

CATALOGUE

DRILLING STRING TOOLS

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ROLLER REAMER STABILIZER

DESTINATION

The roller reamer stabilizers are used in the drilling activity, being mounted in the drilling string above the bit or in between the drill collars. The roller reamer stabilizers perform the following functions:

- ream the well hole
- reduce the torque of the drilling string
- stabilize the drilling string in the well hole
- avoid deviations of the well hole

The position inside the drill collar string of the roller reamer stabilizers depends of the parameters of the drilling regime and the nature of the formations which are passed through during drilling.

CONSTRUCTIVE DESCRIPTION

The reamer stabilizer is a solid construction having as main part the massive body made of alloy steel with chrome and molybdenum on which are mounted the denticulated roller blocks.

The rollers which are the active working elements of the reamer are delivered for work in the following rock formations:

- soft to medium formations, symbol MM
- medium to hard formations, symbol MT
- hard and abrasive formations, symbol TA

FUNCTIONAL CHARACTERISTICS

• The "MM" roller profile is cemented and "MT" roller profile and "TA" is covered with granular hard material, thus providing a long life duration

• The rollers a leaning compared to the axis of the reamer, their profile being established as to allow a permanent contact with the walls of the well hole on their entire generator

• Changing the roller block is easily done

• The roller block has a locking system which does not allow the accidental disassembling of its component parts

• According to the type of the thread connection, the reamers are made in the following solutions:

