

CATALOGUE

HANDLING TOOLS

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ELEVATORS

Elevators are handling tools, used to handle the strings for tubing, drill pipe, drill collar and casing.

Elevators are designed and manufactured in compliance with the provisions of the standards API Spec. 8C and Spec. 7K, at the quality level PSL1 and PSL2 and performance requirement levels SR1, SR2, SR3, SR4 and SR5.

- Quality levels PSL1 and PSL2 are in compliance with API Spec.8C, as follows:

PSL1 – includes current manufacturing practice;

PSL2 – includes all technical requirements imposed by PSL1, plus some additional technical conditions applied by the elevator manufacturers and users.

- The performance requirement level is determined by the additional requirements applied to the elevators only when it is specified in purchaser's order or in the contract and they can be, as the case, one or more of the following:

1. For elevators manufactured in compliance with API Spec. 8C:

- a. S1 – Proof load test

NOTE: For elevators the load test is mandatory even if it is not required

- b. S2 – Low temperature test

- c. S3 – Data Book

- d. S4 – Additional Volumetric Examination of Castings

- d. S5 – Volumetric Examination of Wrought material

NOTE: 1. Any other additional conditions can be agreed between manufacturer and beneficiary.

The dimensions of the contact surfaces of the elevator shoulders with the elevator links as well as the bores of the elevators, comply with API Spec. 8C.

The quality level and technical performance provide security in exploitation of the elevators.

According to the handled material, the elevators are:

- tubing elevators;
- drill pipe elevators;
- drill collar elevators;
- casing elevators.

From the point of view of the environmental temperature, the elevators are made in two solutions:

- a. for functioning in environment with low temperatures down to minus 20°C
- b. for functioning in environment with low temperatures down to minus 45°C

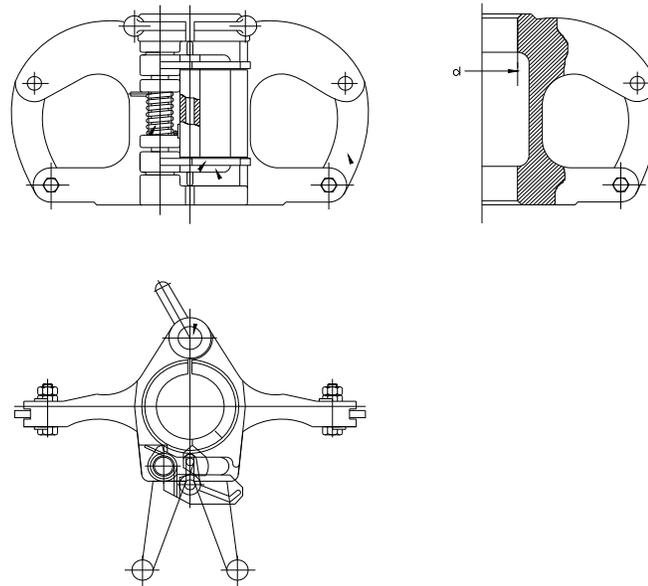
TUBING ELEVATORS

Elevators for tubing are made in the following types:

- center latch square type elevator;
- center latch taper type elevator;
- slip type elevator.

CENTER LATCH 90 DEGREES TYPE TUBING ELEVATORS

The center latch square type tubing elevators are destined to handle the tubing with upset and non upset ends. These elevators consist of two bodies made of low alloy steel, heat treated, joined by means of a bolt and locked by means of a latch – safety lock system, which provides a double safety during functioning. Each of the two bodies is provided with a shoulder for suspending in the elevator links. The external surface of the seat on which the tubing couplings are seated is superficially hardened to obtain a high wear resistance.



From the point of view of the environmental temperature, the elevators are made in two solutions:

- a. for functioning in environment with low temperatures down to minus 20°C
- b. for functioning in environment with low temperatures down to minus 45°C

HANDLING TOOLS

NOMINAL DIMENSION		MAXIMUM WORKING LOAD		PASSING DIAMETER: d	
				Conn.	d
in	mm	ts	tf	-	mm
1,05	26,7	25	22,7	NU	28,58
				EU	36,12
1315	33,4			NU	35,31
				EU	40,08
1,66	42,2			NU	44,04
				EU	48,82
1,9	48,5			NU	50,39
				EU	55,96
1,66	42,2	40	36,3	NU	44,04
				EU	48,82
1,9	48,5			NU	50,39
				EU	55,96
2 3/8	60,3			NU	62,31
				EU	68,66
2 7/8	73,0			NU	75,01
				EU	81,36
1,9	48,5	65	58,9	NU	50,39
				EU	55,96
2 3/8	60,3			NU	62,31
				EU	68,66

NOMINAL DIMENSION		MAXIMUM WORKING LOAD		PASSING DIAMETER : d	
				Conn.	d
in	mm	ts	tf		mm
2 7/8	73,0	65	58,9	NU	75,01
				EU	81,36
3 1/2	88,9			NU	90,88
				EU	98,02
4	101,6			NU	103,58
				EU	110,72
4 1/2	114,3			NU	116,66
				EU	123,42
2 3/8	60,3	100	91	NU	62,31
				EU	68,66
2 7/8	73,0			NU	75,01
				EU	81,36
3 1/2	88,9			NU	90,88
				EU	98,02
4	101,6			NU	103,58
				EU	110,72
4 1/2	114,3	NU	116,66		
		EU	123,42		
2 3/8	60,3	150	136	NU	62,31
				EU	68,66
2 7/8	73,0			NU	75,01
				EU	81,36
3 1/2	88,9			NU	90,88
				EU	98,02
4	101,6			NU	103,58
				EU	110,72
4 1/2	114,3	NU	116,66		
		EU	123,42		

Data to be introduced in the order

- 1) Nominal dimension of elevator
- 2) Passing diameter
- 3) Maximum working load
- 4) Quality level of the product acc. to API Spec. 8C: PSL 1 or PSL 2
- 5) Performance level of product acc. to API Spec. 8C: SR1, SR2, SR3, SR4, SR5.
- 6) Minimum temperature of the environment

