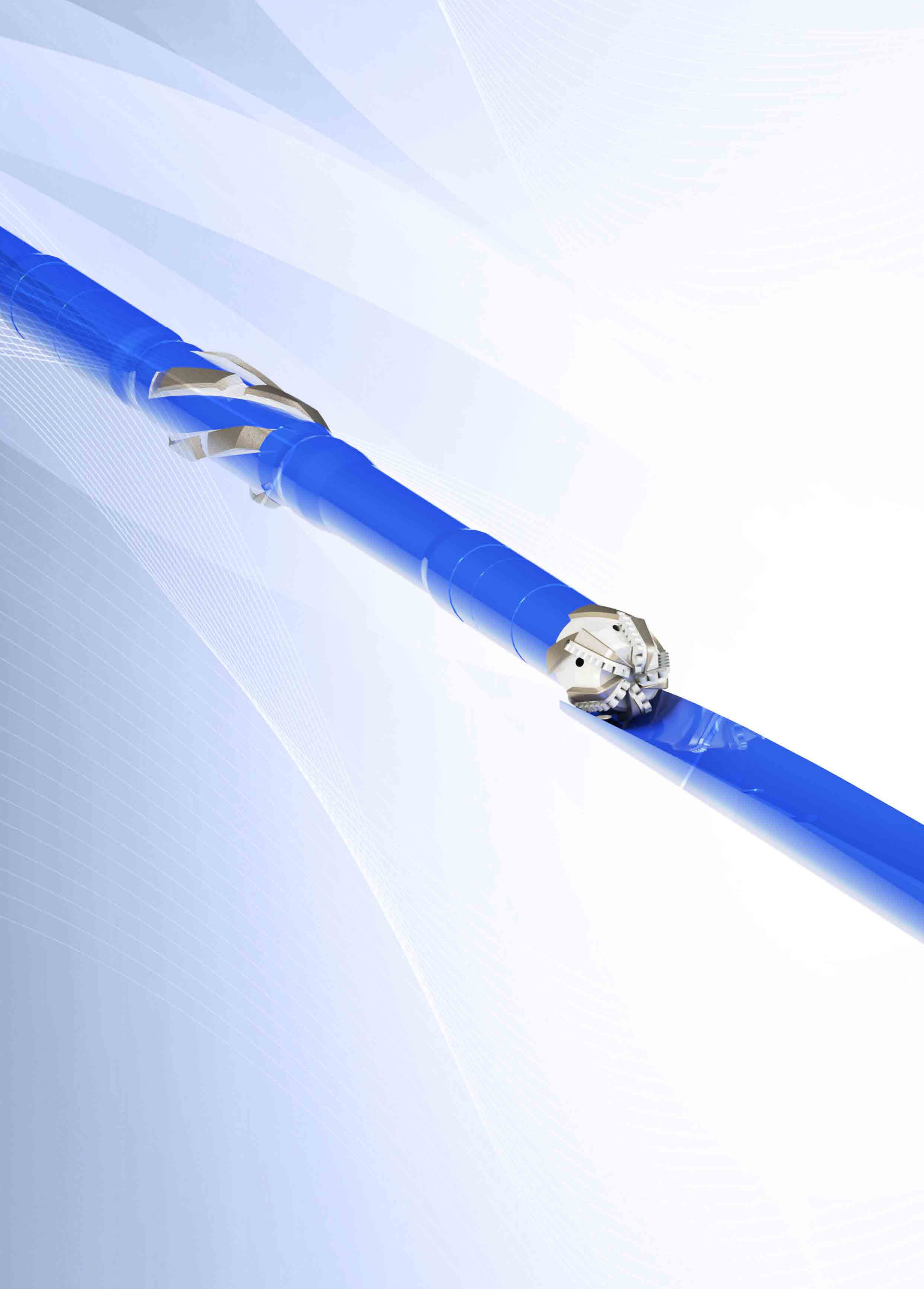


- A wide range of products designed by milling and expanding tools department is represented by various mills, special bits, underreamers, hole openers, near-bit reamers, window and casing sections milling tools, string cutting tools, and BHA elements for drilling and reaming.

- Designers of milling and expanding tools department have the most up-to-date tools for modeling, visualization, analysis and verification of data. All this guarantees task success.

- Work is carried out directly with the customer's technology services, and for all tool runs a detailed analysis is conducted based on reports prepared by field engineers. In addition each design engineer often travels to the customer wells and personally participates in the negotiations and runs of his own invention.

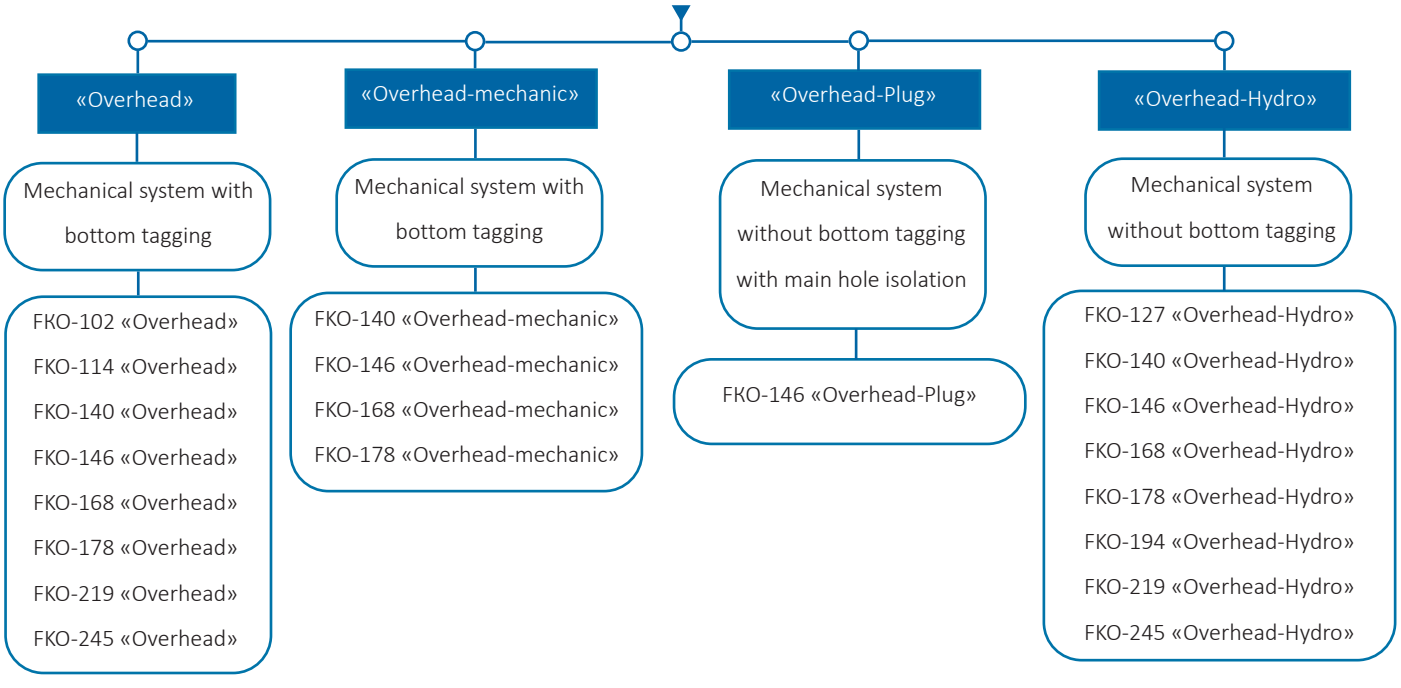
- All new equipment passes the stages of bench, factory and field tests. Recently company has launched a test facility. There can be conducted researches, tests and runs of developed tools in conditions most closely to well conditions.



CASING EXIT SYSTEMS

"BURINTEKH", Ltd offers most effective solutions for window milling in casings from Ø102 to Ø245mm and sidetracking per one trip like systems "Overhead", "Overhead-mechanic", "Overhead-plug" and "Overhead-hydro".

CASING EXIT SYSTEMS PRODUCED BY "BURINTEKH", LTD



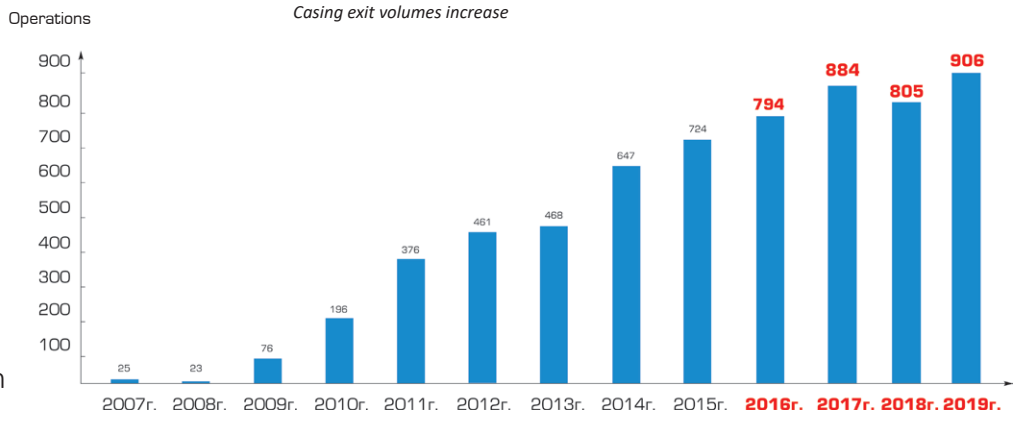
If necessary, it is possible to develop systems such as FKO for other casing diameters

All whipstocks and anchors designs provide smooth trip and reliable anchoring, excepting its turning or movement while milling and all mills provide high milling rates.

Positive dynamics of casing exit services volume of previous years clearly demonstrates the high quality of the equipment produced and the high efficiency of the services provided.

CASING EXIT VAST EXPERIENCE (SERVICE)

Tools run on the territory of the Russian Federation

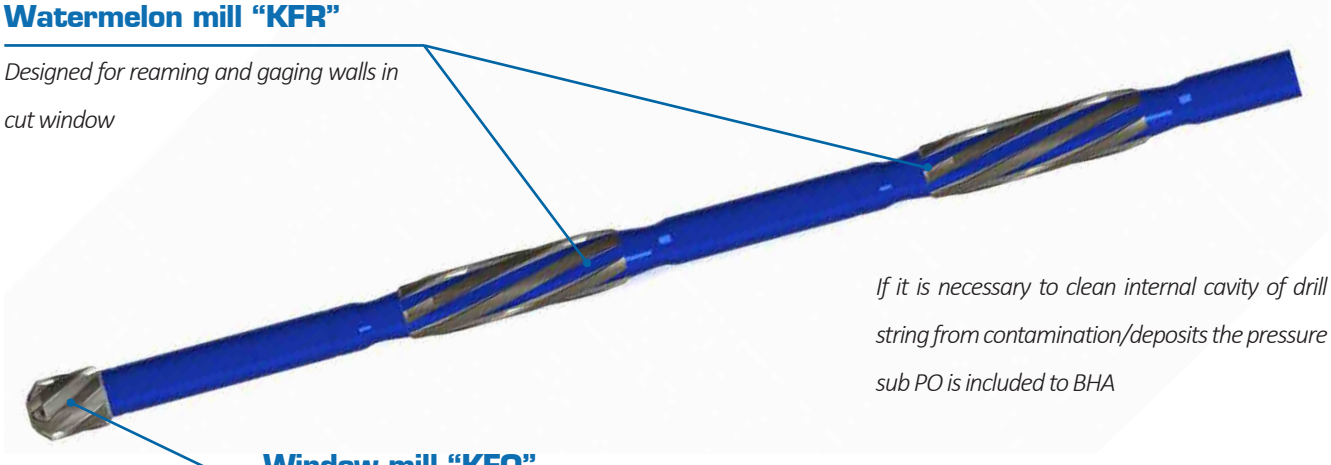


CASING EXIT SYSTEMS

Due to the fact that deposits (paraffin, scale, etc.) formed during the operation of the well that prevent passage of a full-sized BHA to the TD, BURINTEKH, based on the experience of casing exits (more than 5000 cut out "windows" over 12 years), recommends preparing the wellbore before tripping whipstock.