- box up – pin down, recommended for mounting inside the drill collar string

- box up – box down, recommended for mounting over the bit

Data to be introduced in the order

1) Diameter of the well hole

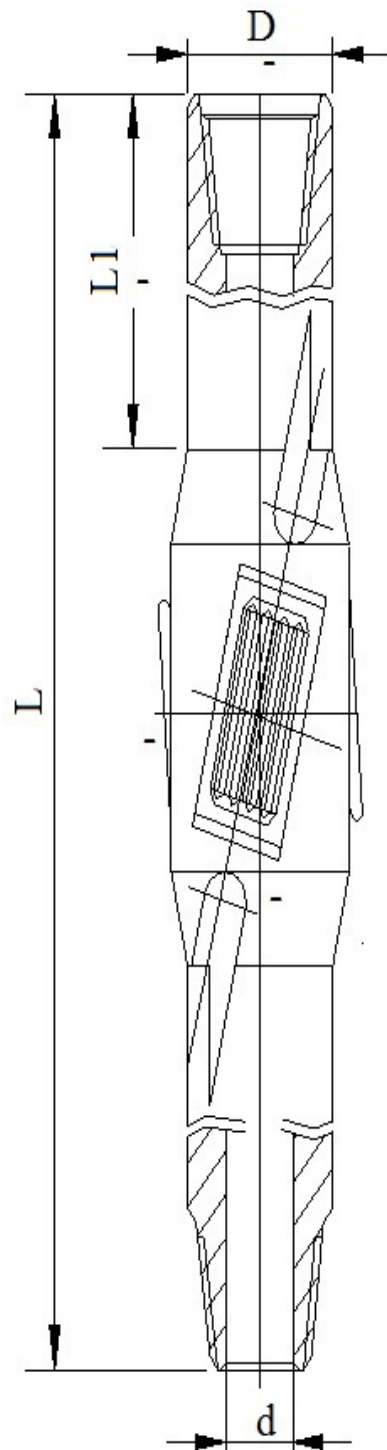
2) Position in the string

- over the bit
- in between the drill collars

4) Body diameter

5) Thread connection

- upper
- lower



DRILLING STRING TOOLS

6) Type of rollers to be equipped with: symbol MM or MT or TA

NOMINAL DIMENSION		DIMENSIONS								THREAD CONNECTION		WEIGHT HT
		D		d		L		L1		MxC	MxM	
in	mm	in	mm	in	mm	in	mm	in	mm	-	-	kg
7 1/2	190,5	5 3/4	146,0	2	50,8	47 17/64	1200	19 11/16	500	4 1/2 Reg	-	135
7 1/2	190,5	5 3/4	146,0	2	50,8	47 17/64	1200	19 11/16	500	-	4IFx4 1/2 Reg	135
7 7/8	200,0	5 3/4	146,0	2 1/4	57,1	47 17/64	1200	19 11/16	500	4 1/2 Reg	-	145
7 7/8	200,0	5 3/4	146,0	2 1/4	57,1	47 17/64	1200	19 11/16	500	-	4 1/2 Reg	145
8 3/8	212,7	6 1/4	158,7	2 1/4	57,1	51 13/64	1300	19 11/16	500	4 IF	-	165
8 3/8	212,7	6 1/4	158,7	2 1/4	57,1	51 13/64	1300	19 11/16	500	4 IF	4IFx4 1/2 Reg	165
8 3/8	212,7	6 3/4	171,4	2 1/4	57,1	51 13/64	1300	19 11/16	500	4 IF	-	170
8 3/8	212,7	6 3/4	171,4	2 1/4	57,1	51 13/64	1300	19 11/16	500	-	4IFx4 1/2 Reg	170
8 1/2	215,9	6 1/4	158,7	2 1/4	57,1	48 27/32	1240	18 1/8	466	4 1/2 Reg	-	156
8 1/2	215,9	6 1/4	158,7	2 1/4	57,1	48 27/32	1240	18 1/8	466	4 IF	-	180
8 1/2	215,9	6 1/2	165,1	2 1/4	57,1	51 13/64	1300	19 11/16	500	4 IF	-	180
8 1/2	215,9	6 1/2	165,1	2 13/16	71,4	48 27/32	1240	18 1/8	466	4 IF	-	142
8 1/2	215,9	6 1/2	165,1	2 1/4	57,1	48 27/32	1240	18 1/8	466	4 1/2 IF	-	156
8 1/2	215,9	6 1/2	165,1	2 1/4	57,1	51 13/64	1300	19 11/16	500	-	4IFx4 1/2 Reg	180
9 5/8	244,5	7	177,8	2 13/16	71,4	55 9/64	1400	23 5/8	600	4 1/2 IF	-	240
9 5/8	244,5	7	177,8	2 13/16	71,4	55 9/64	1400	23 5/8	600	-	4 1/2 IF x 6 5/8 Reg	240
11 5/8	295,3	8	203,2	2 13/16	71,4	55 9/64	1400	23 5/8	600	6 5/8Reg	-	340
11 5/8	295,3	8	203,2	2 13/16	71,4	55 9/64	1400	23 5/8	600	-	6 5/8Reg	340
12 1/4	311,2	8	203,2	2 13/16	71,4	55 9/64	1400	23 5/8	600	6 5/8Reg	-	370
12 1/4	311,2	8	203,2	2 13/16	71,4	55 9/64	1400	23 5/8	600	-	6 5/8Reg	370
12 1/4	311,2	8 1/2	215,9	2 13/16	71,4	55 9/64	1400	23 5/8	600	6 5/8Reg	-	390
12 1/4	311,2	8 1/2	215,9	2 13/16	71,4	55 9/64	1400	23 5/8	600	-	6 5/8Reg	390
12 1/4	311,2	9	228,6	3	76,2	66 61/64	1700	23 5/8	600	6 5/8 FH	-	457
13 5/8	346,1	8	203,2	2 13/16	71,4	55 9/64	1400	23 5/8	600	6 5/8Reg	-	400
13 5/8	346,1	8	203,2	2 13/16	71,4	55 9/64	1400	23 5/8	600	-	6 5/8Reg	400
15 1/2	393,7	9 1/2	241,3	3	76,2	59 5/64	1500	23 5/8	600	7 5/8Reg	-	465
15 1/2	393,7	9 1/2	241,3	3	76,2	59 5/64	1500	23 5/8	600	-	7 5/8Reg	465
17 1/2	444,5	8	203,2	3	76,2	68 59/64	1750	15 3/4	400	6 5/8Reg	-	750
17 1/2	444,5	8	203,2	3	76,2	68 59/64	1750	15 3/4	400	-	6 5/8Reg	750
17 1/2	444,5	9	228,6	3	76,2	68 59/64	1750	15 3/4	400	6 5/8 FH	-	835
17 1/2	444,5	9 1/2	241,3	3	76,2	66 61/64	1700	23 5/8	600	7 5/8Reg	-	735
17 1/2	444,5	9 1/2	241,3	3	76,2	66 61/64	1700	23 5/8	600	-	7 5/8Reg	735
17 1/2	444,5	9 3/4	273,0	3	76,2	66 61/64	1700	23 5/8	600	7 5/8Reg	-	735
17 1/2	444,5	9 3/4	273,0	3	76,2	66 61/64	1700	23 5/8	600	-	-	735

