BITTEKHNIKA

TOOLS FOR SIDETRACKING

BITTEKHNIKA, LLC was founded in 1996. Today it is a fast-growing and high developing company. Traditions and innovative technologies in design and production form basis of our company.

BITTEKHNIKA, LLC strives for constant progress and innovations, product differentiation and customer service improvement.

The company has developed whipstocks for different setting conditions. Special attention is payed to preparation of sidetracking interval, emergency works and well intervention. To provide these works with high-quality equipment we produce sweepers, scrapers, rings and taper mills.

In 2011 the range of tools expanded dramatically: we started to design and produce exclusive fishing tools such as overshots, spears, taper taps, die collars etc.

BITTEKHNIKA, LLC offers not only consulting services in choosing right equipment but also provides technical assistance.

Our geography of products and service supply covers territory of the Russian Federation as well as Eastern Europe, Near East and Asia.

In 2011 BITTEKHNIKA, LLC got recertification of quality management system in compliance with ISO 9001:2008.

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Application:

The Retrievable Whipstock KOI-MF is designed to provide necessary deviation of window mills and reamer mills from the axis of main wellbore while cutting "window" in production casing. It is also used for deviation of cutting and drilling tools while drilling additional borehole in the well.

The Whipstock is used with bottom-hole support (cement plug or packer plug).

To trip, set and cut "window" in casing in a single trip Retrievable Whipstock is used with Starting-Window Mill and Watermelon Mill.

After finishing "window" cutting operation Whipstock may be retrieved from the well by Fishing Hook KL or Die Collar LKz.

Technical data:

Code	Casing diameter, in	Diameter D, in	Total length L, ft	Anchor Length L1, ft	Wedge length L2, ft	Weight, lb
KOI-112MF	5-1/2	4.41	12.75	4.88	7.87	403.4
KOI-115MF	5-3/4	4.53	12.75	4.88	7.87	423.3
KOI-135MF	6-5/8	5.32	16.85	7.01	9.84	749.6
KOI-145MF	7.0	5.71	17.25	7.02	10.23	881.8

Application:

The Whipstock KOP-SF is designed to provide necessary deviation of window mills and reamer mills from the axis of main wellbore while cutting "window" in production casing.

It is also used for deviation of cutting and drilling tools while drilling an additional borehole in the well.

To trip, set and cut «window» in casing in one trip the Whipstock is used in conjunction with Starting-Window Mill FSO and Watermelon Mill FA.

The Whipstock is used with bottom-hole support (cement plug or packer plug).

Technical data:

Code	Casing diameter, in	Diameter D, in	Total length L, ft	Anchor length L2, ft	Wedge Length L1, ft	Weight, lb
KOP-89SF	4-1/2	3.5	13.29	6.73	6.56	277.8
KOP-112SF	5-1/2	4.41	14.53	6.66	7.87	463.0
KOP-115SF	5-3/4	4.53	14.78	6.58	8.2	507.1
KOP-135SF	6-5/8	5.32	17.52	7.35	10.17	749.6
KOP-145SF	7.0	5.7	19.39	8.89	10.5	815.7
KOP-155SF	7-5/8	6.1	20.08	10.99	9.09	1236.8
KOP-190SF	9-5/8	7.48	19.95	9.68	10.83	1948.9

HYDRAULIC-MECHANICAL WHIPSTOCK

KOGM

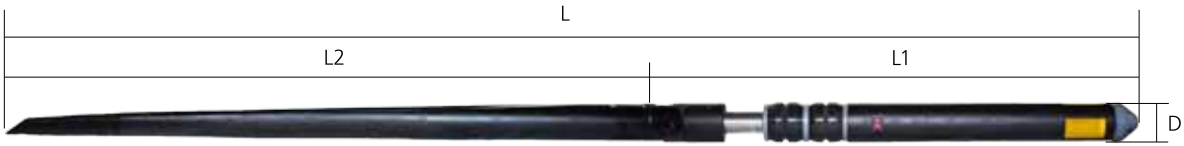
Application:

The Hydraulic-Mechanical Whipstock KOGM is designed to provide necessary deviation of window mills and reamer mills from the axis of main wellbore while cutting "window" in casing.

It is also used for deviation of cutting and drilling tools while drilling an additional borehole in well and further trip of liner.

The Whipstock is used without bottom-hole support. It is irretrievable.
It can be used in working temperature interval up to 100°C.

To trip, set and cut "window" in casing in a single trip the Whipstpck is used with StartingWindow Hydraulic Mill FSO-GT and Watermelon Mill FA.



Technical data:

Code	Casing diameter, in	Diameter, D in	Total length L, ft	Wedge length, ft	Weight, lb
KOGM-112	5-1/2	4.41	13.73	7.87	518.1
KOGM-115	5-3/4	4.53	13.73	8.07	529.1
KOGM-135	6-5/8	5.32	16.21	9.81	826.7
KOGM-145	7.0	5.71	16.58	12.04	948.0
KOGM-195	9-5/8	7.48	18.12	12.86	1 929.0

MECHANICAL WHIPSTOCK

KOM

Application:

The Mechanical Whipstock KOM is designed to provide necessary deviation of window mills and reamer mills from the axis of main wellbore while cutting "window" in casing.

The Whipstock is used without bottom-hole support. At client's request the Whipstock can be made retrievable or irretrievable.