Watermelon mill "KFR"

Designed for reaming and gaging walls in cut window



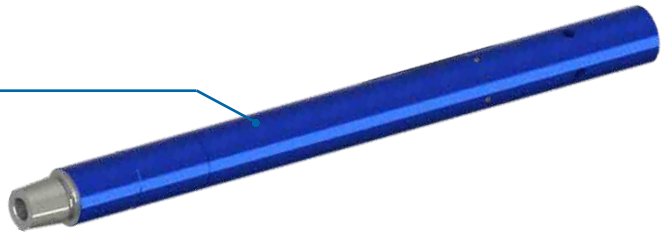
If it is necessary to clean internal cavity of drill string from contamination/deposits the pressure sub PO is included to BHA

Window mill "KFO"

Designed for final window mill and sidetracking

Universal rubber plug

Pressure sub "PO"



Scrapper "SP"

For cleaning internal cavity of drill string

MAIN OPERATION STEPS FOR CASING EXIT

- *Well preparation for tripping whipstock*
- *Tripping, orientation and installation of whipstock*
- *Window milling and drilling rat hole*
- *Metal cuttings disposal (cleanout)*

"OVERHEAD" SYSTEM FOR CASING EXIT

FEATURES:

1. **Mechanical retrievable system** tagging the bottom.
2. Shipped with triple slip **mechanical anchor**. Anchor design allows retrieving whipstock from the well if necessary.

TECHNICAL CHARACTERISTICS

№	Ø casing, mm	System code	Description	Tool code	OD, in	Length, mm	Tool joint	Weight, kg
1	102	FKO-102 «Overhead»	Window milling					
			Mechanical anchor	J-102 «Overhead»	3 1/3	768,5	Z-65	24
			Whipstock	KO-102 «Overhead»	3 1/3	2687	Z-65	73
			Window mill[1]	FO-75 «Overhead»	3	315	Z-50	8
			Bottom watermelon mill	FR-4-80 «Overhead»	3 1/7	1060	Z-50	23
			Top watermelon mill[2]	FR-6-87Sp «Overhead»	3 3/7	1060	Z-65	25
			Hook	KI-102	3 1/7	1300	Z-65	15
			Well preparation (wiper trip)					
			Window mill	KFO-85	3 1/3	345	Z-65	10
			Watermelon mill[2]	KFR-87 – 2 pcs	3 3/7	876	Z-65	25
2	114	FKO-114 «Overhead»	Window milling					
			Mechanical anchor	J-114 «Overhead»	3 3/4	768,5	Z-65	28
			Whipstock	KO-114 «Overhead»	3 3/4	2837	Z-65	100
			Window mill[1]	FO-85 «Overhead»	3 1/3	315	Z-65	9
			Bottom watermelon mill	FR-4-90 «Overhead»	3 1/2	1076	Z-65	32
			Top watermelon mill[2]	FR-6-97Sp «Overhead»	3 5/6	1076	Z-65	35
			Hook	KI-102	3 1/7	1300	Z-65	15
			Подготовка ствола скважины (шаблонировка)					
			Оконный фрезер	КФО-95	3 3/4	350	3-65	13
			Фрезер-райбер[2]	КФР-97 – 2 шт.	3 5/6	876	3-65	30
3	140	FKO-140 «Overhead»	Well preparation (wiper trip)					
			Mechanical anchor	J-140/146 «Divergent»	4 1/2	1106	Z-86	61
			Whipstock	KO-146U «Overhead»	4 1/2	2744	Z-86	140
			Window mill[1]	FO-107 «Overhead»	4 1/5	420	Z-73	20
			Bottom watermelon mill	FR-4-116-118 «Over-head»	4 2/3	1526	Z-73	60
			Top watermelon mill[2]	FR-6-122Sp «Overhead»	4 4/5	1526	Z-73	55
			Hook	KI-140-178	4 1/4	1800	Z-86	30
			Well preparation (wiper trip)					
			Window mill	KFO-122M	4 4/5	460	Z-73	20
			Watermelon mill[2]	KFR-122 – 2 pcs	4 4/5	1130	Z-73	50
4	146	FKO-146 «Overhead»	Window milling					
			Mechanical anchor	J-140/146 «Divergent»	4 1/2	1106	Z-86	61
			Whipstock	KO-146U «Overhead»	4 1/2	2744	Z-86	140
			Window mill[1]	FO-112 «Overhead»	4 2/5	420	Z-73	20
			Bottom watermelon mill	FR-4-116-118 «Over-head»	4 2/3	1526	Z-73	60
			Top watermelon mill[2]	FR-6-124Sp «Overhead»	4 7/8	1526	Z-73	55
			Hook	KI-140-178	4 1/4	1800	Z-86	30

TECHNICAL CHARACTERISTICS

№	Ø casing, mm	System code	Description	Tool code	OD, in	Length, mm	Tool joint	Weight, kg
4	146	FKO-146 «Overhead»	Well preparation (wiper trip)					
			Window mill	KFO-124M	4 7/8	460	Z-73	20
			Watermelon mill[2]	KFR-124 – 2 pcs	4 7/8	1130	Z-73	50
5	168	FKO-168 «Overhead»	Window milling					
			Mechanical anchor	J-140/146 «Divergent»	5 1/3	1106	Z-86	61
			Whipstock	KO-146У «Overhead»	5 1/3	2744	Z-86	140
			Window mill[1]	FO-112 «Overhead»	5 1/5	420	Z-73	20
			Bottom watermelon mill	FR-4-1134-138 «Overhead»	5 3/7	1526	Z-73	60
			Top watermelon mill[2]	FR-6-124Sp «Overhead»	5 2/3	1526	Z-73	55
			Hook	KI-140-178	4 1/4	1800	Z-86	30
			Well preparation (wiper trip)					
			Window mill	KFO-144M	5 2/3	475	Z-86	35
			Watermelon mill[2]	KFR-144 – 2 pcs	5 2/3	1130	Z-86	85
6	178	FKO-178 «Overhead»	Window milling					
			Mechanical anchor	J-168/178 «Divergent»	5 1/3	1449	Z-102	102
			Whipstock	KO-168У «Overhead»	5 1/3	3350	Z-102	222
			Window mill[1]	FO-138 «Overhead»	5 3/7	456	Z-86	30
			Bottom watermelon mill	FR-4-140-144 «Overhead»	5 2/3	1639	Z-86	105
			Top watermelon mill[2]	FR-6-156Sp «Overhead»	6 1/7	1701	Z-86	115
			Hook	KI-140-178	4 1/4	1800	Z-86	30
			Well preparation (wiper trip)					
			Window mill	KFO-156M	6 1/7	485	Z-86	38
			Watermelon mill[2]	KFR-156 – 2 pcs	6 1/7	1200	Z-86	90
7	219	FKO-219 «Overhead»	Window milling					
			Mechanical anchor	J-219/245 «Divergent»	7 2/7	2032	Z-117	255
			Whipstock	KO-219У «Overhead»	7	3753	Z-117	423
			Window mill[1]	FO-162У «Overhead»	6 3/8	500	Z-118	46
			Bottom watermelon mill	FR-5-177 «Overhead»	7	1914	Z-118	205
			Top watermelon mill[2]	FR-6-191Sp «Overhead»	7 1/2	1914	Z-118	205
			Hook	KI-194-245	6 1/9	2000	Z-86	70
			Well preparation (wiper trip)					
			Window mill	KFO-180M	7	500	Z-118	50
			Watermelon mill[2]	KFR-191 – 2 pcs	7 1/2	1514	Z-118	275
8	245	FKO-245 «Overhead»	Window milling					
			Mechanical anchor	J-219/245 «Divergent»	7 2/7	2032	Z-117	255
			Whipstock	KO-245У «Overhead»	7 1/2	3953	Z-117	496
			Window mill[1]	FO-186У «Overhead»	7 1/3	510	Z-133	58
			Bottom watermelon mill	FR-4-195-200 «Overhead»	7 7/8	1914	Z-133	260

TECHNICAL CHARACTERISTICS

№	Ø casing, mm	System code	Description	Tool code	OD, in	Length, mm	Tool joint	Weight, kg
8	245	FKO-245 «Overhead»	Top watermelon mill[2]	FR-6-216Sp «Overhead»	8 1/2	1914	Z-133	260
			Hook	KI-194-245	6 1/9	2000	Z-86	70
			Well preparation (wiper trip)					
			Window mill	KFO-210M-1	8 1/4	470	Z-133	74
			Watermelon mill[2]	KFR-216 – 2 pcs	8 1/2	1650	Z-133	220

1- Depending on the wall thickness of the casing the required window mill OD is determined;

2 – Watermelon mill "FR-6" and "KFR" diameter is selected depending on the wall thickness of the casing and the diameter of the bit for sidetracking.

“OVERHEAD–MECHANIC” SYSTEM FOR CASING EXIT

“Overhead–mechanic” system for casing exit

FEATURES:

1. **Mechanical retrievable system** tagging the bottom.
2. Shipped with single slip **mechanical anchor**. Anchor design allows retrieving whipstock from the well if necessary.
3. After anchor is activated **the “back” of whipstock** is pressed against casing wall which eliminates possible complications when milling “window” in case of incorrect orientation of the whipstock (further drilling with inclination angle drop).