Note

1. Upon request other dimensions can be manufactured as well.
2. The reaming diameter is equal to the diameter of the well hole
2. The stabilizing diameter will be:

- for nominal dimensions: 7 1/2 - 8 3/8, well hole diameter - 1/32 in (0.8 mm)
- for nominal dimensions: 8 1/2 - 12 1/4, well hole diameter - 1/16 in (1.6 mm)
- for nominal dimensions over 12 1/4, well hole diameter - 1/8 in (3.2 mm)

INTEGRAL BLADE STABILIZER

DESTINATION

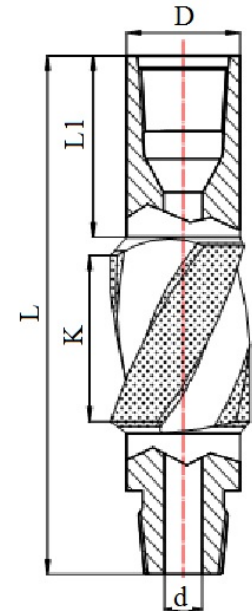
The stabilizers are used in the drilling activity, being mounted in the drilling string above the bit or in between the drill collars. The stabilizers have three helical blades which allow the performance of the following functions:

- centering and assuring the stability of the drilling string inside the well hole
- avoiding the well hole deviations
- protecting the drill collar string against wear due to the friction with the walls of the well

The position of the drill collar string of the stabilizer depends on the parameters of the drilling regime and on the nature of the formations which are passed through during drilling.

CONSTRUCTIVE AND FUNCTIONAL DESCRIPTION

- The integral blades stabilizers are provided with one steel body obtained through complete machining.
- The body is made of AISI 4142 steel heat treated for the mechanical characteristics imposed by API Spec. 7, thus having a good mechanical resistance to the complex loads to which the stabilizer is subject during functioning.
- The blades of the stabilizer are obtained from the body through the machining of the outer hard surface, which is obtained through the following:
 - welding lay on of tungsten carbide
 - applying the tungsten carbide by brass plating
- According to the type of the threaded connection, the stabilizers are made in the following solutions:
 - box up – pin down, recommended for mounting in the drill collar string
 - box up – box down, recommended for mounting over the drilling bit
- The space between the helical blades is established in a manner which will not create significant pressure losses of the drilling fluid.