To trip, set and cut "window" in casing in a single trip the Whipstock is used with Starting Window Mill FSO and Watermelon Mill FA.

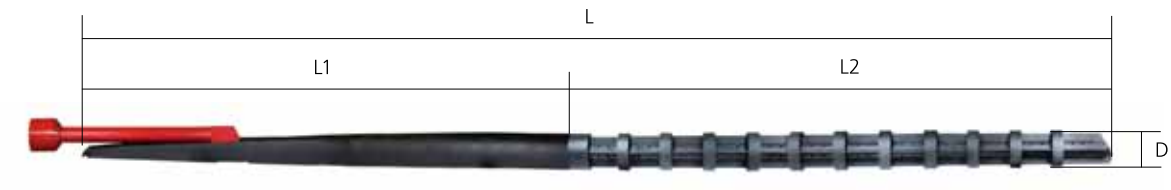
Technical data:

Code	Casing diameter, in	Max OD of whipstock, in	ID of casing string, in	Total length, ft	Anchor length L1, ft	Sliding unit length L2, ft	Wedge length L3, ft	Weight, lb
KOM-112	5-1/2	4.57	4.78-5.01	18.14	6.37	3.9	7.87	617.3
KOM-115	5-3/4	4.8	5.0-5.24	18.68	6.37	4.44	7.87	685.6
KOM-135	6-5/8	5.51	5.67-6.05	21.1	6.23	5.02	9.84	998.7
KOM-145	7.0	5.71	5.92-6.54	21.33	6.23	5.19	9.91	1 076.0
KOM-190	9-5/8	8.11	8.54-9.06	24.69	7.09	6.77	10.83	2 469.0
KOM-280	13-3/8	11.22	11.65-12.08	34.78	6.79	10.27	10.27	4 409.0

Application:

The Cemented Whipstock KOTS is designed to provide necessary deviation of rock-destruction tool from the axis of main wellbore during sidetracking and drilling additional borehole to bypass the emergency section.

The Whipstock is used with bottom-hole support. The Whipstock is irretrievable and after being run, set and cemented in wellbore the Whipstock remains there permanently.



Technical data:

Code	Open hole diameter, in	Diameter D, in	Total length L, ft	Wedge length L1, ft	Anchor length L2, ft	Weight, lb
KOTS–135	7.5-8.5	5.32	20.01	9.84	10.17	848.8
KOTS–190	8.5 - 9.63	7.48	34.78	16.73	18.04	1 224.0
KOTS–245	10.63	9.65	36.25	16.73	19.52	1 521.0
KOTS–426	19.29-20.0	16.77	42.98	11.81	31.17	3 042.0

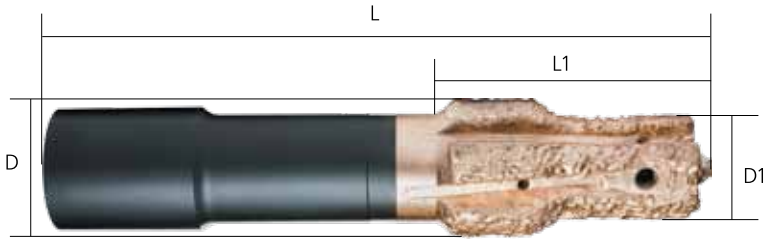
STARTING-WINDOW MILL

FSO

Application:

The Starting-Window Mill FSO is designed to run in and set whipstock on the bottom and to mill "window" in casing in a single trip.
It may be used:

- to trip and set the Whipstock;
- independently with washover through watercourses;
- in conjunction with one (two) watermelon mill.



Technical data:

Code	Casing diameter, in	Diameter D, in	Diameter D1, in	Total length L, ft	L1, ft	Connecting thread*	Weight, lb
FSO–115	5-1/2	4.53	3.74	1.8	0.78	2-7/8 Reg	66.1
FSO–124	5-3/4	4.88	3.9	1.8	0.79	2-7/8 Reg	68.0
FSO–144	6-5/8	2.67	4.09	1.9	0.85	3-1/2 Reg	77.1
FSO–155	7.0	6.1	4.45	1.97	0.85	2-7/8	85.9
FSO–216	9-5/8	8.5	6.14	2.23	1.21	4 IF	198.5

* Subject to agreement

STARTING-WINDOW HYDRAULIC HARD-ALLOYED MILL

FSO-GT

Application:

The Starting-Window Hydraulic Hard-Alloyed Mill FSO-GT is used to run in and set whipstocks KOGM and KOGM-I through line of resultant pressure (hydraulic line) and to cut "window" in casing in one trip.

The mill can be used:

- individually with washover through water courses in body of the Mill;
- independently with washover through watercourses;
- in conjunction with one (two) Watermelon Mill.