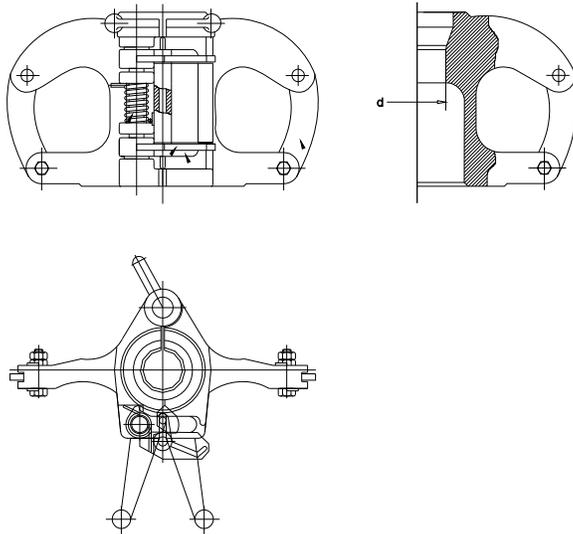
HANDLING TOOLS

CENTER LATCH 18 DEGREES TYPE TUBING ELEVATORS

The center latch taper type tubing elevators, are destined to handle the tubing with upset ends. These elevators consist of two bodies made of low alloy steel, heat treated, jointed by means of a bolt and locked by means of a latch – safety lock system, which provides a double safety during functioning. Each of the two bodies is provided with a shoulder for suspending it in the elevator links.

The conical inner surface of the seat on which the upset ends of the tubing are seated is superficially hardened, to provide a high wear resistance.

NOMINAL DIMENSION		MAXIMUM WORKING LOAD		PASSING DIAMETER d
in	mm	ts	tf	mm
2 3/8	60,3	65	58,9	62,7
2 7/8	73,0			75,0
2 3/8	60,3	100	91	62,7
2 7/8	73,0			75,0
3 1/2	88,9	150	136	91,5
2 3/8	60,3			62,7
2 7/8	73,0			75,0
3 1/2	88,9			91,5



From the point of view of the environmental temperature, the elevators are made in two solutions:

- a. for functioning in environment with low temperatures down to minus 20°C
- b. for functioning in environment with low temperatures down to minus 45°C

Data to be introduced in the order

- 1) Nominal dimension of elevator
- 2) Passing diameter
- 3) Maximum working load
- 4) Quality level of the product acc. to API Spec. 8C: PSL 1 or PSL 2
- 5) Performance level of product acc. to API Spec. 8C: SR1, SR2, SR3, SR4, SR5.
- 6) Minimum temperature of the environment

SUCKER ROD ELEVATORS

The sucker rods elevators are used in the oilfield industry to introduced and extract the sucker rods at the well during the intervention operation.

CONSTRUCTIVE DESCRIPTION

The sucker rods elevators consist mainly of a body, made of low alloy steel, heat treated. At the inside of the body are mounted the latches for front and rear. Maintaining the latches in closed position is made by means of a spring. In order to avoid the accidental pass of the sucker rods through the beaks of the front latch, the distance between the beaks must not be greater than 6 mm.

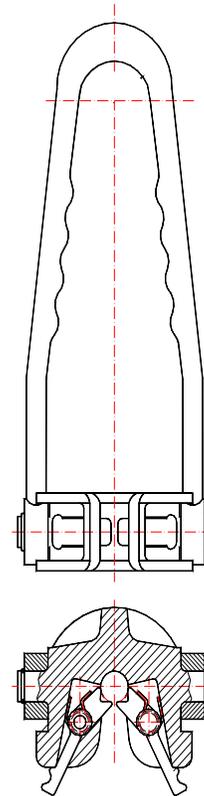
In order to provide a high wear resistance, the inner surfaces of the seats which support the ends of the sucker rods, they are superficially hardened at 54 ÷ 56 HRC.

Constructive type:

- monobloc type;
- with interchangeable seats type.

From the point of view of the environment temperature, the sucker rods elevators are made in two solutions:

- a. for functioning in environment with low temperatures down to minus 20°C
- b. for functioning in environment with low temperatures down to minus 45°C



ELEVATOR SIZE		NOMINAL DIMENSIONS		d	NET WEIGHT
in	mm	in	mm	mm	kg
1/2-5/8	12,7-15,9	1/2	12,7	20	13,2
		5/8	15,9		
5/8 - 3/4	15,9 - 19,1	5/8	15,9	23	12,9
		3/4	19,1		
3/4 - 7/8	19,1 - 22,2	3/4	19,1	26	12,6
		7/8	22,2		
7/8 - 1	22,2 - 25,4	7/8	22,2	30	12,3
		1	25,4		

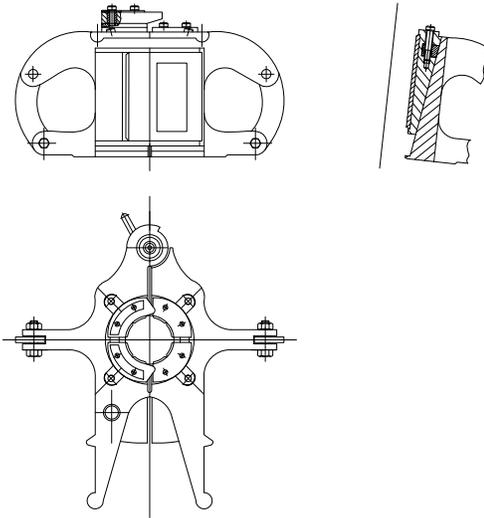
Data to be introduced in the order

- 1) Description and type of the elevator
- 2) Elevator size
- 3) Nominal dimension
- 4) Quality level of the product acc. to API Spec. 8C: PSL 1 or PSL 2
- 5) Performance level of product acc. to API Spec. 8C: SR1, SR2, SR3, SR4, SR5.
- 6) Minimum temperature of the environment

SLIP TYPE TUBING ELEVATORS

The slip type tubing elevators, are destined to suspend and handle the tubing string during introducing and extracting it in and from the well hole. These elevators consist of two bodies made of low alloy steel, heat treated, jointed by means of a bolt and closed by means of a latch – safety lock system, which provides a double safety during functioning. Each of the two bodies is provided with a shoulder for its suspending in the elevator links.

The inside of the two bodies is provided with a cut-coned seat inside where the slips slide, equipped with dies appropriate for the outer diameter of the tubing for which they are used.