DRILLING STRING TOOLS

WELL HOLE DIAMETER		BODY DIAMETER		INNER DIAMETER		LENGTH						CONNECTION THREAD		WEIGHT
		D		d		L		K		L1		M x C	M x M	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	-	-	kg
5 7/8	149,2	4 3/4	120,7	2	50,8	60	1525	12	305	22	560	3 1/2 IF		120
5 7/8	149,2	4 3/4	120,7	2	50,8	60	1525	12	305	22	560		3 1/2 IF x 3 1/2 REG	125
6 1/4	155,8	4 3/4	120,7	2 1/4	57,2	60	1525	12	305	30	760	NC 35		135
6 1/4	155,8	4 3/4	120,7	2 1/4	57,2	60	1525	12	305	30	760		NC 35 x 3 1/2 REG	140
6 3/4	171,5	4 3/4	120,7	2 1/4	57,2	60	1525	12	305	30	760	NC 46 (4 IF)		145
6 3/4	171,5	4 3/4	120,7	2 1/4	57,2	60	1525	12	305	30	760		4 1/2 IF x 4 1/2 REG	150
7 5/8	193,7	5 3/4	146,1	2 1/4	57,2	66	1675	12	305	30	760	4 1/2 IF		210
7 5/8	193,7	5 3/4	146,1	2 1/4	57,2	66	1675	12	305	30	760		4 1/2 IF x 4 1/2 REG	215
8 1/2	215,9	6 1/2	165,1	2 1/4	57,2	66	1675	12	305	30	760	4 1/2 IF		270
8 1/2	215,9	6 1/2	165,1	2 1/4	57,2	66	1675	12	305	30	760	4 1/2 IF	4 1/2 IF x 4 1/2 REG	278
12 1/4	311,2	8	203,2	2 13/16	71,4	69	1750	12	305	30	760	6 5/8 REG		440
12 1/4	311,2	8	203,2	2 13/16	71,4	69	1750	12	305	30	760	6 5/8 REG	6 5/8 REG x 6 5/8 REG	440

Note

1. Upon request other dimensions can be manufactured as well.
2. The nominal diameter over the blades will be:
 - for the nominal dimensions: 5 7/8 - 12 1/4, well hole diameter - 1/32 in (0.8 mm)
 - for the nominal dimensions: over 12 1/4, well hole diameter - 1/16 in (1.6 mm)

Data to be introduced in the order

- 1) Constructive type
- 2) Well hole diameter
- 3) Position in the string
 - in between the drill collar string
 - over the bit
- 4) Body diameter
- 5) Connection threads
 - upper
 - lower
- 6) Hardening solution
 - welding lay on of tungsten carbide
 - applying the tungsten carbide by brass plating

WELDED BLADE STABILIZER

DESTINATION

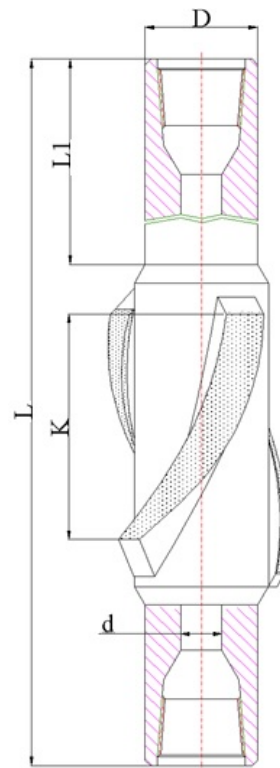
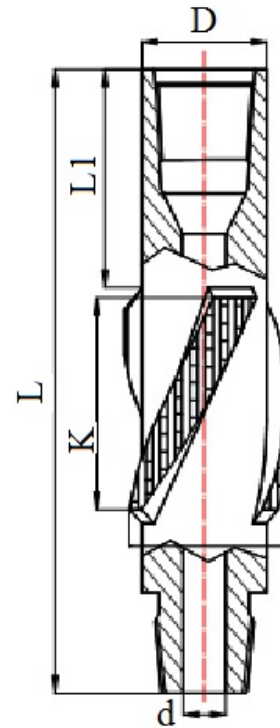
The welded blade stabilizers are used in the drilling activity, being mounted in the drilling string above the bit or in between the drill collar string. The welded blade stabilizers perform the following functions:

- centering and assuring the stability of the drilling string in the well hole
- avoiding the well hole deviations
- protecting the drill collar string against wear due to friction with the walls of the well

Position in the drill collar string of the stabilizer depends on the parameters of the drilling regime and of the nature of the formations which are passed through during drilling.