Technical data:

Code	Casing diameter, in	Diameter D, in	Diameter D1, in	L, ft	L1, ft	Connecting thread*	Weight, lb
FSO-115GT	5-1/2	4.53	3.74	1.8	0.78	2-7/8 Reg	66.1
FSO-124GT	5-3/4	4.88	3.9	1.8	0.79	2-7/8 Reg	68.0
FSO-144GT	6-5/8	2.67	4.09	1.9	0.85	3-1/2 Reg	77.1
FSO-155GT	7.0	6.1	4.45	1.97	0.85	2-7/8 IF	85.9
FSO-216GT	9-5/8	8.5	6.14	2.23	1.21	4-1/2 IF	198.5

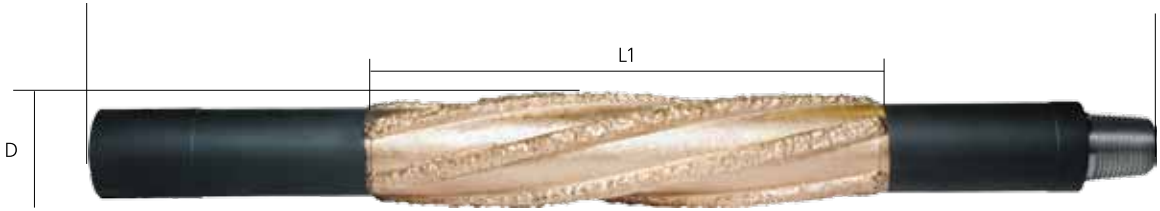
* Subject to agreement

WATERMELON MILL

FA

Application:

The Watermelon Mill FA is used to gauge "window" in casing string in order to provide rock-destruction tool passability having diameter not exceeding the nominal diameter of the Mill.
The Watermelon Mill may be used:
• independently on a tool with washover through watercoourses in box (pin);
• in conjunction with second Watermelon Mill and Window Mill with washover through watercourses on Window Mill;
• in conjunction with rock-destruction tool with washover through watercourses of rock-destruction tool;
• in conjunction with Starting-Window Mill to cut and gauge "window" in a single trip.



Technical data:

Code	Casing diameter, in	Diameter D, in	Total length L, ft	L1, ft	Connecting thread*	Weight, lb
FA–92	4-1/2	3.62	3.74	1.97	NC 23	85.9
FA–112	5-1/2	4.41	4.2	1.97	2-7/8 Reg	114.64
FA–116	5-1/2	4.57	4.2	1.97	2-7/8 Reg	127.8
FA–118	5-1/2	4.65	4.2	1.97	2-7/8 Reg	134.48
FA–120	5-1/2	4.72	4.2	1.97	2-7/8 Reg	141.1
FA–124	5-3/4	4.88	4.2	1.97	2-7/8 Reg	145.5
FA–142	6-5/8	5.59	4.2	1.97	3-1/2 Reg	163.14
FA–151	7.0	5.94	4.2	1.97	3-1/2 Reg	165.35
FA–216	9-5/8	8.5	4.92	2.62	4-1/2 IF	198.42

* Subject to agreement

FKK

Application:

The Taper Mill FKK is used for additional calibration of wellbore at the exit of cut "window" in casing string in order to provide drilling tool passability during sidetracking.
The Taper Mill may be used:

- independently on the tool with washover through central and side openings;
- in conjunction with Watermelon Mill with washover through watercourse in Taper Mill.

The Taper Mill is strengthened with tungsten carbide powder and can be produced in spiral and straight-tooth configurations.

Technical data

Code	Casing diameter, in	Diameter D, in	Total length L, ft	Length L1,ft	Connecting thread*	Weight, lb
FKK-80	4.0	3.15	3.54	1.62	NC 16	79.4
FKK-95	4-1/2	3.74	3.54	1.62	NC 16	88.2
FKK-110	5.0	4.33	3.54	2.63	2-3/8 Reg	92.6
FKK-121	5-1/2	4.76	3.54	2.63	2-7/8 Reg	101.0
FKK-125	5-3/4	4.92	3.54	2.63	2-7/8 Reg	99.2
FKK-144	6-7/8	5.67	3.54	2.63	2-7/8 IF	143.0
FKK-156	7.0	6.14	3.54	2.63	2-7/8 IF	150.0
FKK-170	7-7/8	6.69	3.94	2.63	3-1/2 IF	198.0
FKK-195	8-7/8	7.68	3.94	2.63	4-1/2 Reg	271.0
FKK-215	9-7/8	8.46	3.94	2.63	4-1/2 Reg	342.0
FKK-240	10-3/4	9.45	3.94	2.63	4-1/2 IF	443.0
FKK-255	11-3/4	10.0	3.94	2.63	4-1/2 IF	470.0
FKK-275	12-3/4	10.8	3.94	2.63	5-1/2 FH	507.0

* Subject to agreement

STRAIGHT BLADE CALIBRATOR

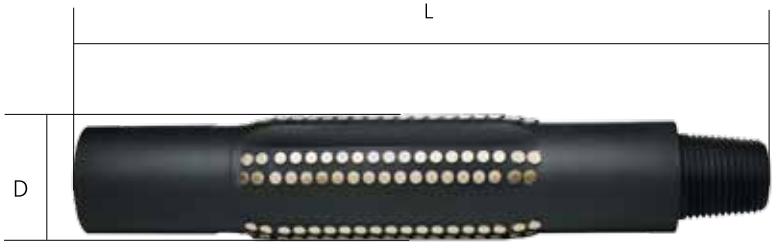
KP

Application:

The Straight Blade Calibrator KP is used to calibrate wellbore walls up to nominal diameter when the rock destruction tool is worn out as well as to center and improve conditions of rock destruction tool operation.

The Calibrator is strengthened with carbide inserts.
It is used in conjunction with:

- rock destruction tool;
- second calibrator;
- milling tools.