TECHNICAL CHARACTERISTICS

№	Ø casing, mm	System code	Description	Tool code	OD, in	Length, mm	Tool joint	Weight, kg
1	140	FKO-140 «Overhead-mechanic»	Window milling					
			Mechanical anchor	J-140-146 «Overhead-mechanic»	4 1/2	1540	-	75
			Whipstock	KO-140-146У «Overhead-mechanic»	4 1/2	2816	-	145
			Window mill[1]	FO-107 «Overhead»	4 1/5	420	Z-73	20
			Bottom watermelon mill	FR-4-116-118 «Overhead»	4 2/3	1526	Z-73	60
			Top watermelon mill[2]	FR-6-122Sp «Overhead»	4 4/5	1526	Z-73	55
			Hook	KI-140-178	4 1/4	1800	Z-86	30
			Well preparation (wiper trip)					
			Window mill	KFO-122M	4 4/5	460	Z-73	20
			Watermelon mill[2]	KFR-122 – 2 pcs	4 4/5	1130	Z-73	50
2	146	FKO-146 «Overhead-mechanic»	Window milling					
			Mechanical anchor	J-140-146 «Overhead-mechanic»	4 1/2	1540	-	75
			Whipstock	KO-140-146У «Overhead-mechanic»	4 1/2	2816	-	145
			Window mill[1]	FO-112 «Overhead»	4 2/5	420	Z-73	20
			Bottom watermelon mill	FR-4-116-118 «Overhead»	4 2/3	1526	Z-73	60
			Top watermelon mill[2]	FR-6-124Sp «Overhead»	4 7/8	1526	Z-73	55
			Hook	KI-140-178	4 1/4	1800	Z-86	30
			Well preparation (wiper trip)					
			Window mill	KFO-124M	4 7/8	460	Z-76	25
			Watermelon mill[2]	KFR-124 – 2 pcs	4 7/8	1130	Z-76	50
3	168	FKO-168 «Overhead-mechanic»	Window milling					
			Mechanical anchor	J-168-178 «Overhead-mechanic»	5 1/3	1600	-	106
			Whipstock	KO-168-178У «Overhead-mechanic»	5 1/3	3300	-	235
			Window mill[1]	FO-132 «Overhead»	5 1/5	456	Z-86	25
			Bottom watermelon mill	FR-4-134-138 «Overhead»	5 3/7	1639	Z-86	105
			Top watermelon mill[2]	FR-6-144Sp «Overhead»	5 2/3	1639	Z-86	105
			Hook	KI-140-178	4 1/4	1800	Z-86	30
			Well preparation (wiper trip)					
			Window mill	KFO-144M	5 2/3	475	Z-86	35
			Watermelon mill[2]	KFR-144 – 2 pcs	5 2/3	1130	Z-86	85

TECHNICAL CHARACTERISTICS

№	Ø casing, mm	System code	Description	Tool code	OD, in	Length, mm	Tool joint	Weight, kg
4	178	FKO-178 «Overhead-mechanic»	Window milling					
			Mechanical anchor	J-168-178 «Overhead-mechanic»	5 1/3	1600	-	106
			Whipstock	KO-168-178У «Overhead-mechanic»	5 1/3	3300	-	235
			Window mill[1]	FO-138 «Overhead»	5 3/7	456	Z-86	30
			Bottom watermelon mill	FR-4-140-144 «Overhead»	5 2/3	1639	Z-86	105
			Top watermelon mill[2]	FR-6-156Sp «Overhead»	6 1/7	1701	Z-86	115
			Hook	KI-140-178	4 1/4	1800	Z-86	30
			Well preparation (wiper trip)					
			Window mill	KFO-156M	6 1/7	485	Z-86	38
			Watermelon mill[2]	KFR-156 – 2 pcs	6 1/7	1200	Z-86	90

1- Depending on the wall thickness of the casing the required window mill OD is determined;

2 – Watermelon mill "FR-6" diameter is selected depending on the wall thickness of the casing and the diameter of the bit for sidetracking.

“OVERHEAD–PLUG”

SYSTEM FOR CASING EXIT

FEATURES:

1. **Mechanical retrievable system** no tagging the bottom.
2. Shipped with **mechanical packer device** providing isolation below and above the packer space (withstands excess pressure ~350atm).
3. **Reduces time consumption** for well preparation (no need of cement bridge, WOC, etc.).
4. **Whipstock orientation** using mud pulse MWD (without bypass in BHA).

TECHNICAL CHARACTERISTICS

Ø casing, mm	System code	Description	Tool code	OD, in	Length, mm	Tool joint	Weight, kg
146	FKO-146 «Over-head-Plug»	Window milling					
		Mechanical packer[1]	PKD-122-35	4 4/5	2360	Z-86	127
		Whipstock	KO-146Y «Overhead»	4 1/2	2744	Z-86	140
		Window mill[1]	FO-112 «Overhead»	4 2/5	420	Z-73	20
		Bottom watermelon mill	FR-4-116-118 «Overhead»	4 2/3	1526	Z-73	60
		Top watermelon mill[2]	FR-6-124Sp «Overhead»	4 7/8	1526	Z-73	55
		Hook	KI-140-178	4 1/4	1800	Z-86	30
		Well preparation (wiper trip)					
		Window mill	KFO-124M	4 7/8	460	Z-76	25
		Watermelon mill[2]	KFR-124 – 2 pcs	4 7/8	1130	Z-76	50

1 – Packer size is determined depending on casing wall thickness;

2- Depending on the wall thickness of the casing the required window mill OD is determined;

3 – Watermelon mill "FR-6" diameter is selected depending on the wall thickness of the casing and the diameter of the bit for sidetracking.

Packer for other casing sizes can be designed if necessary

“OVERHEAD–HYDRO”

SYSTEM FOR CASING EXIT

Комплект технических средств типа «OVERHEAD–HYDRO» для фрезеро–вания «окна» в обсадной колонне

ОСОБЕННОСТИ:

1. **Mechanical retrievable system** no tagging the bottom.
2. **Shipped with hydraulic pipe anchor JGT**. This type of anchors has simple design but provides reliable fixation excluding axial and tangential displacements because of high shearing resistance due to large operating surface.

№	Ø casing, mm	System code	Description	Tool code	OD, in	Length, mm	Tool joint	Weight, kg
1	127	FKO-127 «Overhead-Hydro»	Window milling					
			Hydraulic anchor[1]	JGT-127.255	4	2250	Z-73	50
			Whipstock	KO-127 «Overhead-Hydro»	4	2477	Z-73	88
			Window mill[2]	FO-90 M-2 «Overhead-Hydro»	3 1/2	365	Z-73	20
			Bottom watermelon mill	FR-4-98 «Overhead»	3 6/7	1276	Z-73	40
			Top watermelon mill[3]	FR-6-103Sp «Overhead»	4	1276	Z-73	40
			Circulating sub	KOPP-73	3 1/2	526	Z-73	20
			Hook	KI-140-178	4 1/4	1800	Z-86	30
			Well preparation (wiper trip, scraping)					
			Window mill	KFO-103	4	350	Z-73	17
			Watermelon mill	KFR-103 – 2 pcs	4	876	Z-73	38
			Pressure sub	PO-73	3 1/2	1087	Z-73	36
2	140	FKO-140 «Overhead-Hydro»	Window milling					
			Hydraulic anchor[1]	JGT-140.255	4 1/3	2250	Z-86	10
			Whipstock	KO-146У «Overhead-Hydro»	4 1/2	2795	Z-86	132
			Window mill[2]	FO-107 M-2 «Overhead-Hydro»	3 1/2	420	Z-73	20
			Bottom watermelon mill	FR-4-116-118 «Overhead»	3 6/7	1526	Z-73	60
			Top watermelon mill[3]	FR-6-122Sp «Overhead»	4	1526	Z-73	55
			Circulating sub	KOPP-86	4 1/4	539	Z-86	14
			Hook	KI-140-178	4 1/4	1800	Z-86	30
			Well preparation (wiper trip, scraping)					
			Window mill	KFO-122M	4	460	Z-73	20
			Watermelon mill	KFR-122 – 2 pcs	4	1130	Z-73	50
			Pressure sub	PO-86	4 1/3	1074	Z-86	60
3	146	FKO-146 «Overhead-Hydro»	Window milling					
			Hydraulic anchor[1]	JGT-146.615	4 4/7	2750	Z-86	50
			Whipstock	KO-146У «Overhead-Hydro»	4 1/2	2795	Z-86	132
			Window mill[2]	FO-112 M-2 «Overhead-Hydro»	4 2/5	420	Z-73	20
			Bottom watermelon mill	FR-4-116-118 «Overhead»	4 2/3	1526	Z-73	60
			Top watermelon mill[3]	FR-6-124Sp «Overhead»	4 7/8	1526	Z-73	55
			Circulating sub	KOPP-86	4 1/4	539	Z-86	14
			Hook	KI-140-178	4 1/4	1800	Z-86	30
			Well preparation (wiper trip, scraping)					
			Window mill	KFO-124M	4 7/8	460	Z-76	25
			Watermelon mill	KFR-124 – 2 pcs	4 7/8	1130	Z-76	50
			Pressure sub	PO-86	4 1/3	1074	Z-86	60

TECHNICAL CHARACTERISTICS

№	Ø casing, mm	System code	Description	Tool code	OD, in	Length, mm	Tool joint	Weight, kg
4	168	FKO-168 «Overhead-Hydro»	Window milling					
			Hydraulic anchor[1]	JGT-168.615	5 1/3	2750	Z-102	57
			Whipstock	KO-168У «Overhead-Hydro»	5 1/3	3350	Z-102	218
			Window mill[2]	FO-132 M-2 «Overhead-Hydro»	5 1/5	455	Z-86	28
			Bottom watermelon mill	FR-4-134-138 «Overhead»	5 3/7	1639	Z-86	105
			Top watermelon mill[3]	FR-6-144Sp «Overhead»	5 2/3	1639	Z-86	115
			Circulating sub	KOPP-102	4 5/7	532	Z-102	33
			Hook	KI-140-178	4 1/4	1800	Z-86	30
			Well preparation (wiper trip, scraping)					
			Window mill	KFO-144M	4 7/8	470	Z-86	33
			Watermelon mill	KFR-144 – 2 pcs	4 7/8	1130	Z-86	85
			Pressure sub	PO-102	4 3/4	1102	Z-102	70
5	178	FKO-178 «Overhead-Hydro»	Window milling					
			Hydraulic anchor[1]	JGT-178.615	5 6/7	2700	Z-102	65
			Whipstock	KO-168У «Overhead-Hydro»	5 1/3	3350	Z-102	218
			Window mill[2]	FO-138 M-2 «Overhead-Hydro»	5 3/7	455	Z-86	35
			Bottom watermelon mill	FR-4-140-144 «Overhead»	5 2/3	1639	Z-86	105
			Top watermelon mill[3]	FR-6-156Sp «Overhead»	6 1/7	1701	Z-86	115
			Circulating sub	KOPP-102	4 5/7	532	Z-102	33
			Hook	KI-140-178	4 1/4	1800	Z-86	30
			Well preparation (wiper trip, scraping)					
			Window mill	KFO-156M	6 1/7	485	Z-86	38
			Watermelon mill	KFR-156 – 2 pcs	6 1/7	1200	Z-86	90
			Pressure sub	PO-102	4 3/4	1102	Z-102	70
6	194	FKO-194 «Overhead-Hydro»	Window milling					
			Hydraulic anchor[1]	JGT-194.211	5 6/7	2700	Z-102	65
			Whipstock	KO-194У «Overhead-Hydro»	6 1/9	3298	Z-117	285
			Window mill[2]	FO-148 M-2 «Overhead-Hydro»	5 5/6	462	Z-102	35
			Bottom watermelon mill	FR-4-150-155 «Overhead»	6 1/9	1602	Z-102	90
			Top watermelon mill[3]	FR-6-165,5Sp «Overhead»	6 1/2	1639	Z-102	130
			Circulating sub	KOPP-102	4 5/7	532	Z-102	33
			Hook	KI-194-245	6 1/9	2000	Z-86	70
			Well preparation (wiper trip, scraping)					
			Window mill	KFO-164M	6 1/2	400	Z-102	40
			Watermelon mill	KFR-165,5 – 2 pcs	6 1/2	1130	Z-102	90
			Pressure sub	PO-102	4 3/4	1102	Z-102	70