DIMENSIUNI CORP	DIMENSIUN I PENE	DIMENSIUNI TEVI DE EXTRACTIE		SARCINA MAXIMĂ DE LUCRU	
		in	mm	ts	tf
1,315 - 2 7/8	1,315 – 1,9	1,315	33,4	25	22,7
		1,66	42,2		
		1,9	48,3		
	2 3/8 – 2 7/8	2 3/8	60,3		
		2 7/8	73,0		
1,315 - 2 1/16	1,315 - 2 1/16	1,315	33,4	65	59
		1,66	42,2		
		1,9	48,3		
		2	50,8		
		2 1/16	52,4		
2 3/8 - 3 1/2	2 3/8 - 3 1/2	2 3/8	60,3	100	91
		2 7/8	73,0		
		3 1/2	88,9		
2 3/8 - 3 1/2	2 3/8 - 3 1/2	2 3/8	60,3	150	136
		2 7/8	73,0		
		3 1/2	88,9		
3 1/2 - 4 1/2	3 1/2 - 4	3 1/2	88,9	150	136
		4	101,6		
2 3/8 - 3 1/2	2 3/8 - 3 1/2	4 1/2	114,3	150	136
		2 3/8	60,3		
		2 7/8	73,0		
3 1/2 - 4 1/2	3 1/2 - 4	3 1/2	88,9	150	136
		4	101,6		
		4 1/2	114,3		

From the point of view of the environmental temperature, the elevators are made in two solutions:

- for functioning in environment with low temperatures down to minus 20°C
- for functioning in environment with low temperatures down to minus 45°C

Data to be introduced in the order

- 1) Tubing dimension
- 2) Slip dimension
- 3) Maximum working load
- 4) Quality level of the product acc. to API Spec. 8C: PSL 1 or PSL 2
- 5) Performance level of product acc. to API Spec. 8C: SR1, SR2, SR3, SR4, SR5.
- 6) Minimum temperature of the environment

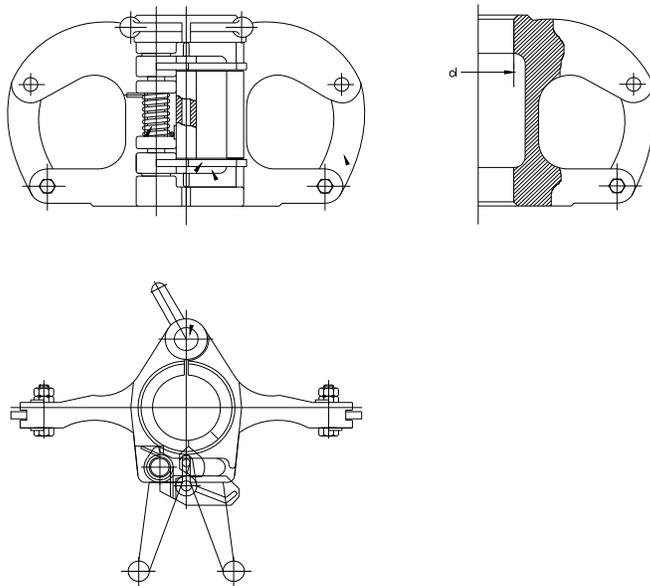
DRILL PIPE ELEVATORS

Drill pipe elevators are manufactured in the following types:

- center latch square type elevators;
- center latch taper type elevators;

CENTER LATCH 90 DEGREES TYPE DRILL PIPE ELEVATORS

The center latch square type drill pipe elevators are destined to handle drill pipe with connection couplings. These elevators consist of two bodies made of low alloy steel, heat treated, jointed by means of a bolt and closed by means of a latch – safety lock system, which provides a double safety during functioning. Each of the two bodies is provided with a shoulder for its suspending in the elevator links. The outer surface of the seat on which the drill pipe couplings are seated is superficially hardened in order to get a high wear resistance.



From the point of view of the environmental temperature, the elevators are made in two solutions:

- a. for functioning in environment with low temperatures down to minus 20°C
- b. for functioning in environment with low temperatures down to minus 45°C

HANDLING TOOLS

NOMINAL DIMENSION		CONN	PASSING DIAMETER = d		MAXIMUM WORKING LOAD						
in	mm	-	in	mm	ts						
2 3/8	60,3	I.U.	2 5/8	66,7	100	125	175	-	-	-	-
		E.U.	2 13/16	71,4	100	125	175	-	-	-	-
		I.E.U.	2 5/8	66,7	100	125	175	-	-	-	-
2 7/8	73,0	I.U.	3 1/8	79,4	100	125	175	-	-	-	-
		E.U.	3 3/8	85,73	100	125	175	-	-	-	-
		I.E.U.	3 1/8	79,4	100	125	175	-	-	-	-
3 1/2	88,9	I.U.	3 13/16	96,8	100	125	175	-	250	-	-
		E.U.	4 1/16	103,19	100	125	175	-	-	-	-
		I.E.U.	3 13/16	96,8	100	125	175	-	250	-	-
4	101,6	I.U.	4 5/16	109,54	100	150	175	225	250	275	-
		E.U.	4 13/16	122,24	100	150	175	225	250	-	-
		I.E.U.	4 5/16	109,54	100	150	175	225	250	275	-
4 1/2	114,3	I.U.	4 13/16	122,24	100	150	175	225	250	275	350
		E.U.	5 5/16	134,94	-	-	175	-	250	275	-
		I.E.U.	4 13/16	122,24	100	150	175	225	250	275	350
5	127,0	I.E.U.	5 5/16	134,94	-	-	175	225	250	275	350
5 1/2	139,7	I.U.	5 7/8	149,23	-	-	175	-	250	-	350
		I.E.U.	5 7/8	149,23	-	-	175	-	250	-	350
6 5/8	168,3	I.E.U.	6 3/4	171,4	-	-	175	-	250	-	-