Technical data:

Code	Diameter D, in	Total length L, ft	Rotation rate, rpm	Load capacity, lbf	Connecting thread*	Weight, lb
KP–117	4-5/8	2.23			2-7/8 IF	77.2
KP–124	4-7/8	2.23			2-7/8 IF	81.6
KP–139	5-1/2	2.23	60 - 120	1 100 - 11 000	2-7/8 IF	92.6
KP–142,9	5-5/8	2.46			2-7/8 IF	119.0
KP–155,6	6-1/8	2.05			3-1/2 IF	89.9

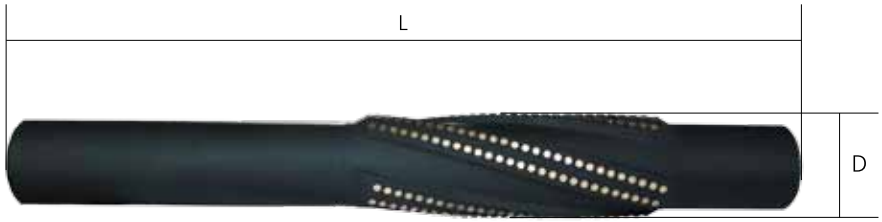
* Subject to agreement

SPIRALED BLADE CALIBRATOR

KS

Application:

The Spiraled Blade Calibrator KS is used to calibrate wellbore walls up to nominal diameter when the rock destruction tool is worn out as well as to center and improve conditions of rock destruction tool operation.
The Calibrator can be used to gauge the wellbore.



Technical data:

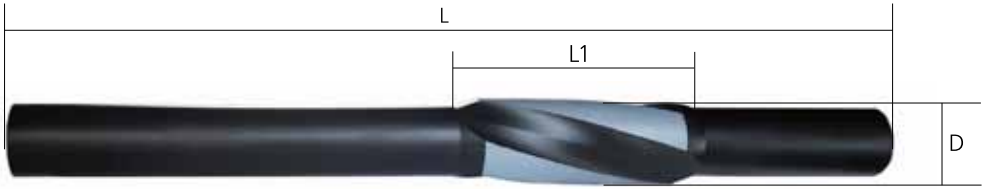
Code	Diameter D, in	Total length L, ft	Connecting thread*	Weight, lb
KS–114,3	4-1/2	2.05	2-1/8 Reg	55.12
KS–123,8	4-7/8	0.85	2-7/8 IF	25.35
KS–142,8	5-5/8	0.9	2-7/8 IF	31.97
KS–215,9	8-1/2	1.42	4-1/2 Reg	122.4
KS–243	9-9/16	4.46	5-1/2 FH	637.1
KS–295,3	11-5/8	3.41	6-7/8 Reg	529.1

* Subject to agreement

NEAR-BIT STABILIZER SD/ STRING STABILIZER SK

Application:

String Stabilizers are used to stabilize and centralize drill string elements and drill strings during borehole drilling.
These Stabilizers have cylindrical form with three spiral blades covered with nickel-chromium alloy and executed in right-hand configuration.
Stabilizers are used for both rotary and turbine drilling.
Stabilizer rotation nearby the drilling bit provides additional support for the bottom of arrangement and minimizes vibration.



Technical data:

Code	Diameter D, in	Total length L, ft	Length of working part L1, ft	Connecting thread*	Weight, lb
SD-149,2	5-7/8	4.75	1.08	3-1/2 Reg	232.0
SD-215	8-1/2	4.76	1.08	5-1/2 FH	441.0
SK-82	3-1/4	2.95	0.82	NC 16	34.8
SK-92	3-5/8	3.44	0.82	2-3/8 Reg	77.2
SK-95	3-3/4	3.44	0.82	2-3/8 Reg	87.1
SK-104	4-1/8	3.94	0.84	2-3/8 Reg	92.6
SK-120	4-3/4	3.61	0.98	2-7/8 Reg	119.0
SK-128	5-1/16	3.77	1.15	2-7/8 Reg	131.0
SK-146	5-3/4	4.92	1.31	3-1/2 Reg	203.0
SK-149	5-7/8	5.41	1.25	3-1/2 IF	265.0
SK-155	6-1/8	5.41	1.64	3-1/2 Reg	229.0

* Subject to agreement

Application:

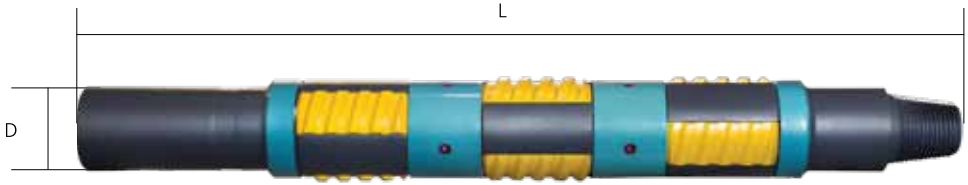
The Scraper SM is used to clean inner walls of casing or tubing string from sludge, cement, rust, paraffin and other sediments.
The Scraper works at translation and rotational motion with fluid circulation.
The Scraper is run in the well on drill pipes and is actuated by drilling rotor or low-speed engine.
The Scraper can be designed in left/right hand configuration.