CONSTRUCTIVE AND FUNCTIONAL DESCRIPTION

- The welded blade stabilizer has a simple and strong construction, consisting of a steel body on which the three helical blades are applied by welding
- The body is made of AISI 4142 steel heat treated to the mechanical characteristics imposed by API Spec. 7, thus having a good mechanical resistance to the complex loads to which the stabilizer is subject during functioning.
- The blades of the stabilizer applied by welding on the body have a good resistance to wear as they have a hard external surface, obtained through the following:
 - welding lay on of tungsten carbide
 - applying the tungsten carbide by brass plating
- The worn stabilizers can be remedied, according to the wear grade and the type of the hard layer, by one of the following methods:
 - removing of the worn blades and replacing them with others which than can be hardened on the external surface
 - laying on over the worn surface, by welding, the tungsten carbide



DRILLING STRING TOOLS

WELL HOLE DIAMETER		BODY DIAMETER		INNER DIAMETER		LENGTH						CONNECTION THREAD		WEIGHT	
		D		d		L		K		L1		M x C	M x M	M x C	M x M
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	-	-	kg	kg
6 1/4	155,8	4 3/4	120,7	2 1/4	57,2	64	1625	14	495	30	760	NC 35		130	-
6 1/4	155,8	4 3/4	120,7	2 1/4	57,2	58	1473	14	495	30	760		NC 35 x 3 1/2 REG	-	120
6 3/4	171,5	4 3/4	120,7	2 1/4	57,2	65	1651	14	495	30	760	NC 46 (4 IF)		135	-
6 3/4	171,5	4 3/4	120,7	2 1/4	57,2	59	1498	14	495	30	760		4 1/2 IF x 4 1/2 REG	-	125
7 5/8	193,7	4 3/4	120,7	2 1/4	57,2	66	1675	14	495	30	760	4 1/2 IF		150	-
7 5/8	193,7	4 3/4	120,7	2 1/4	57,2	60	1524	14	495	30	760		4 1/2 IF x 4 1/2 REG	-	135
8 1/2	215,9	6 1/2	165,1	2 1/4	57,2	66	1675	14	495	30	760	4 1/2 IF		260	-
8 1/2	215,9	6 1/2	165,1	2 1/4	57,2	60	1524	14	495	30	760	4 1/2 IF	4 1/2 IF x 4 1/2 REG	-	235
12 1/4	311,2	8	203,2	2 1/4	57,2	70	1778	14	495	30	760	6 5/8 REG		350	-
12 1/4	311,2	8	203,2	2 1/4	57,2	64	1625	14	495	30	760	6 5/8 REG	6 5/8 REG x 6 5/8 REG	-	315
17 1/2	444,5	9	228,6	2 13/16	71,4	80	2032	18	457	30	760	6 5/8 REG		600	-
17 1/2	444,5	9	228,6	2 13/16	71,4	74		18	457	30	760		6 5/8 REG x 6 5/8 REG	-	560

Note

1. Upon request other dimensions can be manufactured as well

2. The nominal diameter over the blades can be:

- for the nominal dimensions: 6 1/4 - 12 1/4, well hole diameter - 1/16 in (1.6 mm)
- for the nominal dimensions: over 12 1/4, well hole diameter - 1/8 in (3,2 mm)

Data to be introduced in the order

1) Constructive type

2) Well hole diameter

3) Position in the string

- in between the drill collar string

- over the bit

4) Body diameter

5) Connection thread

- upper

- lower

6) Hardening solution

- lay on by welding of the tungsten carbide

- apply the tungsten carbide by brass plating

DRILLING STRING TOOLS

UPPER AND LOWER KELLY COCK FOR THE KELLY STEM

DESTINATION

The kelly cock are valves manually operated and destined to be mounted in the circulating system of the drilling string, used for the inside closing of the working fluid pressure, when eruptions are signaled during the drilling process.

The upper kelly cock is mounted between the lower end of the reduction from the hydraulic head and the upper end of the kelly stem.