№	Ø casing, mm	System code	Description	Tool code	OD, in	Length, mm	Tool joint	Weight, kg
7	219	FKO-219 «Overhead-Hydro»	Window milling					
			Hydraulic anchor1	JGT-219.211	7 1/4	4250	Z-117	245
			Whipstock	KO-219У «Overhead-Hydro»	7	3753	Z-117	480
			Window mill2	FO-162M-2 «Overhead-Hydro»	6 3/8	510	Z-118	47
			Bottom watermelon mill	FR-5-177 «Overhead»	7	1914	Z-118	205
			Top watermelon mill3	FR-6-191Sp «Overhead»	7 1/2	1914	Z-118	205
			Circulating sub	KOPP-133	6 2/7	714	Z-133	80
			Hook	KI-194-245	6 1/9	2000	Z-86	70
			Well preparation (wiper trip, scraping)					
			Window mill	KFO-180M	7	500	Z-118	50
			Watermelon mill	KFR-191 – 2 pcs	7 1/2	1514	Z-118	275
			Pressure sub	PO-133	6 2/7	1514	Z-133	134
8	245	FKO-245 «Overhead-Hydro»	Window milling					
			Hydraulic anchor1	JGT-245.211	8 1/5	4250	Z-117	245
			Whipstock	KO-245У «Overhead-Hydro»	7 1/2	3953	Z-117	490
			Window mill2	FO-186M-2 «Overhead-Hydro»	7 1/3	510	Z-133	62
			Bottom watermelon mill	FR-4-195-200 «Overhead»	7 7/8	1914	Z-133	260
			Top watermelon mill3	FR-6-216Sp «Overhead»	8 1/2	1914	Z-133	250
			Circulating sub	KOPP-133	6 2/7	714	Z-133	80
			Hook	KI-194-245	6 1/9	2000	Z-86	70
			Well preparation (wiper trip, scraping)					
			Window mill	KFO-210M	8 1/4	470	Z-133	74
			Watermelon mill	KFR-216 – 2 pcs	8 1/2	1650	Z-133	220
			Pressure sub	PO-133	6 2/7	1514	Z-133	134

1 – Anchor profile (two-pronged or six-pronged) is selected depending on casing drift diameter (wall thickness);

2- Depending on the wall thickness of the casing the required window mill OD is determined;

3 – Watermelon mill "FR-6" diameter is selected depending on the wall thickness of the casing and the diameter of the bit for sidetracking.

CASING EXIT SYSTEMS USING SPECIAL DESIGN MILLS

FEATURES:

1. Due to the special design there is no dead point on the window mill thus **reducing the likelihood of loss of penetration** when milling the window.
2. Ability to eliminate the **need of including watermelon mill"FR-4" to BHA** because window mill OD is equal to watermelon mill FR-4 diameter.

TECHNICAL CHARACTERISTICS

Mechanical window mills of a special design:

№	Ø casing, mm	Eccentric window mill code	OD, mm	OD, in	Length, mm	Tool joint	Weight, kg
1	146	FO-118 «Overhead»	118	4 2/3	370	Z-73	14
2	168	FO-140 «Overhead»	140	5 1/2	450	Z-86	14
3	178	FO-144 «Overhead»	144	5 2/3	450	Z-86	15
4	245	FO-200 «Overhead»	200	7 7/8	600	Z-133	70

Hydraulic window mills of eccentric design:

№	Ø casing, mm	Eccentric window mill code	OD, mm	OD, in	Length, mm	Tool joint	Weight, kg
1	146	FO-118M-2 «Overhead-Hydro»	118	4 2/3	340	Z-73	15
2	168	FO-140M-2 «Overhead-Hydro»	140	5 1/2	450	Z-86	15
3	178	FO-144M-2 «Overhead-Hydro»	144	5 2/3	450	Z-86	16
4	245	FO-200M-2 «Overhead-Hydro»	200	7 7/8	590	Z-133	70

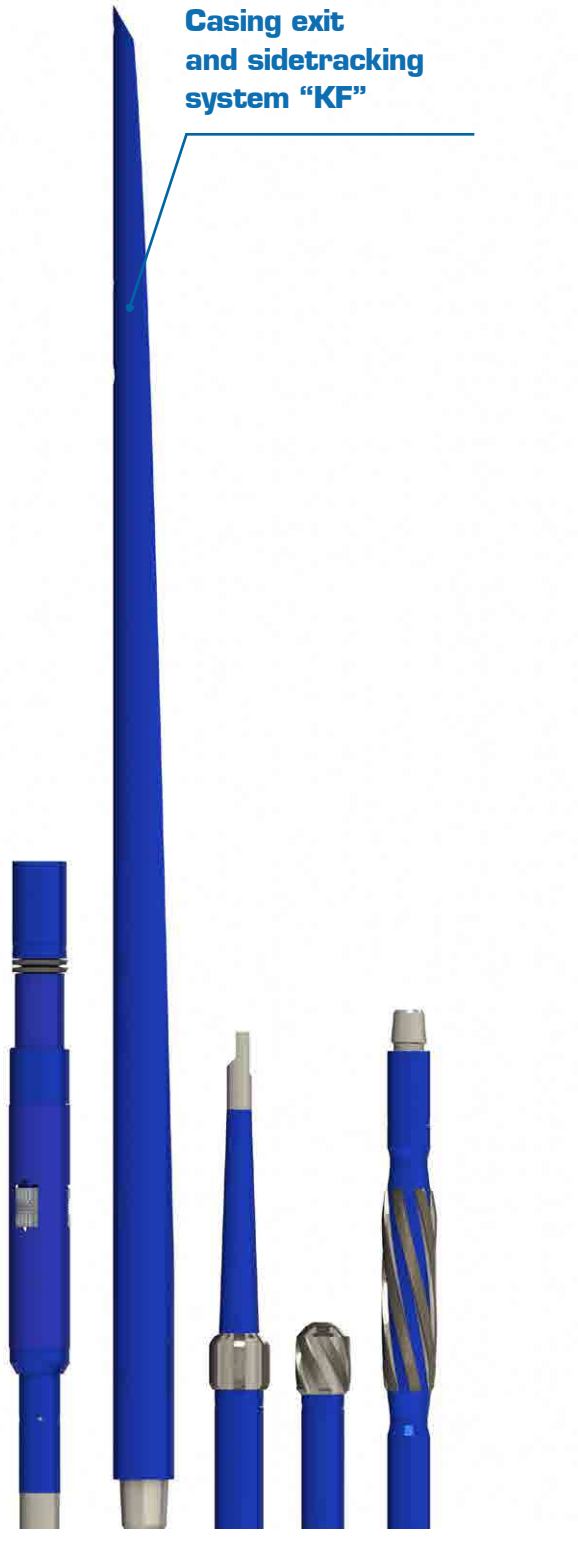
If necessary the development of special window mills for other casing sizes is possible.

CASING EXIT AND SIDETRACKING SYSTEM **"KF"** IN TWO TRIPS

FEATURES:

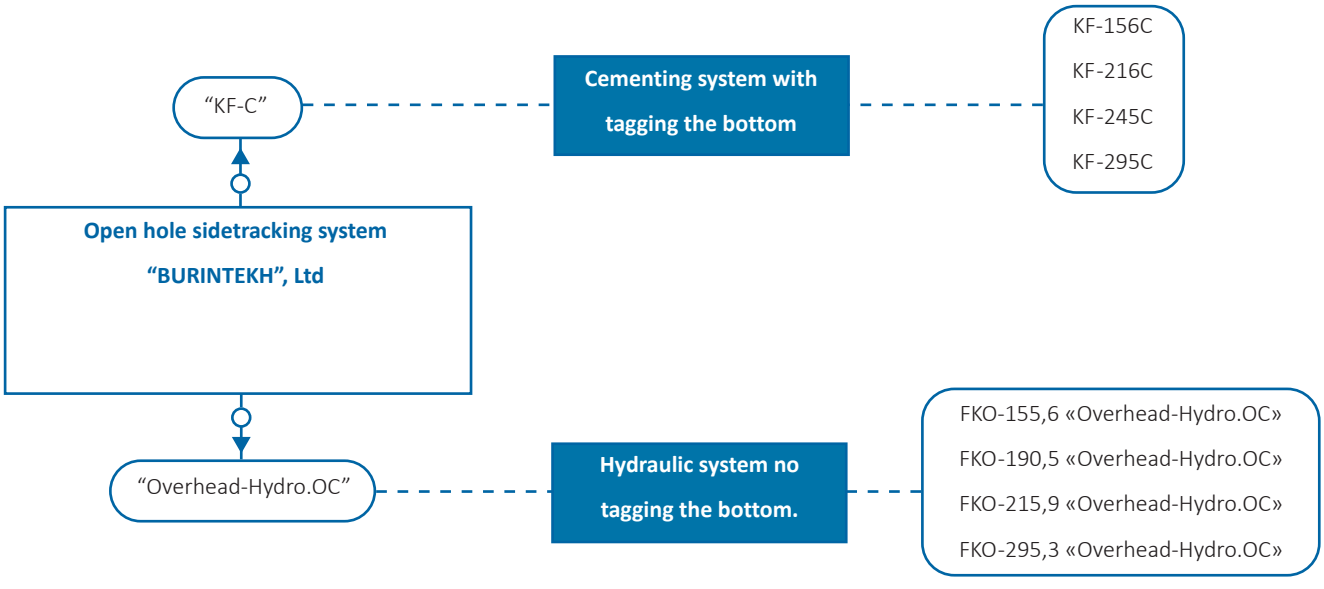
The use of this system is most appropriate in wells with a high dogleg severity. System basic elements consist of:

1. **Mechanical anchor** – for mounting whipstock in casing tagging the bottom.
2. **Whipstock** – for ensuring necessary deviation of milling tools from main bore axis when milling window.
3. **Kickoff mill** – for mounting whipstock in well and preliminary milling.
4. **Window mill** – for finish milling window in casing and sidetracking.
5. **Watermelon mill** – for reaming and gaging walls in milled window.
6. **Hook** – for retrieving whipstock and anchor from well if necessary.