Technical data:

Code	Nominal casing string D, in	Body OD, in	Connecting thread	Max D of dies projection, in	Total length L, ft	Weight, lb
SM-60	2-3/8	1-13/16	NC 10	2-7/16	1.96	33.07
SM-73	2-7/8	2-7/8	NC 13	2-7/16	2.32	55.12
SM-89	3-1/2	2-7/8	NC 16	3-3/16	2.32	61.73
SM-102	4.0	3-7/8	NC 16	3-7/8	2.64	72.75
SM-114	4-1/2 - 5.0	3-7/2	NC 23	4-3/4	2.64	88.18
SM-140	5-1/2 - 5-3/4	4-7/16	2-7/8 Reg	5-7/16	2.88	105.8
SM-146	5-3/4	4-7/16	2-7/8 Reg	5-7/16	2.88	105.8
SM-168	6-5/8 - 7.0	5-3/8	2-7/8 IF	6-7/4	3.31	167.6
SM-178	7.0	5-3/8	3-1/2 Reg	6-5/8	3.31	295.4
SM-245	9-5/8 - 10-3/4	8-7/16	4-1/2 IF	9-7/16	3.97	405.7
SM-340	13-3/8	10-7/8	6-5/8 Reg	13.0	3.97	560.0

Application:

The Hydraulic Scraper SG is used to clean inner walls of casing from rust, cement, paraffin deposits and other deposits in particular place.
The Scraper consists of body, blade, piston, spring, cup, screw, split ring, cup. Solid tubular scraper body at upper and lower ends has connecting box and pin threads. Sleeve for fluid flow regulation is screwed into lower part of body. Longitudinal grooves on body have die type blades (with possibility of radial movement) with wear-resistant hardened surface of cutting edges. Pistons (three pistons on each blade) move in cups under pressure of drilling fluid, this movement presses blades to the surface of cleaned pipe.

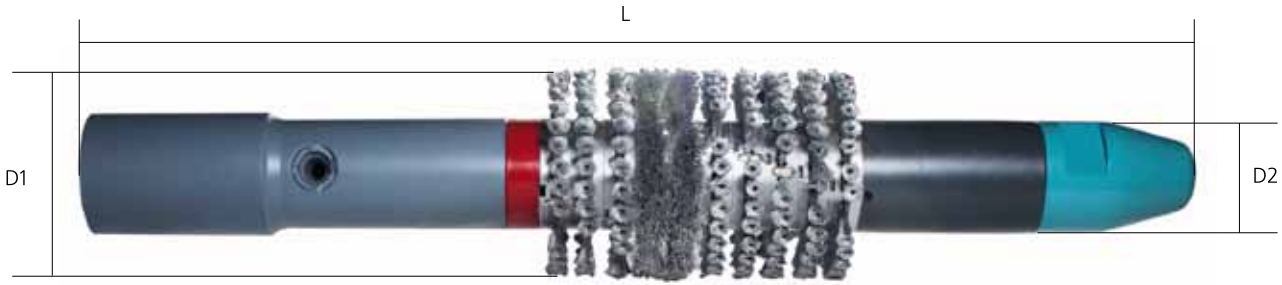


Technical data

Code	Casing string D, in	Body OD, in	Connecting thread	Range of ID casing string, in	Total length L, ft	Water course D, in	Rate of rotation, rpm	Flow rate, gps	Weight, lb
SG–140	5-1/2	4-7/16	2-7/8 Reg	4-5/8 - 5-1/2	3.28				119.0
SG–146	5-3/4	4-9/16	2-7/8 Reg	4-7/8 - 5-11/16	3.28	1/2	60 - 120	158.5 - 190.2	123.5
SG–168	5-5/8	5-7/16	2-7/8 Reg	5-1/2 - 6-3/16	4.30				213.8
SG–245	9-5/8	8-1/16	3-1/2 IF	8-3/8 - 9-1/16	3.93				436.5

Application:

The Sweeper SSCH is used for hydromechanical cleaning of casing inner walls from sludge, rust and asphalt, resin, paraffin deposits.
The Sweeper consists of body having flushing channel, nozzle with water jet, sub and replaceable brushes.
The Sweeper works in rotary motion with proper level of fluid circulation. The Sweeper is run in the well on drill pipes and is activated by high-speed bottom-hole engine or rotor.
The Sweeper can be designed in left\right hand configuration.

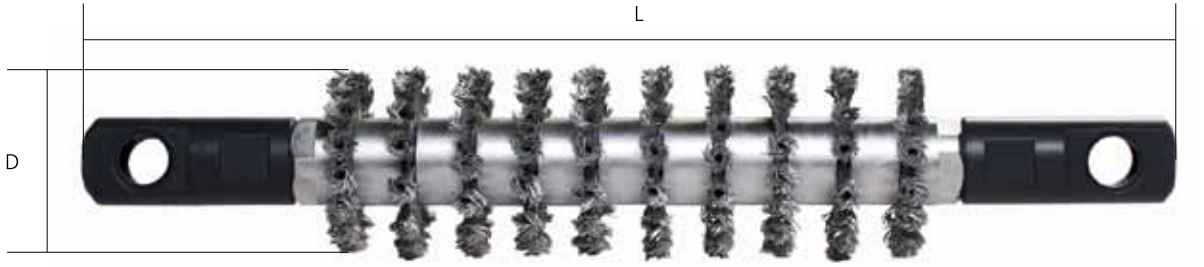


Technical data:

Code	Nominal casing string D, in	Brush OD D1, in	Body OD D2, in	Connecting thread	Total length L, ft	Rate of rotation, rpm	Minimum flow rate, gps	Weight, lb
SSCH-140	5-1/2	4-3/4	3-3/4	2-7/8 Reg	3.54			88.18
SSCH-146	5-3/4	5-5/16	3-3/4	2-7/8 Reg	3.26			81.57
SSCH-168	6-5/8	5-5/16	3-3/4	NC 31	3.29	120 - 240	158.5 - 237.8	101.4
SSCH-178	7.0	6-7/16	3-3/4	NC 31	3.49			125.7
SSCH-245	9-5/8	9-1/16	6-3/8	NC 38	3.47			313.1

Application:

The Tubing Brush SCHM is used to clean inner walls of tubing and drilling pipes from rust, sludge and other deposits and to remove residues from cleaning. The Tubing Brush consists of set of changeable brushes and subs for cable fastening. The Brush works in reciprocating motion inside tubing and drilling pipes.



Technical data:

Code	Max Diameter D, in	Total length L, ft	Weight, lb
SCHM-51	2.0	1.47	6.61
SCHM-55	2-3/16	1.47	6.61
SCHM-60	2-7/16	1.47	6.61
SCHM-63	2-1/2	1.47	6.61
SCHM-65	2-9/16	1.47	6.61
SCHM-68	2-11/16	1.47	6.61
SCHM-73	2-15/16	1.47	6.61
SCHM-95,5	3-3/4	1.57	21.61
SCHM-105,4	4-1/8	1.57	22.49

JETTING NOZZLE SUB

GM

Application:

The Jetting Nozzle Sub GM is used to create compact jet of flushing fluid coming out of nozzle under pressure.
It is also used as guide of BHA during processing and reaming of open wellbores in order to prevent drilling of new wellbore.

Technical data:

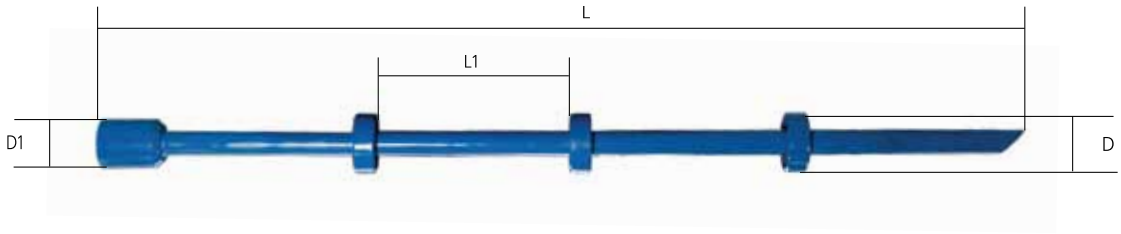
Code	Diameter D, in	Total length L, ft	Connecting thread	Weight, lb
GM-114	4-1/2	0.98	3-1/2 Reg	35.71
GM-127	5.0	0.98	NC 38	41.89
GM-171	6-3/4	2.99	NC 50	257.9
GM-203	8.0	2.99	6-5/8 Reg	388.0
GM-228	9.0	2.99	6-5/8 Reg	507.1
GM-311	12-1/4	3.82	6-5/8 Reg	903.9
GM-381	15.0	3.89	7-5/8 Reg	1 367.0

DRIFT DIAMETER GAUGE

SHP

Application:

The Drift Diameter Gauge SHP is designed to gauge production casing in order to provide passing of downhole equipment with corresponding size.
Gauge elements are designed as rings (gauge SHPK) or blades (gauge SHPL) placed in circle.



Technical data:

Code	Casing diameter, in	Diameter D*, in	Diameter D1*, in	Total length L, ft	Length L1, ft	Connecting thread*
SHP-114x1500	5-1/2	4-1/2	2-3/8	4.92	0.98	NC 26
SHP-114x4000	5-1/2	4-1/2	2-3/8	14.76	1.31	NC 26
SHP-117x1500	5-1/2	4-5/8	2-3/8	4.92	0.98	NC 26
SHP-117x4000	5-1/2	4-5/8	2-3/8	14.76	1.31	NC 26
SHP-122x1500	5-3/4	4-13/16	2-3/8	4.92	0.98	NC 26
SHP-126x1500	5-3/4	4-15/16	2-3/8	4.92	0.98	NC 26
SHP-137x5000	6-5/8	5-3/8	2-7/8	16.4	1.31	NC 31
SHP-144x1600	6-5/8	5-11/16	2-7/8	5.24	0.98	NC 31
SHP-147x1600	6-5/8	5-13/16	2-7/8	5.24	0.98	NC 31
SHP-147x5500	6-5/8	5-13/16	2-7/8	18.04	1.31	NC 31
SHP-155x1800	7.0	6-1/8	2-7/8	5.9	0.98	NC 31

* Subject to agreement

DRIFT DIAMETER GAUGE WITH ANNULAR GAUGE ELEMENTS

SHP-K

Application:

The Drift Diameter Gauge with Annular Gauge Elements SHP-K is designed to control inner diameter of casing.
It consists of body with poles screwed in it. Stick is welded to the poles. In order to reduce weight of construction body is made of aluminum alloy D16 (aluminium wrought alloy).