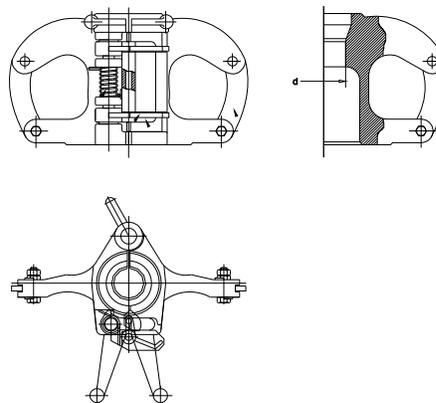
Data to be introduced in the order

- 1) Nominal dimension and connection type of drill pipe
- 2) Passing diameter
- 3) Maximum working load
- 4) Quality level of the product acc. to API Spec. 8C: PSL 1 or PSL 2
- 5) Performance level of product acc. to API Spec. 8C: SR1, SR2, SR3, SR4, SR5.
- 6) Minimum temperature of the environment

HANDLING TOOLS

CENTER LATCH 18 DEGREES TYPE DRILL PIPE ELEVATORS

The center latch taper type drill pipe elevators are destined to handle the drill pipe with welded connection. These elevators consist of two bodies made of low alloy steel, heat treated, jointed by means of a bolt and closed by means of a latch – safety lock system, which provides a double safety system during functioning. Each of the two bodies is provided with a shoulder for its suspending in the elevator links. The inner conical surface of the seat on which the welded connections of the drill pipes is seated, is superficially hardened, in order to have a high wear resistance.



NOMINAL DIMENSION		DRILL PIPE CONNECTION	CONN TYPE	PASSING DIAMETERd		MAXIMUM WORKING LOAD					
in	mm	-	-	in	mm	ts					
2 3/8	60,3	NC 26(2 3/8IF)	E.U.	2 21/32	67,47	100	150	175	-	-	-
2 7/8	73,0	-	I.U.	3 3/32	78,6	100	150	175	-	-	-
		NC 31(2 7/8IF)	E.U.	3 9/32	83,34	100	150	175	-	-	-
3 1/2	88,9	-	I.U.	3 25/32	96,0	-	-	-	-	250	-
		NC 38(3 1/2IF)	E.U.	3 31/32	100,81	100	150	175	-	-	-
4	101,6	NC 40(4FH)	I.U.	4 9/32	108,74	100	-	-	-	250	350
		NC 46(4IF)	E.U.	4 25/32	121,44	100	-	175	-	250	350
4 1/2	114,3	NC 46(4IF)	I.U.	4 25/32	121,44	100	-	175	-	250	350
		NC 50(4 1/2 IF)	E.U.	5 1/4	133,35	100	-	175	200	250	350
		4 1/2 FH	I.E.U.	4 25/32	121,44	100	-	175	-	250	350
5	127,0	NC 50(4 1/2 IF)	I.E.U.	5 1/4	133,35	100	-	175	200	250	350
		5 1/2 FH	I.E.U.	5 1/4	133,35	100	-	175	200	250	350
5 1/2	139,7	5 1/2 FH	I.E.U.	5 13/16	147,64	-	-	175	200	250	350

From the point of view of the environmental temperature, the elevators are made in two solutions:

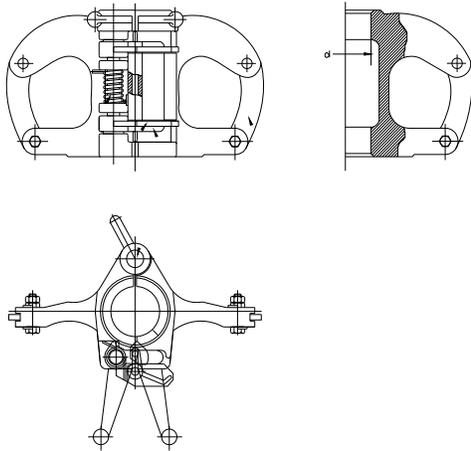
- for functioning in environment with low temperatures down to minus 20°C
- for functioning in environment with low temperatures down to minus 45°C

Data to be introduced in the order

- Nominal dimension and connection type of drill pipe
- Passing diameter
- Maximum working load
- Quality level of the product acc. to API Spec. 8C: PSL 1 or PSL 2
- Performance level of product acc. to API Spec. 8C: SR1, SR2, SR3, SR4, SR5.
- Minimum temperature of the environment

DRILL COLLAR WITH ZIP LIFT RECESS ELEVATORS

The center latch square type drill collar elevators are destined to handle drill collar. Closing of the elevators on the drill collar body is made on the recess located near the drill collar end which includes the coupling. These elevators consist of two bodies made of low alloy steel, heat treated, jointed by means of a bolt and closed by means of a latch – safety lock system, which provides a double safety during functioning. Each of the two bodies is provided with a shoulder for its suspending in the elevator links. The external surface of the seat on which the shoulders of the drill collars are set, is superficially hardened to obtain a high wear resistance.



NOMINAL DIMENSION		BORE d		WORKING LOAD		
in	mm	in	mm	ts		
4 1/8	104,8	3 13/16	96,8	65	100	-
4 3/4	120,7	4 3/8	111,13	65	100	-
6	152,4	5 1/2	139,7	-	-	150
6 1/4	158,8	5 3/4	146,0	-	-	150
6 1/2	165,1	6	152,4	-	-	150
6 3/4	171,5	6 3/16	157,2	-	-	150
7	177,8	6 7/16	163,5	-	-	150
7 1/4	184,2	6 11/16	169,8	-	-	150
7 1/2	190,5	6 15/16	176,2	-	-	150
7 3/4	196,9	7 3/16	182,6	-	-	150
8	203,2	7 7/16	188,9	-	-	150
8 1/4	209,6	7 11/16	195,3	-	-	150
8 1/2	215,9	7 15/16	201,6	-	-	150
9	228,9	8 3/8	212,7	-	-	150
9 1/2	241,3	8 7/8	225,4	-	-	150
10	254,0	9 3/8	238,2	-	-	150
11 1/4	285,8	10 5/8	269,9	-	-	150

From the point of view of the environmental temperature, the elevators are made in two solutions:

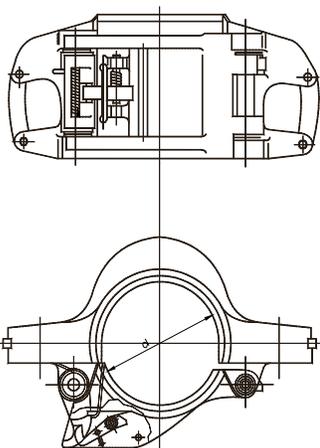
- for functioning in environment with low temperatures down to minus 20°C
- for functioning in environment with low temperatures down to minus 45°C