The lower kelly cock is mounted between the lower end of the Kelly stem and the upper end of drilling string.

Constructive types

- lower
- upper

Constructive solutions

- with the body of one piece
- with the body of two pieces

CONSTRUCTIVE AND FUNCTIONAL CHARACTERISTICS

- The cock has the body of AISI 4142 steel quenched and tempered, thus having a good resistance to the mechanical and hydraulic loads in the drilling string
- The sealing set (seat + ball) which represents the closing element of the cock is made of stainless steel thus having a high resistance during functioning.
- Sealing set, which is a wear subassembly is interchangeable.
- The inner diameter allows the passing of the drilling fluid without pressure losses
- The connection of the cock to the drilling string is made by threaded connections with shoulder
- Mounting of the Kelly cock (lower or upper) is always made with the thread box up – pin down
- Simple and strong construction.

Data to be introduced in the order

1) *Kelly cock type:*

- *lower*
- *upper*

2) *Constructive solution*

- *one piece body*
- *two pieces body*

3) *Nominal dimension*

4) *Connection thread*

- *upper*
- *lower*

5) *Working pressure*

6) *API Spec 7-1 for threads*

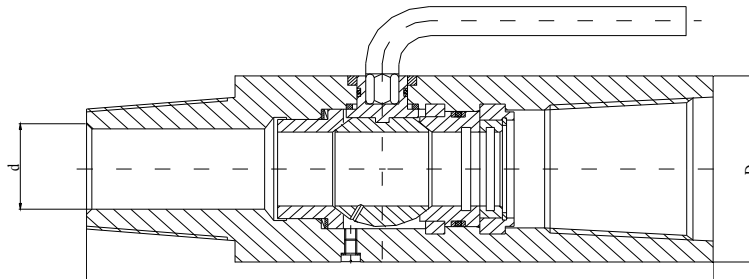
DRILLING STRING TOOLS

Upper Kelly Cock with one-piece body

NOMINAL DIMENSION		CONNECTION THREAD	DIMENSIONS						WORKING PRESSURE	WEIGHT					
			OUTER DIAMETER "D"		INNER DIAMETER "d"		LENGTH								
in	mm		in	mm	in	mm	in	mm	bar	kg					
2 1/2	63,5	4 1/2 REG-LH	5 3/4	146,0	2	50,8	18 1/8	460	700	45					
3	76,0				1 3/4	44,4									
3 1/2	89,0				6 5/8 REG-LH	7 7/8	200,0	3			76,2	21 1/16	535	97	
4 1/4	108,0							2 1/2			63,5	20 43/64	525		110
2 1/2	63,5	6 5/8 REG-LH	7 7/8	200,0				3		76,2	21 1/16	535	97		
3	76,0							2 1/2		63,5	20 43/64	525		110	
3 1/2	89,0				6 5/8 REG-LH	7 7/8	200,0	3		76,2	21 1/16	535	97		
4 1/4	108,0							2 1/2		63,5	20 43/64	525		110	
5 1/4	133,3							6	152,4		2 1/2	63,5	20 43/64		525
6	152,4														

Lower Kelly Cock with one-piece body

NOMINAL DIMENSION		CONNECTION THREAD	DIMENSIONS						WORKING PRESSURE	WEIGHT
			OUTER DIAMETER "D"		INNER DIAMETER "d"		LENGTH			
in	mm		in	mm	in	mm	in	mm	in	
2 1/2	63,5	2 3/8 IF	3 3/4	95,0	1 1/4	31,7	14 4/7	370	700	20
3	76,0									
3	76,0	2 7/8 IF	4 1/8	104,8	1 3/4	44,4	16 47/64	425		25
3 1/2	89,0									
3 1/2	89,0	3 1/2 IF	5	127,0	2	50,8	17 23/32	450		35
4 1/4	108,0									
4 1/4	108,0	4 IF	6 1/4	158,8	2 1/2	63,5	19 3/32	485		60
5 1/4	133,0									
4 1/4	108,0	4 1/2 IF	6 3/8	162,0	2 1/3/16	71,4	19 11/16	500	60	
5 1/4	133,0									
5 1/4	133,0	5 1/2 FH NC 56	7	177,8	3 1/4	82,5	21 13/32	545	83	
6	152,4									