TECHNICAL CHARACTERISTICS

№	Ø casing, mm	System code	Description	Tool code	OD, in	Length, mm	Tool joint
1	140	KF-140	Window milling				
			Mechanical anchor	J-140/146 «Divergent»	4 1/2	1106	Z-86
			Whipstock	KOC-146	4 1/2	2589	Z-86
			Kickoff mill	KFC-119	4 2/3	1068	Z-73
			Window mill	KFO-119	4 2/3	460	Z-73
			Watermelon mill	KFP-119	4 2/3	1130	Z-73
			Hook	KI-140-178	4 1/4	1800	Z-86
2	146	KF-146	Window milling				
			Mechanical anchor	J-140/146 «Divergent»	4 1/2	1106	Z-86
			Whipstock	KOC-146	4 1/2	2589	Z-86
			Kickoff mill	KFC-124	4 7/8	1081	Z-73
			Window mill	KFO-124,5	5	460	Z-73
			Watermelon mill	KFP-124,5	5	1130	Z-73
			Hook	KI-140-178	4 1/4	1800	Z-86
3	168	KF-168	Window milling				
			Mechanical anchor	J-168/178 «Divergent»	5 1/3	1450	Z-102
			Whipstock	KOC-168	5 1/3	3170	Z-102
			Kickoff mill	KFC-140	5 2/3	1081	Z-86
			Window mill	KFO-147	5 4/5	475	Z-86
			Watermelon mill	KFP-147	5 4/5	1130	Z-86
			Hook	KI-140-178	4 1/4	1800	Z-86
4	178	KF-178	Window milling				
			Mechanical anchor	J-168/178 «Divergent»	5 1/3	1450	Z-102
			Whipstock	KOC-168	5 1/3	3170	Z-102
			Kickoff mill	KFC-140	5 1/2	1081	Z-86
			Window mill	KFO-156	6 1/7	485	Z-86
			Watermelon mill	KFP-156	6 1/7	1200	Z-86
			Hook	KI-140-178	4 1/4	1800	Z-86
5	219	KF-219	Window milling				
			Mechanical anchor	J-219/245 «Divergent»	7 2/7	2040	Z-117
			Whipstock	KOC-245	7 1/2	3978	Z-117
			Kickoff mill	PY-245	6 2/7	1081	Z-133
			Window mill	KFO-180	7	500	Z-118
			Watermelon mill	KFP-191	7 1/2	1514	Z-118
			Hook	KI-194-245	6 1/9	2000	Z-86
6	245	KF-245	Window milling				
			Mechanical anchor	J-219/245 «Divergent»	7 2/7	2040	Z-117
			Whipstock	KOC-245	7 1/2	3978	Z-117
			Kickoff mill	PY-245	6 2/7	1081	Z-133
			Window mill	KFO-210	8 1/4	470	Z-133
			Watermelon mill	KFP-216	8 1/2	1650	Z-133
			Hook	KI-194-245	6 1/9	2000	Z-86



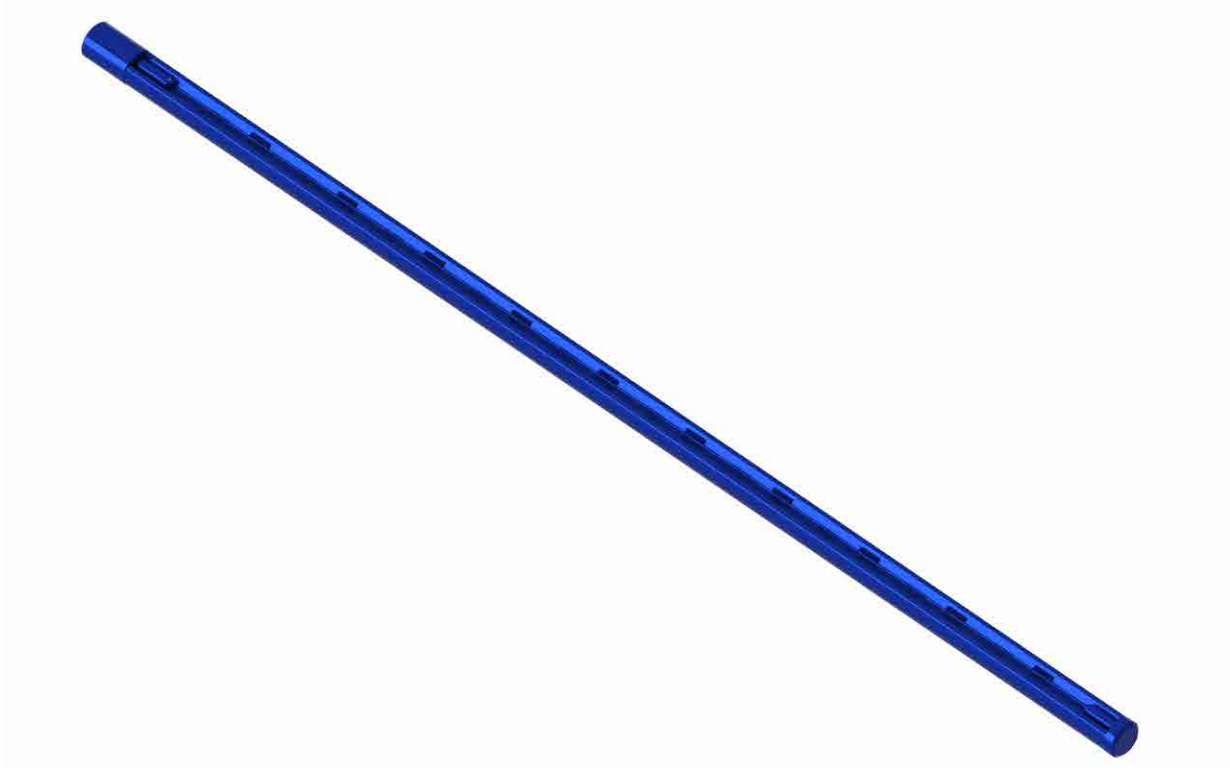
Cemented system "KF-C" is purposed for provision necessary deviation from main open hole axis to pass over the emergency section and sidetracking. System is non-retrievable and is cemented with preliminary tagging the bottom.

№	Ø open hole, mm	System code	Description	Tool code	OD, mm	OD, in	Length, mm	Tool joint
1	156	KF-156C	Cemented anchor	J-156C	135	5 1/3	3270	Z-102
			Whipstock	KOC-156C	135	5 1/3	4264	Z-86
2	216	KF-216C	Cemented anchor	J-216C	178	7	5360	Z-147
			Whipstock	KOC-216C	178	7	3360	Z-147
3	245	KF-245C	Cemented anchor	J-245C	190	7 1/2	5320	Z-147
			Whipstock	KOC-245C	203	8	4080	Z-147
4	295	KF-295C	Cemented anchor	J-295C	236	9 2/7	5330	Z-171
			Whipstock	KOC-295C	254	10	4910	Z-171
5	311	KF-311C	Cemented anchor	J-311C	254	10	5000	Z-171
			Whipstock	KOC-311C	295	11 3/5	5050	Z-171

If necessary the development of FKO systems for other casing sizes is possible.

OPEN HOLE
SIDETRACKING SYSTEM

Hydraulic system “Overhead-Hydro.OC” is purposed for provision necessary deviation from main open hole axis to pass over the emergency section and sidetracking. System is non-retrievable and is cemented without preliminary tagging the bottom.



FEATURES:

Reduces time consumption for wellbore preparation (WOC, etc.)

№	Ø open hole, mm	System code	Description	Tool code	OD, mm	OD, in	Length, mm	Tool joint
1	155,6	FKO-155,6 «Overhead-Hydro.OC»	Hydraulic anchor	JGT-155,6.OC	139	5 1/2	4250	Z-102
2	190,5	FKO-190,5 «Overhead-Hydro.OC»	Hydraulic anchor	JGT-190,5.OC	184	7 1/4	4300	Z-117
3	215,9	FKO-215,9 «Overhead-Hydro.OC»	Hydraulic anchor	JGT-215,9.OC	190	7 1/2	4300	Z-117
4	295,3	FKO-295,3 «Overhead-Hydro.OC»	Hydraulic anchor	JGT-295,3.OC	280	11	4900	Z-177

If necessary the development of systems for other open hole sizes is possible.

UNDERREAMERS RR

RR type underreamers are designed for enlarging any interval of wellbore (for liners, tail pipes, and profile packer, repair and remedial cementing intervals) in soft and medium hard formations.

FEATURES:

- hydraulic activation;
- changeable blades;
- reaming coefficient up to 2,8;
- changeable sleeves for various flushing fluids flow rates and densities;
- wide range of reamers.

Expansion of blades equipped with high quality PDC cutters into operating position is provided by the effect of differential pressure in the reamer body.

Delivery set of all types of underreamers includes back valve which prevents tool from sludging during round-trip operations.