Data to be introduced in the order

- Nominal dimension of drill collar with zip lift recess
- Passing diameter
- Maximum working load
- Quality level of the product acc. to API Spec. 8C: PSL 1 or PSL 2
- Performance level of product acc. to API Spec. 8C: SR1, SR2, SR3, SR4, SR5.
- Minimum temperature of the environment

SIDE DOOR 90 DEGREES TYPE CASING ELEVATOR

The side door square type casing elevator, is destined to catch and handle the casing during the casing-off operation of the production wells. This elevator consists of a body jointed with a door made of low alloy steel, heat treated, inside which is machined the square seat for the couplings at the ends of the casings. The shoulders of the body allow suspending the elevator in the elevator links appropriate to its load. The door of the elevator is jointed with the body by means of a bolt, and its opening is secured by means of a latch and a safety lock which provide a double locking. The external surface of the seat on which the shoulders of the drill collars are set, is superficially hardened to obtain a high wear resistance.



DIMENSIUNE A NOMINALĂ		DIAMETRUL DE TRECERE d		SARCINA DE LUCRU			
in	mm	in	mm	ts			
4 1/2	114,3	4 19/32	117,0	65	-	150	-
4 3/4	120,7	4 27/32	123,0	65	-	150	-
5	127,0	5 1/16	129,0	65	-	150	-
5 1/2	139,7	5 9/32	142,0	65	-	150	-
5 3/4	146,0	5 13/16	148,0	65	-	150	-
6	152,4	6 1/8	155,0	65	-	150	-
6 5/8	168,3	6 3/4	171,5	65	-	150	-
7	177,8	7 1/8	181,0	65	-	150	-
7 5/8	193,7	7 3/4	196,9	-	100	150	-
8 5/8	219,1	8 3/4	222,0	-	100	150	-
9 5/8	244,5	9 3/4	248,0	-	100	150	250
10 3/4	273,1	10 7/8	277,0	-	100	150	-
11 3/4	298,5	11 15/16	303,0	-	100	150	-
12 3/4	323,9	12 15/16	329,0	-	-	150	250
13 3/8	339,7	13 9/16	344,0	-	-	150	-
16	406,4	16 3/16	411,0	-	-	150	-
18 5/8	473,1	18 13/16	478,0	-	-	150	-
20	508,0	20 1/4	514,0	-	-	150	250
21 1/2	546,1	21 3/4	552,0	-	-	150	-
24 1/2	622,3	24 11/16	627,0	-	-	150	-

From the point of view of the environmental temperature, the elevators are made in two solutions:

- for functioning in environment with low temperatures down to minus 20°C
- for functioning in environment with low temperatures down to minus 45°C

Data to be introduced in the order

- Nominal dimension of casing.
- Passing diameter.
- Maximum working load
- Quality level of the product acc. to API Spec. 8C: PSL 1 or PSL 2
- Performance level of product acc. to API Spec. 8C: SR1, SR2, SR3, SR4, SR5.
- Minimum temperature of the environment

SINGLE JOINT ELEVATORS

The single joint elevators are used for lifting from the well floor of the casing with screwed coupling or of the casing with coupling from body and bringing them inside the derrick drilling in vertical position, for screwing them inside the casing string. These elevators are made in the following solution:

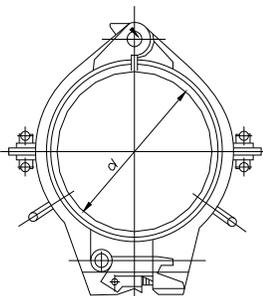
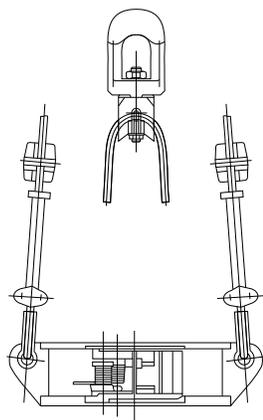
- square type elevators.

SINGLE JOINT SQUARE TYPE ELEVATORS

The elevator consists of two symmetrical bodies jointed by means of a bolt. Their closing on the casing body is made by means of a latch – safety lock system, which provides a double safety during functioning. The two bodies are provided with two lifting ears each, antipodal located which are jointed by means of bolts to the hook suspending device consisting of a whirl eye and a zincate cable which can be fixed by means of clamps with screws. Whirl eye allows the free rotation of the assembly elevator-suspending device around the whirl's axis.

From service temp. point of view there are two solutions:

- functioning down to la minus 20°C
- functioning down to minus 45°C



NOMINAL DIMENSION		BORE d mm	WORKING LOAD	
in	mm		ts	tf
4 1/2	114,3	118,0	3,3	3
5	127,0	129,0		
5 1/2	139,7	141,2		
6 5/8	168,3	171,0		
7	177,8	179,5		
7 5/8	193,7	197,0		
8 5/8	219,1	220,6		
9 5/8	244,5	246,0		
10 3/4	273,1	275,0		
11 3/4	298,5	301,0		
12 3/4	323,9	326,0	4,4	4
13 3/8	339,7	342,0		
16	406,4	413,0		
18 5/8	473,1	477,0		
20	508,0	512,0		
21 1/2	546,1	550,0		
24 1/2	622,3	627,0		

Data to be introduced in the order

- 1) Nominal dimension of the casing
- 2) Passing diameter: d
- 3) Maximum working load
- 4) Quality level of the product acc. to API Spec. 8C: PSL 1 or PSL 2
- 5) Performance level of product acc. to 8C: SR1, SR2, SR3, SR4, SR5
- 6) Minimum temperature of the environment

SLIP TYPE ELEVATOR - SPIDER FOR 4 1/2-13 3/8 in CASING

Slip type spider – elevator for casing 4 1/2-13 3/8 in is manufactured in two solutions:

- with maximum working load of 350 short ton
- with maximum working load of 500 short ton

The two solutions are similar from a constructive point of view.

The assembly, according to the equipping and installment, may be used as spider or as elevator.

The operation of the spider and, respectively, of the elevator can be done manually or pneumatically, according to the request of the beneficiary.

The two spider-elevators, of 350 short tons and of 500 short tons are designed in compliance with API Spec. 8 C.