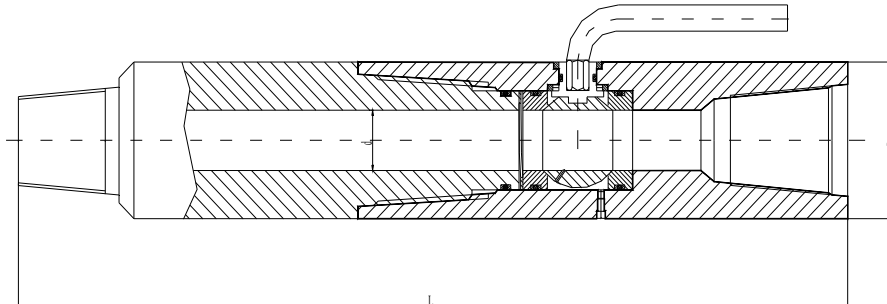
DRILLING STRING TOOLS

Upper Kelly Cock with two-pieces body

NOMINAL DIMENSION		CONNECTI ON THREAD	DIMENSIONS						WORKING PRESSURE	WEIGHT
			OUTER DIAMETER ""D""		INNER DIAMETER ""d""		LENGTH			
in	mm		in	mm	in	mm		in	mm	in
2 1/2	63,5	6 5/8 REG-LH	7. 49/64	197,0	2 13/16	71,4	34 41/64	880	700	175
3	76,0									
3 1/2	89,0									
4 1/4	108,0									
5 1/4	133,3									
6	152,4									

Lower Kelly Cock with two-pieces body

NOMINAL DIMENSION		CONNECTION THREAD	DIMENSIONS						WORKING PRESSURE	WEIGHT
			OUTER DIAMETER ""D""		INNER DIAMETER ""d""		LENGTH			
in	mm		in	mm	in	mm		in	mm	in
2 1/2	63,6	2 3/8 IF	4 1/8	104,8	1 1/4	31,7	25 2/3	652	700	18
3	76,2	2 7/8 IF	4 3/4	120,7	1 3/4	44,5	28	711		45
3 1/2	88,9									
3 1/2	88,9	3 1/2 IF	5 3/4	146,0	2 1/2	57,2	32 11/16	830		60
4 1/4	108,0									
4 1/4	108,0	4 IF	7 3/8	187,5	2 13/16	71,4	34 39/64	879		160
		4 1/2 IF					34 7/16	875		164
5 1/4	133,3	5 1/2 FH	8	203,2	3 15/64	82,2	35 7/16	900		170
		NC 56								174



DRILL PIPES SUBS

The subs are component parts of the drilling string as connection parts, as follows:

- between the hydraulic head and the Kelly stem
- between the Kelly stem and drill pipe coupling
- between different dimensions drill pipe couplings or between different threaded connections of them
- between drill pipe coupling and drill collar
- between drill collars
- between drill collar and rock bit.

Constructive shapes

Drill pipe subs for the drilling string, according to the shape of the connections, are made in three solutions:

- pin - pin, symbol C - C
- pin - box, symbol C - M
- box - box, symbol M - M

The subs are made in the following constructive solutions:

- straight subs
- straight subs with seat for protector
- X-over subs
- X-Over subs with seat for protector

The subs for the drilling string are made of AISI 4142 steel

Heat treated to the mechanical characteristics imposed by API Spec. 7-1.

Data to be introduced in the order

- 1) Subs type
- 2) Outer diameter
- 3) Inner diameter
- 4) Length (from shoulder to shoulder)
- 5) Connection thread
 - upper
 - lower
- 6) API Spec 7-1 for threads