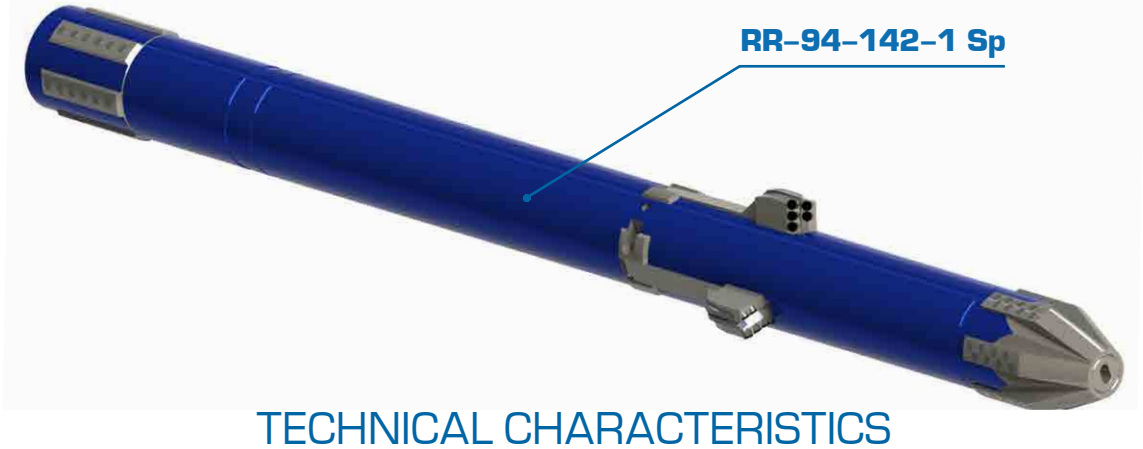
Size	Body OD, in	Stabilizers diameter, in	Reaming diameter, in	Length, in	Tool joint	
					GOST 28487-90	API
RR-78-120-1	3 8/35	3 8/35	4 71/98	40 13/55	Z-66	2 3/8 Reg
RR-92-156-1	3 28/45	3 7/10	6 1/7	42 25/69	Z-73	NC-26
RR-94-142-1	3 7/10	3 7/10	5 13/22	47 7/8		
RR-105-132-1C	4 2/15	4 21/43	5 13/66	39 31/48	Z-86	NC-31
RR-105-215-1	4 10/47	4 10/47	8 46/99	47 21/86		
RR-118-127-1	4 31/48	4 31/48	5	58 15/56		
RR-118-130-1	4 31/48	4 31/48	5 2/17	58 15/56		
RR-118-132-1C	4 31/48	4 31/48	5 13/66	56 4/39		
RR-118-137-1	4 31/48	4 31/48	5 13/33	58 15/56		
RR-118-146-1C	4 31/48	4 31/48	5 3/4	56 4/39		
RR-118-149-1	4 31/48	4 31/48	5 13/15	58 15/56		
RR-118-152-1	4 31/48	4 31/48	5 62/63	58 15/56		
RR-118-156-1	4 31/48	4 31/48	6 1/7	58 15/56		
RR-115-226-1	4 48/91	4 17/30	8 79/88	50 63/64		
RR-115-226-1.118	4 48/91	4 31/48	8 79/88	50 63/64		
RR-120-192-1	4 71/98	4 49/61	7 52/93	50 63/64		
RR-120-226-1	4 71/98	4 49/61	8 79/88	50 63/64		
RR-120-226-1.136	4 71/98	5 28/79	8 79/88	50 63/64		
RR-122-156-1	4 49/61	5 13/30	6 1/7	59 13/75		
RR-132-168-1	5 13/66	5 13/22	6 43/70	66 21/62	Z-102	NC-38
RR-132-168.138	5 13/66	5 13/30	6 43/70	66 21/62		
RR-132-226-1	5 13/66	5 28/79	8 79/88	55 48/53		
RR-138-175-1	5 13/30	5 43/52	6 8/9	68 46/59		
RR-138-190,5-1	5 13/30	6 3/10	7 1/2	53 6/7		
RR-138-190,5-1.139	5 13/30	5 43/91	7 1/2	53 6/7		
RR-138-215,9-1	5 13/30	5 43/91	8 1/2	53 6/7		
RR-138-226-1	5 13/30	5 13/22	8 79/88	53 46/59		
RR-138-240-1	5 13/30	5 13/22	9 22/49	53 46/59		
RR-138-280-1	5 13/30	5 13/22	11 2/85	53 46/59		
RR-142-400-1	5 13/22	5 13/22	15 3/4	56 1/7		
RR-142-500-1	5 13/22	5 13/22	19 37/54	56 1/7		
RR-158-194-1C	6 15/68	6 21/62	7 37/58	55 2/17	Z-133	NC-50
RR-185-240-1	7 19/67	8 9/26	9 22/49	66 9/13	Z-147	5 ½FH
RR-185-310-1	7 19/67	8 9/26	12 17/83	66 9/13		
RR-185-380-1	7 19/67	8 9/26	14 49/51	66 9/13		
RR-208-220,7-1	8 17/90	8 9/26	8 31/45	71 17/20		
RR-206-240-1	8 1/9	8 9/26	9 22/49	71 17/20		
RR-208-240-1	8 17/90	8 9/26	9 22/49	71 17/20		
RR-208-400-1	8 17/90	8 9/26	15 3/4	67 1/8		
RR-260-310-1	10 13/55	11 5/12	12 17/83	76 71/92	Z-171	6 5/8 FH
RR-260-330-1	10 13/55	11 5/12	13	76 71/92		

Underreamer RR-142-400-1 is designed for reaming 146-150mm diameter wellbore up to 400mm in soft rocks of 2-3 category of hardness in any interval.

FEATURES:

- high performance characteristics;
- reaming coefficient up to 3,5.

RR Sp type underreamers are designed for carrying out special operations in open hole intended to form a cavity within a wellbore for further intentional sidetracking from original hole.



TECHNICAL CHARACTERISTICS

Size	Body OD, in	Stabilizers diam-eter, in	Extended blades diameter, in	Length, in	Tool joint	
					GOST 28487-90	API
RR-78-120 Sp-1	3 8/35	3 8/35	4 71/98	40 13/55	Z-66	2 3/8 Reg
RR-94-142 Sp -1	3 7/10	3 7/10	5 13/22	47 7/8	Z-73	NC-26
RR-118-156 Sp -1	4 31/48	4 31/48	6 1/7	58 15/56	Z-86	NC-31
PP-138-200 Сп-1	5 13/30	5 27/49	7 7/8	68 46/59		

UNDERREAMERS RR H

RR H underreamers are designed for reaming any intervals of wellbore as a part of BHA with pilot bit or for reaming previously drilled section.

RR–208–240 H

RR–208–240 Y WITH BIT

FEATURES:

- hydraulic activation;
- changeable blades;
- capability of operation both with bit and stabilizer;
- high tool life.

TECHNICAL CHARACTERISTICS

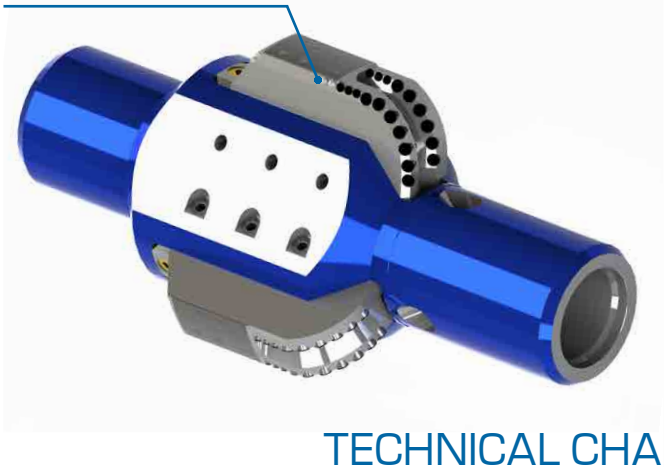
Size	Body OD, in	Stabilizers diameter, in	Reaming diameter, in	Length, in	Tool joint	
					GOST 28487-90	API
RR-118-132H	4 31/48	4 31/48	5 13/66	47	Z-86	NC-31
RR-118-137H			5 13/33			
RR-118-146H			5 3/4			
RR-118-156H			6 1/7			
RR-138-175H	5 13/30	5 43/52	6 8/9	48 37/87	Z-102	NC-38
RR-158-194H	6 15/68	6 21/62	7 37/58	49 10/47	Z-133	NC-50
RR-208-226H	8 17/90	8 9/26	8 79/88	58 1/14	Z-147	5 1/2 FH
RR-208-240H-1			9 22/49	75 13/33		

All reamers can be shipped with additional set of blades that can be easily replaced on the rig site.

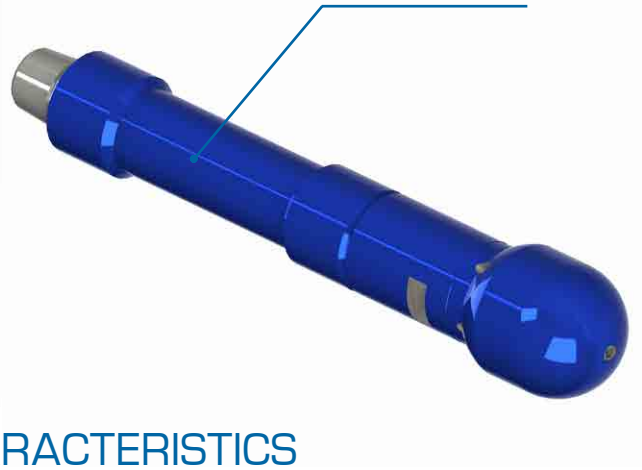
RL TYPE HOLE OPENERS

RL type hole openers are designed for drilling wells with pilot bit or enlarging previously drilled intervals. Service life of reamers is equal to service life of PDC bits in same conditions; herewith enlarging is carried out at high ROP. Reamer blades, equipped with PDC cutting structure, have back reaming cutters and reinforced gage protection. For enlarging previously drilled intervals reamer can be completed with extending sub and PZU (special tool preventing from accidental sidetracking) equipped with jet nozzles.

RL–295–510



PZU–280



TECHNICAL CHARACTERISTICS

Size	Body OD, in	Min diameter of pilot hole (pilot bit), in	Max reaming diameter, in	Length, in	Tool joint GOST 28487-90	PZU
RL-152-215,9	5 62/63	6	8 1/2	21 17/26	Z-102/Z-88	PZU–140
RL-216-295,3	9 1/4	8 1/2	11 5/8	30 17/24	Z-117/Z-117	PZU–200
RL-216-311	9 1/4	8 1/2	12 21/86	30 17/24	Z-117/Z-117	
RL-295-394	12 17/83	11 5/8	15 43/84	38 7/12	Z-147 / Z-152 Z-171 / Z-152 Z-171 / Z-171	PZU–280
RL-295-398	12 17/83	11 5/8	15 2/3	38 7/12	Z-147 / Z-152 Z-171 / Z-152 Z-171 / Z-171	
RL-295-444,5	12 17/83	11 5/8	17 1/2	38 7/12	Z-147 / Z-152 Z-171 / Z-152 Z-171 / Z-171	
RL-295-495	13 46/59	11 5/8	19 21/43	39 10/27	Z-147 / Z-152 Z-171 / Z-152 Z-171 / Z-171	
RL-295-510	13 46/59	11 5/8	20 7/89	39 10/27	Z-147 / Z-152 Z-171 / Z-152 Z-171 / Z-171	
RL-295-550	13 46/59	11 5/8	21 17/26	39 10/27	Z-147 / Z-152 Z-171 / Z-152 Z-171 / Z-171	
RL-295-585	13 46/59	11 5/8	23 1/32	39 10/27	Z-147 / Z-152 Z-171 / Z-152 Z-171 / Z-171	
RL-394-660,4	15 43/84	15 1/2	26	39 10/27	Z-171 / Z-171	PZU–350
RL-394-710	15 43/84	15 1/2	27 20/21	39 10/27	Z-171 / Z-171	

CASING SECTION MILLING TOOLS

Expandable mill FKR is designed for continuous casing section milling throughout the diameter in any interval of wellbore. Expansion of blades, reinforced with high quality composite material, into operating position is provided by the effect of differential pressure in mill body. FKR delivery set includes back valve, which prevents tool from sludging during round-trip operations.

FEATURES:

- hydraulic activation;
- changeable blades;
- capability of using both for cutting-off and for full milling of casing;
- changeable sleeves for different flow rates.

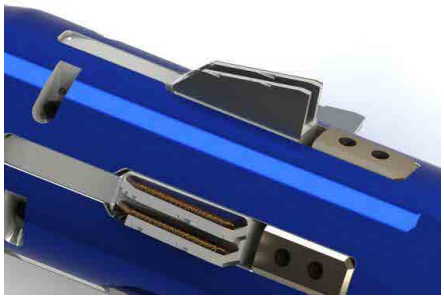
TECHNICAL CHARACTERISTICS

Size	Cutoff casing diameter, in	Body OD, in	Stabilizer diameter, in	Extended blades OD, in	Tool joint	
					GOST 28487-90	API
FKR-102-1	4 1/64	3 3/20	3 8/35	5	Z-66	2 3/8 Reg
FKR-114-1	4 21/43	3 46/99	3 7/10	5 13/22	Z-73	NC-26
FKR-127-1	5	4 10/47	4 10/47	6 1/7	Z-86	NC-31
FKR-140-1	5 22/43	4 1/4	4 17/30	6 37/81		
FKR-146-1	5 3/4	4 21/43	4 15/17	6 9/13		
FKR-168-1	6 43/70	5 13/30	5 27/49	8 9/26	Z-102	NC-31
FKR-178-1	7	5 43/52	5 48/53	8 46/59		
FKR-194-1	7 37/58	6 1/16	6 37/81			
FKR-219-1	8 28/45	7 19/67	7 25/69	10 17/27	Z-147	5 1/2 FH
FKR-245-1	9 31/48		8 9/26	11 5/12		

FKR blades are made from high quality materials including carbide plates and reinforcing of the back of the blade with crushed carbide. For the most of RKR the cutting structure on the blades is doubled.