From a constructive point of view the body of the spider-elevator consists of two elements: body and door, their joint being done by means of two bolts.

The body has two sided arms, by means of which the assembly hangs in the elevator links when it works as an elevator, and at the inside has a cut-coned surface provided with circular ribs which are used to support the slips when they support the tubular material. The slips are not leaning on the door when they support the tubular material.

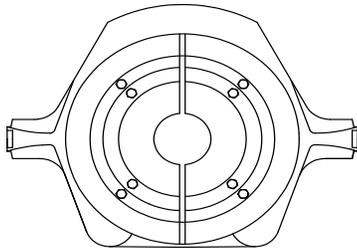
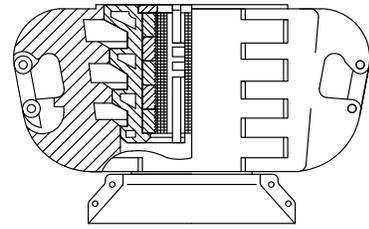
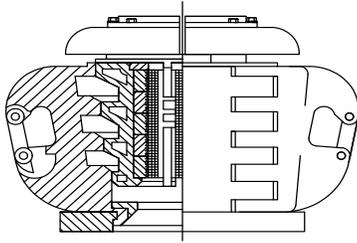
Each set of slips consists of three bodies: middle slip, left slip and right slip. The middle slip is connected to the lifting mechanism, and the left and right slips are jointed with hinges on each side of the middle slip.

When the product is used as slip type spider, the body is equipped at the lower part with a plate of an appropriate dimension to the rotary table on which is set, which protects the slips in lifted position and guides the entering of the casing inside the body of the spider.

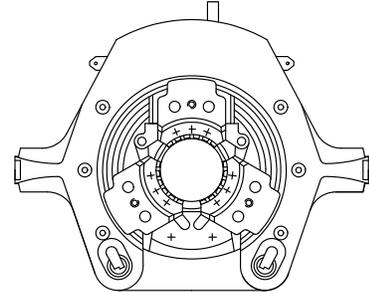
When the product is used as an elevator, the body is equipped at the lower part with a funnel which guides the casing when it enters the body of the elevator. For equipping in horizontal position, the elevator is equipped with a balance tensor.

ITEM	CHARACTERISTIC	SPIDER – ELEVATOR TYPE	
		4 1/2 - 13 3/8 x 350 ts	4 1/2 - 13 3/8 x 500 ts
1	Nominal dimension of the casing which can be handled	4 1/2; 5; 5 1/2; 5 3/4; 6 5/8; 7; 7 5/8; 8 5/8; 9 5/8; 10 3/4; 11 3/4; 12 3/4; 13 3/8 in	
2	Set of slips and mode of equipping	slips 5 1/2 in complete with dies: 4 1/2; 5; 5 1/2 in	
		slips 7 5/8 in complete with dies: 5 3/4; 6 5/8; 7; 7 5/8 in	
		slips 9 5/8 in complete with dies: 8 5/8; 9 5/8 in	
		slips 11 3/4 in complete with dies: 10 3/4; 11 3/4 in	
		slips 13 3/8 in complete with dies: 12 3/4; 13 3/8 in	
3	Maximum working load	350 ts(320 tf)	500 ts(450 tf)
4	Maximum working load of the slips		
	Slips 5 1/2 in	220 ts(200 tf)	330 ts(300 tf)
	Slips 7 5/8 in	275 ts(250 tf)	385 ts(450 tf)
	Slips 9 5/8 in	275 ts(250 tf)	440 ts(400 tf)
	Slips 11 3/4 in	350 ts(320 tf)	500 ts(450 tf)
	Slips 13 3/8 in	350 ts(320 tf)	500 ts(450 tf)
5	Pressure of the actuating air	7 - 10 bar	
6	Overall dimensions	Spider	Elevator
	Length	1480 mm	1480 mm
	Width	1300 mm	1300 mm
	Height	840 mm	840 mm

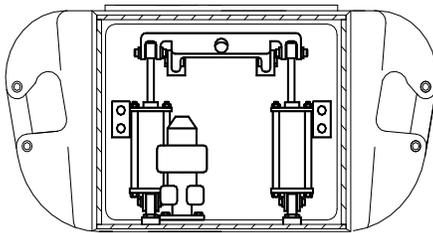
HANDLING TOOLS



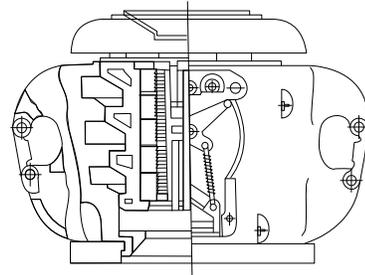
Spider solution



Elevator solution



Pneumatic drive for
spider elevator



Manual drive for
spider elevator

From the point of view of the environmental temperature, spider-elevator of 350 ts and of 500 ts is made in two solutions:

- a. for functioning in environment with low temperatures down to minus 20°C
- b. for functioning in environment with low temperatures down to minus 45°C

Data to be introduced in the order:

- 1) *Nominal dimension of the tubular material to be handled with the spider - elevator*
- 2) *Maximum working load of the spider-elevator*
- 3) *Quality level of the product acc. to API Spec. 8C: PSL 1 or PSL 2*
- 4) *Performance level of product acc. to API Spec. 8C: SR1, SR2, SR3, SR4, SR5*
- 5) *Minimum temperature of the environment*

SLIP TYPE TUBING SPIDER

The slip type tubing spiders are used to support the tubing string during the operations of introducing and extracting them in the wells during intervention. The slip type tubing spiders are manufactured for the following maximum working loads: 40 ; 65 ; 100 ts .

Regarding the operating mode, the slip type tubing spiders are manufactured in the following solutions:

- manually operated :BMTE type
- pneumatically operated :BPTE type
- hydraulically operated : BHTE type

The slip type tubing spider is designed such as to pass from one solution to another by simply replacing the actuating subassembly, the remaining elements staying the same.

From a constructive point of view, the body of the spider consists of two elements: the body itself and the door, joining the two elements by means of two bolts. At the inside, the body has a cut-coned surface on which the slip assembly is set when they support the tubing string. The slips do not lean on the door when they support the tubular material.