Technical data:

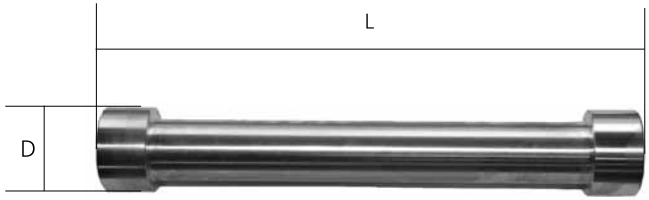
Code	Diameter D, in	Total length L, ft	Weight, lb
SHP-94x300K	3-11/16		8.59
SHP-96,5x300K	3-13/16		9.25
SHP-147x300K	5-13/16		19.84
SHP-150x300K	5-15/16	0.98	19.84
SHP-222,7x300K	8-3/4		33.07
SHP-224x300K	8-13/16		39.46
SHP-300x300K	11-13/16		51.81
SHP-400x300K	15-3/4		80.25

DRIFT DIAMETER GAUGE FOR TUBING

SHP

Application:

The Drift Diameter Gauge for Tubings SHP is designed to control inner diameter of tubing. It is a cylinder of required diameter with hole in the center.
In order to reduce weight of construction there is groove on body and the tool is made of aluminum alloy D16 (aluminium wrought alloy).

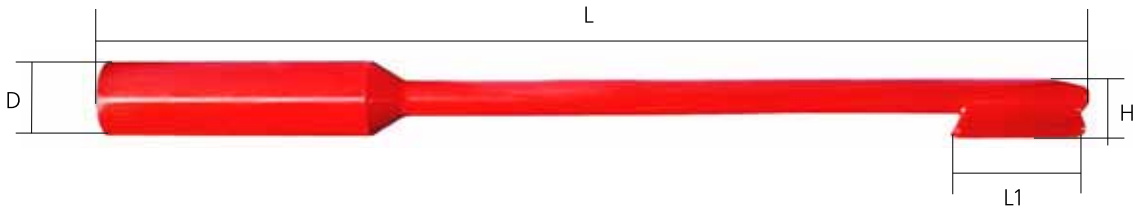


Technical data:

Code	Diameter D, in	Total length L, ft	Weight, lb
SHP–50x300K	2.0	1.64	4.63
SHP–80x300K	$3\text{-}^{3}/_{16}$	1.64	11.46

Application:

The Fishing Hook KL is designed to retrieve whipstocks KOI, KOGM-I, KOM-I after "window" cutting in casing.



Technical data:

Code	Diameter D, in	Total length L, ft	Length L1, ft	H, in	Connecting thread*	Weight, lb
KL-112	3-3/8	3.93	0.55	2-1/8	2-3/8 IF	40.57
KL-115	3-3/8	3.93	0.55	2-1/8	2-7/8 Reg	47.62
KL-135	4-1/8	4.18	0.57	2-1/2	2-7/8 IF	67.46
KL-145	4-1/4	4.75	0.57	3-3/8	NC 31	92.59
KL-190	6-1/2	4.75	0.57	4,0	NC 50	196.2

* Subject to agreement

PZ

Application:

The Crossover Sub PZ for drill strings is used to connect separate parts of drill strings or to connect tools with different type and size tool-joint thread during drilling and repair works in oil, gas and exploration wells.

The Crossover sub can be designed in 3 different types: P, B and N.

Joints type P-cross-over.

Joints type B-box.

Joints type N-nipple.

Table 1–Main sizes of joints type P.

Code	Thread box	Thread nipple	OD, in	Watercourse ID, in	Total length L, ft	Weight, lb
B NC 16/N 2–3/8 IF	NC 16	2-3/8 IF	3-3/8	1-3/8	0.92	19.84
B 2–3/8 Reg/N 2–3/8 IF	2-3/8 Reg	2-3/8 IF	4-1/4	1-1/4	1.31	37.48
B 2–3/8 Reg/N 2–7/8 Reg	2-3/8 Reg	2-7/8 Reg	3-3/4	1.0	0.92	23.37
B 2–3/8 Reg/N 2–7/8 IF	2-3/8 Reg	2-7/8 IF	4-7/8	1.0	0.92	31.09
B 2–3/8 IF/N 2–3/8 Reg	2-3/8 IF	2-3/8 Reg	4-1/4	1-1/4	1.31	37.48
B 2–3/8 IF/N 2–3/8 IF	2-3/8 IF	2-3/8 IF	3-3/8	1-3/4	0.92	15.43
B 2–3/8 IF/N 2–7/8 Reg	2-3/8 IF	2-7/8 Reg	3-3/4	1.0	0.92	23.37
B 2–3/8 IF/N 2–7/8 IF	2-3/8 IF	2-7/8 IF	4-7/8	1-3/4	1.31	40.57
B 2–3/8 IF/N 3–7/2 Reg	2-3/8 IF	3-7/2 Reg	4-7/4	1-3/4	0.92	26.24
B 2–7/8 Reg/N 2–3/8 Reg	2-7/8 Reg	2-3/8 Reg	3-3/4	1.0	1.31	37.48
B 2–7/8 Reg/N 2–3/8 IF	2-7/8 Reg	2-3/8 IF	4-1/8	1-3/4	1.16	30.86
B 2–7/8 Reg/N 2–7/8 Reg	2-7/8 Reg	2-7/8 Reg	3-3/4	1-7/4	0.92	21.16
B 2–7/8 Reg/N 2–7/8 IF	2-7/8 Reg	2-7/8 IF	4-1/4	1-7/4	1.31	37.48
B 2–7/8 IF/N 2–3/8 Reg	2-7/8 IF	2-3/8 Reg	4-7/8	1.0	1.31	41.67
B 2–7/8 IF/N 2–3/8 IF	2-7/8 IF	2-3/8 IF	4-7/8	1-3/4	1.31	37.04
B 2–7/8 IF/N 2–7/8 Reg	2-7/8 IF	2-7/8 Reg	4-1/4	1-7/4	1.31	37.48
B 2–7/8 IF/N 2–7/8 IF	2-7/8 IF	2-7/8 IF	4-7/8	1-7/4	1.31	41.01
B 2–1/8 IF/N 3–7/2 Reg	2-7/8 IF	3-7/2 Reg	4-7/4	1-7/2	1.31	37.48
B 3–1/2 Reg/N 3–7/2 Reg	3-7/2 Reg	3-7/2 Reg	4-7/4	1-7/2	0.92	25.57
B 3–1/2 IF/N 2–3/8 IF	3-7/2 IF	2-3/8 IF	4-3/4	1-3/4	0.92	27.34
B 3–1/2 IF/N 2–7/8 IF	3-7/2 IF	2-7/8 IF	4-3/4	1-15/16	1.31	32.63
B 3–1/2 IF/N 3–7/2 Reg	3-7/2 IF	3-7/2 Reg	4-3/4	1-1/2	1.05	33.95
B 3–1/2 IF/N 3–7/2 IF	3-7/2 IF	3-7/2 IF	5-1/8	2-3/8	1.41	55.12
B 4–1/2 Reg/N 2–7/8 IF	4-7/2 Reg	2-7/8 IF	4-7/8	2-7/8	1.64	33.73
B 4–1/2IF/N 4–7/2IF	4-7/2IF	4-7/2IF	6-1/4	3-3/4	1.67	114.6
B 4–1/2IF/N5–7/2 FH	4-7/2IF	5-7/2 FH	7.0	4.0	1.71	103.6