CASING SECTION MILLING TOOLS

Mill for cutting off and full milling 324mm casing section mm in any vertical interval.



FEATURES:

- blades are equipped with high quality carbide plates.

TECHNICAL CHARACTERISTICS

Characteristics	Value
OD, mm	260
OD over stabilizers, mm	290
Blades quantity	5
Max blades diameter, mm	370
Length, mm	1820
Recommended weight on mill, t	3...6
Recommended flow rate*, l/s	17...32
Recommended pressure drop*, atm	8...15
Recommended RPM	60...80
Tool joint GOST 28487-2018, box	Z-171
Weight, kg	600

IDENTIFICATION MARKS

FKR–324–1

FKR – mill type.

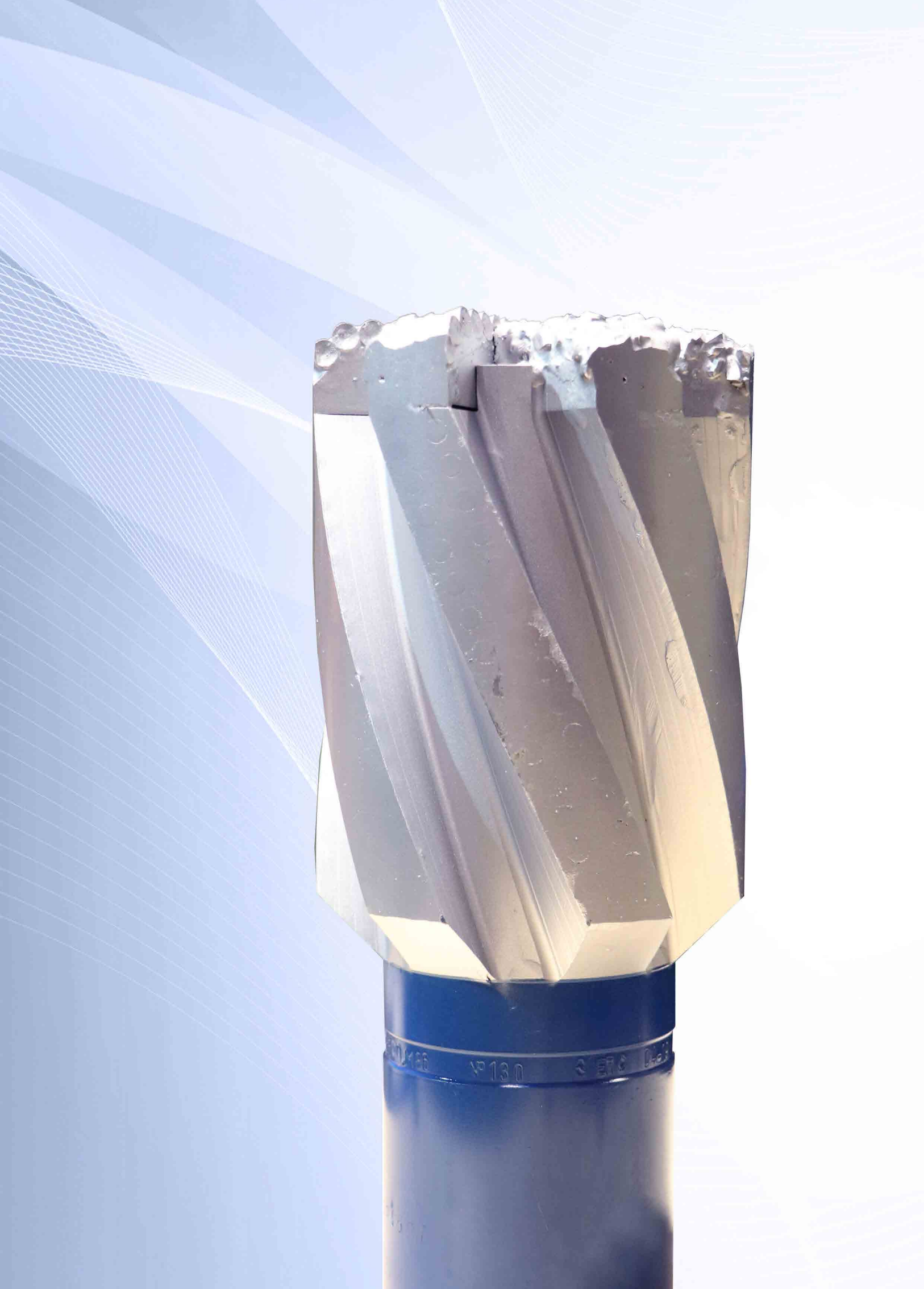
324 – casing diameter.

1 – modification.

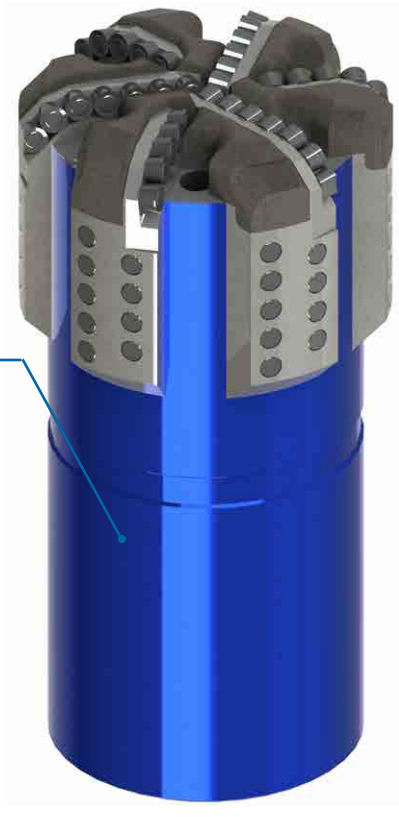
Internal hydromechanical pipe cutters “TGMV” are designed for cutting part of casing or tubing string in well for further retrieving to surface during repair-andrenewal operations. Expansion of blades, reinforced with high quality composite material, into operating position is provided by the effect of differential pressure in pipe cutter body.

Size	Body OD, in	Stabilizer OD, in	Cutoff casing diameter, in	Extended blades OD, in	Tool joint		Weight, kg
					GOST P 50864-96	API	
TGMV – 60	1 71/92	1 73/90	2 25/69	2 20/21	Z – 35	-	6
TGMV – 73	2 1/6	2 1/6	2 7/8	3 46/59	Z – 42		8,5
TGMV – 89		2 13/25	3 1/2	3 15/16			9,1
TGMV -102	3 3/20	3 8/35	4 1/64	4 9/22	Z – 66	-	35
TGMV – 114	3 7/10	3 7/10	4 21/43	4 15/17	Z – 73	NC-26	50

Delivery set includes interchangeable blades easily replaceable in rig conditions.



MILLS



Special junk mill FZ2 Sp is the most effective and multi-purpose tool for drilling out cement and sand plugs, casing equipment, milling metal objects on the bottomhole Effective cutting at high ROP is achieved due to tungsten carbide plates and self-sharpening effect.

Combined cutting structure considerably increases mill operating characteristics and expands area of application: besides milling light alloy pipes, tubings, drilling out cement plugs at favorable conditions FZ2 Sp successfully recommended itself in milling casing equipment and drill pipes.

TECHNICAL CHARACTERISTICS

Mill type	OD, mm	OD, in	Tool joint	
			GOST 28487-90	API
FZ2 Sp	57...70	2 10/41 - 2 65/86	Z-45	-
	80...97	3 3/20 - 3 9/11	Z-66	2 3/8 Reg
	98...114	3 6/7 - 4 41/84	Z-73	NC-26
	115...124	4 48/91 - 4 15/17	Z-76	2 7/8 Reg
	113...143	4 35/78 - 5 17/27	Z-86	NC-31
	152	5 62/63	Z-88	3 1/2 Reg
	224	8 9/11	Z-102	NC-38
	216	8 1/2	Z-117	4 1/2 Reg

ООО «Татнефть-РемСервис»

Диплом
ФИНАЛИСТА
РЕСПУБЛИКАНСКОГО КОНКУРСА
«ЛУЧШИЕ ТОВАРЫ БАШКОРТОСТАНА»
ООО НПП «БУРИНТЕХ»

BOTTOM–HOLE JUNK MILLS

Junk mill FZ2 is effective tool for milling metal objects on the bottomhole. Cutting surface is reinforced with composite material made up of granulated hard alloy and binder material that allows mill to easily operate in difficult milling conditions where high durability of tool is required.

Concave junk mill FZV2 is modification of FZ2 with concave working surface that allows centralizing unfixed milling objects relative to mill.

At customer request FZ2 and FZV2 mills can be produced with increased cover of granulated hard alloy that is designated by “Y” letter in the end of tool series name.

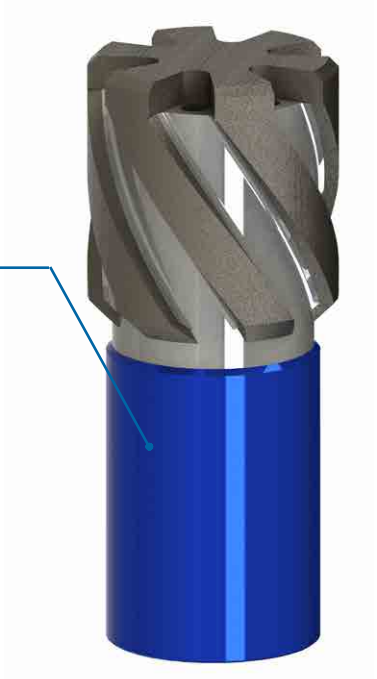
TECHNICAL CHARACTERISTICS

Mill type	OD, mm	OD, in	Tool joint	
			GOST 28487-90	API
FZ2	83 … 95	3 19/71 - 3 37/50	Z-66	2 3/8 Reg
	102 … 127	4 1/64 - 5	Z-76	2 7/8 Reg
	130 … 145	5 2/17 - 5 17/24	Z-88	3 1/2 Reg
	180 … 220	7 2/23 - 8 41/62	Z-117	4 1/2 Reg
	268 … 270	10 27/49 - 10 17/27	Z-147	5 1/2 FH
FZV2	210 … 220	8 19/71 - 8 41/62	Z-117	4 1/2 Reg
	268 … 270	10 27/49 - 10 17/27	Z-147	5 1/2 FH

BOTTOM–HOLE JUNK MILLS

Spiral junk mill FZS2 is designed for drilling out cement and sand plugs, casing equipment, milling metal objects on the bottomhole.

Special feature of this tool is cutting face and spiral gauging blades reinforced with granulated hard alloy.