Each size of slip assembly consists of three bodies: middle slip, left slip and right slip. The middle slip is connected to the lifting mechanism, and the left and right slips are jointed by hinges on each side of the middle slip.

The slip type tubing spiders are designed and manufactured in compliance with the provisions imposed by API Spec.7K.

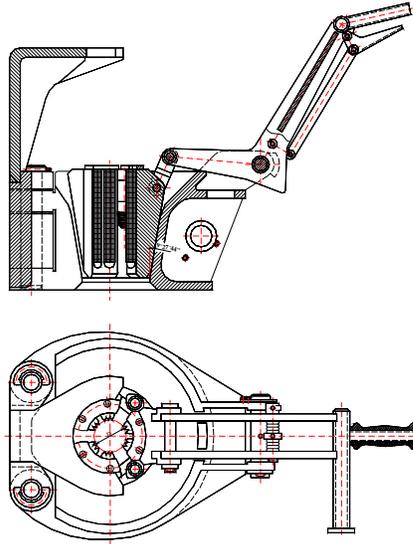
From a point of view from a minimum environmental temperature, the tubing spiders are made in two solutions:

- for functioning in environment with low temperatures down to minus 20°C
- for functioning in environment with low temperatures down to minus 45°C

Data to be introduced in the order:

- 1) *Nominal dimension of the tubing to be handled with the spider*
- 2) *Maximum working load*
- 3) *Mode of actuation of the spider*
- 4) *Performance level of the product, acc. to API Spec.7K*
- 5) *Minimum temperature of the environment*

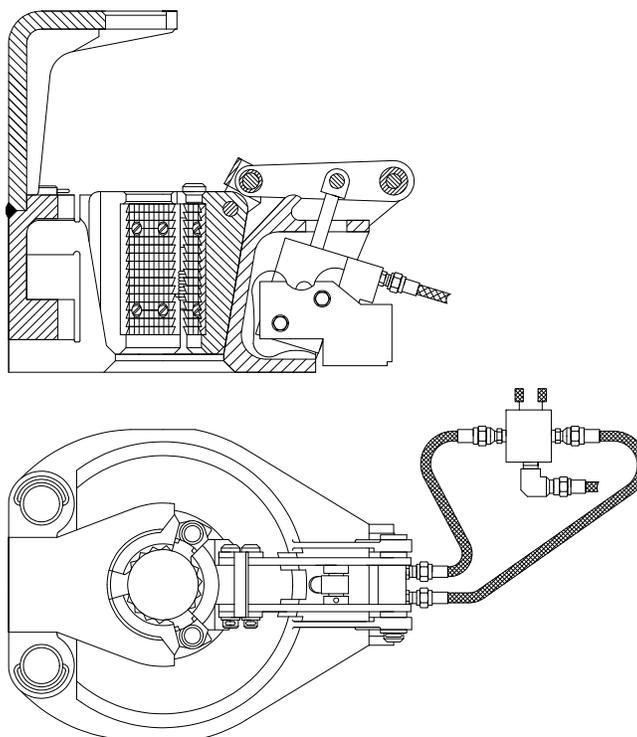
SLIP TYPE TUBING SPIDER MANUALLY OPERATED



Item	Maximum Working Load		Slips		Maximum actuating force	Overall dimensions					
			Nominal Dimension	Dimension of Dies		L		l		h	
-	ts	tf	in	mm	N	in	mm	in	mm	in	mm
1	40	36	1,900	1,315	90	32 11/16	830	13 25/32	350	17 23/32	450
				1,660							
				1,900							
			3 1/2	2 3/8							
				2 7/8							
				3 1/2							
2	65	58	1,900	1,315	90	30 5/16	770	14 31/32	380	20 7/8	530
				1,660							
				1,900							
			3 1/2	2 3/8							
				2 7/8							
				3 1/2							
3	100	89	3 1/2	2 3/8	170	39 3/8	1000	15 3/4	400	36 7/32	920
				2 7/8							
				3 1/2							
			4 1/2	3 1/2							
				4							
				4 1/2							

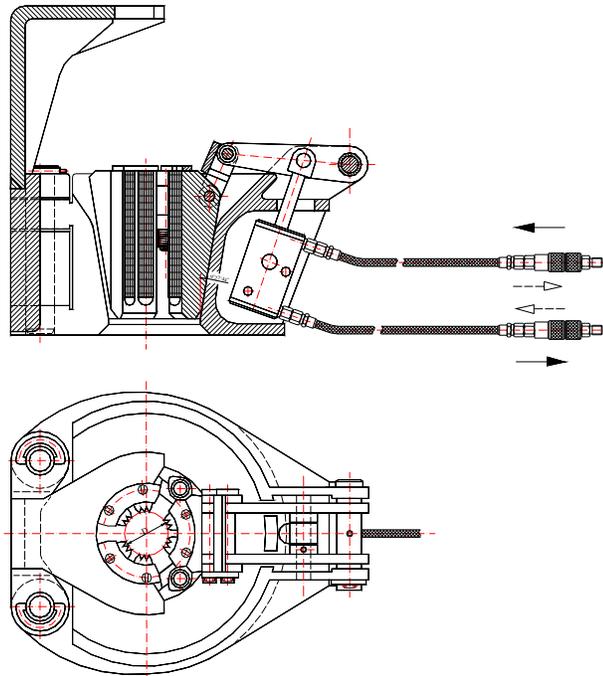
HANDLING TOOLS

SLIP TYPE TUBING SPIDER PNEUMATICALLY OPERATED



Item	Maximum Working load		Slips		Pressure of the actuating air	Overall dimensions					
			Nominal Dimension	Dimension of Dies		L		l		h	
-	ts	tf	in	mm	bar	in	mm	in	mm	in	mm
1	40	36	1,900	1,315	7... 10	15 3/4	400	13 25/32	350	13 25/32	350
				1,660							
				1,900							
			3 1/2	2 3/8							
				2 7/8							
				3 1/2							
2	65	58	1,900	1,315	7... 10	20	518	14 31/32	380	19 9/32	490
				1,660							
				1,900							
			3 1/2	2 3/8							
				2 7/8							
				3 1/2							
3	100	89	3 1/2	2 3/8	7... 10	24 13/16	630	15 3/4	400	24 13/16	630
				2 7/8							
				3 1/2							
			4 1/2	3 1/2							
				4							
				4 1/2							