Table 2–Main sizes of joints type B.

Code	Thread box 1	Thread box 2	OD, in	Watercourse ID, in	Total length L, ft	Weight, lb
B 2-3/8 Reg/B 2-3/8 Reg	2-3/8 Reg	2-3/8 Reg	3-3/16	1.0	1.31	25.35
B 2-3/8 IF/B 2-3/8 IF	2-3/8 IF	2-3/8 IF	3-7/16	1-1/2	0.91	47.62
B 2-3/8 IF/B 2-7/8 Reg	2-3/8 IF	2-7/8 Reg	3-3/4	1-1/2	1.11	26.46
B 2-7/8 Reg/B 2-7/8 Reg	2-7/8 Reg	2-7/8 Reg	3-3/4	1-1/4	0.91	23.15
B 2-7/8 Reg/B 2-7/8 IF	2-7/8 Reg	2-7/8 IF	4-1/4	1-1/4	1.14	37.48
B 2-7/8 IF/B 2-7/8 IF	2-7/8 IF	2-7/8 IF	4-1/4	2-7/8	0.91	25.13
B 3-1/2 Reg/B 2-7/8 IF	3-1/2 Reg	2-1/8 IF	4-7/16	2-7/8	1.14	41.89
B 3-1/2 Reg/B 3-1/2 Reg	3-1/2 Reg	3-1/2 Reg	4-7/4	1-3/4	0.91	26.46

Table 3–Main sizes of joints type N.

Code	Thread nipple 1	Thread nipple 2	OD, in	Watercourse ID, in	Total length L, ft	Weight, lb
N 2-3/8 Reg/N NC 16	2-3/8 Reg	NC 16	3-7/16	1.0	0.98	14.55
N 2-3/8 Reg/N 2-3/8 Reg	2-3/8 Reg	2-3/8 Reg	3-3/16	1.0	0.98	15.43
N 2-3/8 IF/N 2-3/8 IF	2-3/8 IF	2-3/8 IF	3-3/8	1-3/4	0.91	22.49
N 2-3/8 IF/N 3-1/2 Reg	2-3/8 IF	3-7/2 Reg	4-7/4	1-3/4	0.91	25.57
N 2-7/8 Reg/N 2-3/8 IF	2-7/8 Reg	2-3/8 IF	3-3/4	1-1/4	0.91	23.15
N 2-7/8 Reg/N 2-7/8 Reg	2-7/8 Reg	2-7/8 Reg	3-3/4	1-1/4	1.31	37.48
N 2-7/8 Reg/N 3-1/2 Reg	2-7/8 Reg	3-1/2 Reg	4-7/4	1-1/4	0.91	25.57
N 2-7/8 Reg/N 5-1/2 FH	2-7/8 Reg	5-1/2 FH	7,0	1-1/2	1.14	58.86
N 2-7/8 IF/N 2-3/8 Reg	2-7/8 IF	2-3/8 Reg	4-1/8	1.0	0.91	25.35
N 2-7/8 IF/N 2-7/8 IF	2-7/8 IF	2-7/8 IF	4-1/8	1-1/2	1.31	41.89
N 3-1/2 Reg/N 3-1/2 Reg	3-1/2 Reg	3-1/2Reg	4-1/4	1-1/2	0.91	25.57
N 3-1/2 IF/N 3-1/2 IF	3-1/2 IF	3-1/2 IF	4-3/4	2-3/4	1.05	25.57