Pilot mill FP2 is designed for milling components of tubings, liners, packers, joints and sleeves during repair-and-renewal operations.

Capable of operating in heavy milling conditions where high durability of tool is required. Main design feature is cutting surface reinforced with composite material made up of granulated hard alloy and binding material.

Bit-mill DTF is designed for drilling out cement and sand plugs, casing equipment in favorable conditions with small impact loads.

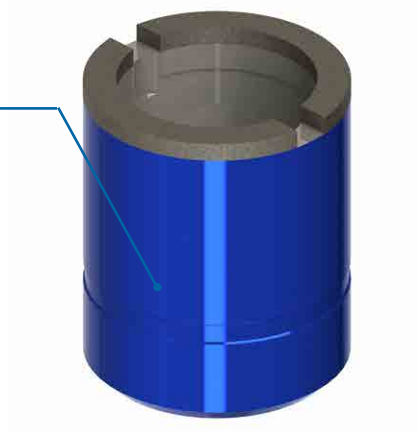
JUNK MILLS

Junk mills FZ2Z are effective tool for milling cement plugs, sand plugs, casing mountings, metal objects on the bottomhole as well as milling in horizontal well with liner-assemblies for multistage hydraulic fracturing.

TECHNICAL CHARACTERISTICS

Mill type	OD, mm	OD, in	Flushing ports, pcs	Flushing ports diameter, mm	Height, mm	Weight, kg	Tool joint
FZ2-82Z.H66	82	3 21/92	4	10	210	6	Z-66
FZ2-116Z.H76	116	4 17/30	4	12	320	14	Z-76
FZ2-118Z.H76	118	4 51/79	4	12	320	14	Z-76
FZ2-120Z.H76	120	4 21/29	4	12	320	15	Z-76
FZ2-122Z.H76	122	4 53/66	4	12	320	15	Z-76
FZ2-124Z.M86	124	4 15/17	4	14	300	18	Z-86
FZ2-125Z.H76	125	4 35/38	4	14	320	16	Z-76
FZ2-127Z.H76	127	5	4	14	320	17	Z-76

Washover mill FK2 Sp is reinforced with granulated hard alloy and tungsten carbide teeth. Designed for milling stuck drill pipes, tubings and sucker rods. All washover mills are produced with welding bevel.



Washover mill FK2 has massive cutting edge reinforced with granulated hard alloy and designed for milling big metal objects in heavy conditions.

Magnetic mill FM is multi-purpose tool designed for retrieving metal objects with ferromagnetic properties from well. Cutting mill crown allows milling metal object before retrieving.

TECHNICAL CHARACTERISTICS

Mill type	OD, mm	OD, in	Tool joint	
			GOST 28487-90	API
FM	85 ... 88	3 9/26 - 3 13/28	Z-66	2 3/8 Reg
	103 ... 122	4 1/18 - 4 53/66	Z-76	2 7/8 Reg
	135 ... 145	5 17/54 - 5 17/24	Z-88	3 1/2 Reg
	150 ... 170	5 67/74 - 6 9/13	Z-117	4 1/2 Reg
	195 ... 210	7 11/16 - 8 19/71	Z-121	4 1/2 FH

TAPER STRING MILLS

Taper string mills are designed for reaming elliptical pipes (restoring internal diameter), milling out a collapsed section of pipes, removing an internal surface roughness and cleaning a casing window.

Main feature of this tool is a tapered working surface reinforced with crushed carbide. Mill RK2 has apical angle 10o, string mill FKK2 has angle 20°, window mill FRK2 has angle 60°.

At customer option all mills of FKK2 and RK2 types can be produced with central flushing hole, thus marking will include index "C".

FRK2 FKK2 RK2

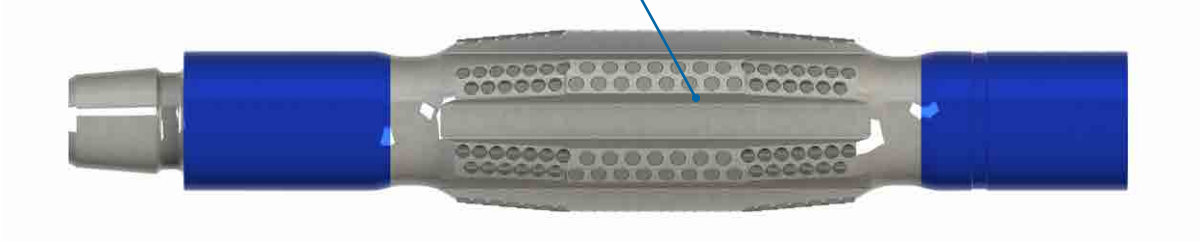
TECHNICAL CHARACTERISTICS

Mill type	OD, mm	OD, in	Tool joint	
			GOST 28487-90	API
FKK2	85	3 9/26	Z-42	-
	90 ... 106	3 44/81 - 4 9/52	Z-66	2 7/8 Reg
	114 ... 126	4 41/84 - 4 73/76	Z-76	2 7/8 Reg
	127 ... 148	5 - 5 62/75	Z-88	3 1/2 Reg
	149 ... 198	5 13/15 - 7 66/83	Z-121	4 1/2 FH
	213 ... 272	8 27/70 - 10 17/24	Z-147	5 1/2 FH
RK2	120,3	4 67/91 - 4 9/52	Z-76	2 7/8 Reg
	122 ... 126	4 53/66 - 4 73/76	Z-86	NC-31
	141 ... 146	5 27/49 - 5 3/4	Z-88	3 1/2 Reg
FRK2	122 ... 124	4 53/66 - 4 15/17	Z-76	2 7/8 Reg
	140 ... 146	5 22/43 - 5 3/4	Z-86	NC-31

Reamer bits KRp-2ST is designed for calibrating and reaming well sections represented by medium, hard and abrasive formations. Reamer bits allow reaming horizontal and high dogleg severity wells preventing accidental sidetracking and sizing wellbore to nominal diameter both moving down and up.

Reamer bits are produced with two tapered surfaces. Tapered surfaces, reinforced with tungsten carbide inserts with cutting edge, comprise reaming part of a tool.

KRp–123,8–2CT



TECHNICAL CHARACTERISTICS

Reamer bit type	OD, mm	OD, in	Default quantity of blades	Tool joint	
				GOST 28487-90	API
KRp	113,5-117,5	$4\,^{15}/_{32}$ - $4\,^{5}/_{8}$	4	Z-73	NC-26
	120,6-123,8	$4\,^{3}/_{4}$ - $4\,^{7}/_{8}$		Z-76/Z-86	2 7/8 Reg / NC-31
	125-139,7	$4\,^{82}/_{89}$ - $5\,^{1}/_{2}$		Z-86	NC-31
	140-146	$5\,^{22}/_{43}$ - $5\,^{3}/_{4}$	6	Z-86	NC-31
	146-165	$5\,^{3}/4$ - $6\,^{1}/_{2}$		Z-102	NC-38
	210-218	$8\,^{15}/_{56}$ - $8\,^{7}/_{12}$		Z-133/Z-147	NC-50 / 5 1/2 FH

IDENTIFICATION MARKS

KRp(S)–142,9–2CT(L).4.P(M)–83–83

(S) – spiral blades
(L) – left hand design (adding to describing thread)
P – means body type “box-pin”
(M) – body type “box-box”
83 – unconventional quantity of blades

DUMP SUB

Dump sub is installed above motor and is designed for communicating drill pipes shank bore with annular space during tripping operations.

РОССИЙСКАЯ ФЕДЕРАЦИЯ

ПАТЕНТ

НА ПОЛЕЗНУЮ МОДЕЛЬ

№ 160015

ПЕРЕВОДНИК ПЕРЕЛИВНОЙ ЗАБОЙНОГО ДВИГАТЕЛЯ

Патентообладатель(ли): *Общество с ограниченной ответственностью Научно-производственное предприятие "БУРИНТЕХ" (ООО НПП "БУРИНТЕХ") (RU)*

Автор(ы): *см. на обороте*

Заявка № 2015132437

Приоритет полезной модели **03 августа 2015 г.**

Зарегистрировано в Государственном реестре полезных моделей Российской Федерации **05 февраля 2016 г.**

Срок действия патента истекает **03 августа 2025 г.**

Руководитель Федеральной службы по интеллектуальной собственности

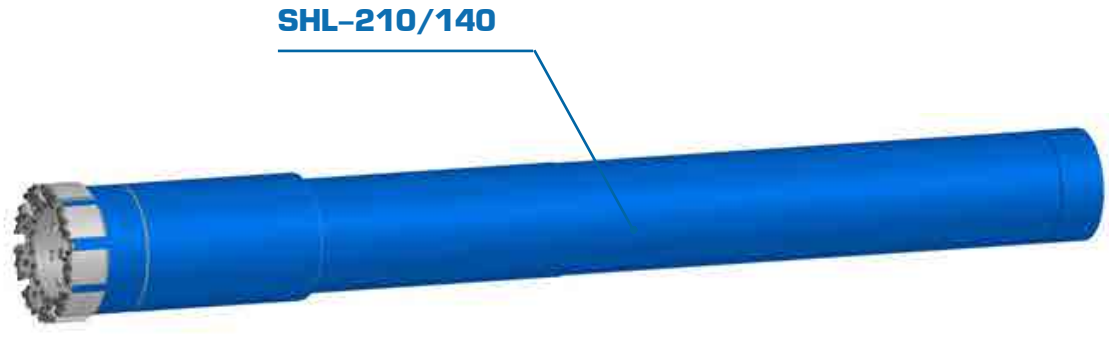
Г.П. Ивлиев

TECHNICAL CHARACTERISTICS

Name	OD, mm	Flow channel diameter, mm	Tool joint GOST	Total length (without thread), mm	Weight no more than, kg	Mud flow rate though valve, l/s
PP-95	108	25	Z-86/ Z-86	459/370	22	5...10
PP-120	120	25	Z-102/ Z-102	502/400	30	10...20
PP-172	170	50	Z-133/ Z-133	600/486	70	25...57
PP-240	203	55	Z-171/ Z-171	697/570	120	30...75

SHL–210/140 TRI–CONE CATCHER

Catcher for retrieving 215.9 mm tri-cones from the bottom



TECHNICAL CHARACTERISTICS

Characteristics	Value
Core bit OD, mm	210
Core bit ID, mm	140
Body OD, mm	172
Cutting structure	Carbide inserts
Flushing ports, pcs	9
Flushing ports diameter, mm	12
Tool joint GOST 28487-2018, box	Z-133
Length, mm	1730
Weight, kg	120

OPERATING CHARACTERISTICS

Characteristics	Value
RPM	38...120
Weight on mill, t	3...6
Flow rate, l/s	20...32

IDENTIFICATION MARKS

SHL–210/140

SHL – catcher.

210 – outside diameter.

140 – inside diameter.

FOR NOTES

FOR NOTES

BURINTEKH

Address: 4/1 Yubileynaya Str., Ufa, Republic of Bashkortostan,
Russia, 450029
Phone: +7 347 246–08–72,
Fax: +7 347 291–25–32, 291–25–33
E–mail: bit@burinteh.com;
www.burintekh.com