SLIP TYPE TUBING SPIDER HYDRAULICALLY OPERATED



Item	Maximum Working load		Slips		Pressure of the actuating oil	Overall dimensions					
			Nominal Dimension	Dimension of Dies		L		l		h	
-	ts	tf	in	mm	bar	in	mm	in	mm	in	mm
1	40	36	1,900	1,315	7... 10	15 3/4	400	13 25/32	350	13 25/32	350
				1,660							
				1,900							
			3 1/2	2 3/8							
				2 7/8							
2	65	58	1,900	1,315	7... 10	20	518	14 31/32	380	19 9/32	490
				1,660							
				1,900							
			3 1/2	2 3/8							
				2 7/8							
3	100	89	3 1/2	2 3/8	7... 10	24 13/16	630	15 3/4	400	24 13/16	630
				2 7/8							
				3 1/2							
			4 1/2	3 1/2							
				4							
			4 1/2								

ROTARY SLIPS

The drill pipe slips have the purpose to catch on the drill pipe for the purpose of suspending the drill pipe string in the Rotary tables of 17 1/2; 20 1/2; 27 1/2; 37 1/2 and 49 1/2 in. Some slips could be used with Master Bushing.

The drill pipe slips are designed in compliance with the provisions imposed by API Spec. 7K and are made of cast low alloy steel, heat treated. Through their design they assure an uniform contact with the tubular material and an optimum distribution of the loads, which determines a long exploitation and a good protection of the drill pipes, in the most severe working conditions.

The slips for drill pipe consist of a central body and two sided bodies jointed by means of bolts, the sided ones being opened by the action of the springs.

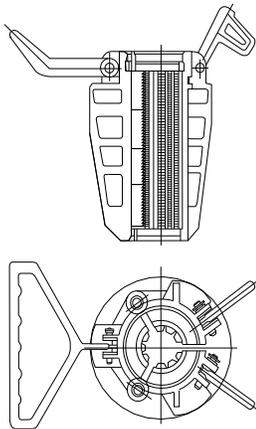
Each body has dovetail slots in which the dies are introduced. At the upper part, each body is provided with a handle, used to handle the slip.

After the contact length of the tubular material with the dies which equip the slips, the slips are classified as follows:

- short slips (S type), with the contact length of 10 3/64 in (255 mm);
- long slips (L type), with the contact length of 13 3/8 in (340 mm);
- extra long slips (EL type), with the contact length of 16 3/4 in (425 mm).

From the point of view of the environmental temperature, the drill pipe slips are made in two solutions:

- a. for functioning in environment with low temperatures down to minus 20°C
- b. for functioning in environment with low temperatures down to minus 45°C



SLIP TYPE	NOMINAL DIMENSION OF SLIP		NOMINAL DIMENSION TO CATCH		MAXIMUM WORKING LOAD	
	in	mm	in	mm	ts	tf
S	3 1/2	88,9	2 3/8	60,3	100	91
			2 7/8	73,0		
			3 1/2	88,9		
	4 1/2	114,3	3 1/2	88,9		
			4	101,6		
			4 1/2	114,3		
L	3 1/2	88,9	2 3/8	60,3	150	136
			2 7/8	73,0		
			3 1/2	88,9		
	4 1/2	114,3	3 1/2	88,9		
			4	101,6		
			4 1/2	114,3		
	5	127,0	4	101,6		
			4 1/2	114,3		
			5	127,0		
	5 1/2	139,7	4 1/2	114,3		
			5	127,0		
			5 1/2	139,7		
EL	4 1/2	114,3	3 1/2	88,9	200	181
			4	101,6		
			4 1/2	114,3		
	5	127,0	4	101,6		
			4 1/2	114,3		
			5	127,0		
	5 1/2	139,7	4 1/2	114,3		
			5	127,0		
			5 1/2	139,7		

Data to be introduced in the order:

- 1) Slip type
- 2) Nominal dimension of slip
- 3) Performance level of product, acc. to API Spec.7K
- 4) Minimum environmental temperature

MULTI-SEGMENT DRILL COLLAR SLIPS

The multi-segment drill collar slips are destined to catch and suspend the casing string or the drill collar string, in the adapters introduced in the master bushings of the Rotary table, during the operations of introducing- extracting. The drill collar slips are designed in compliance with the provisions imposed by API Spec. 7K

The slip segments are made of low alloy steel in forged construction, heat treated and jointed by bolts and hinges. The number of segments and bolts is according to the gripping dimension of the casing or of the drill collars. Each slip segment is provided with normal dies or circular dies. To the external slip segments (left-right) as well as to the middle segment are attached handles to handle the slips.

In case, due to technical reasons, the casing string or drill collar string must be kept suspended for a longer period of time, for security reasons there will be mounted above the slips a multi segment safety clamp for casing or drill collar.

From the point of view of the environmental temperature, the multi-segment manual slips are manufactured in two solutions:

- for functioning in environment with low temperatures down to minus 20°C
- for functioning in environment with low temperatures down to minus 45°C

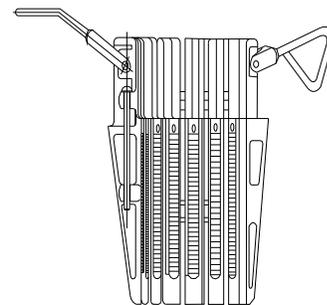
MULTISEGMENT MANUAL CASING SLIPS

MULTISEGMENT MANUAL DRILL COLLAR SLIPS

The contact length between the casing and the dies of the slip is of 13 3/8 in (340 mm)

NOMINAL DIMENSION OF CASING SLIP		NO. OF SEGMENT FOR SLIP	NO. OF DIES		Max. Working Load	
in	mm		Normal	Circular	ts	tf
5	127	9	36	108		
5 1/2	139,7	11	44	132		
6 5/8	168,3	12	48	144		
7	177,8	12	48	144		
7 5/8	193,7	12	48	144		
8 5/8	219,1	13	52	156		
9 5/8	244,5	14	56	168		
10 3/4	273,1	15	60	170		
11 3/4	298,5	17	68	194		
13 3/8	339,7	18	72	206	150	136
16	406,4	21	84	252		
18 5/8	473,1	25	100	300		
20	508,0	26	104	312		
24 1/2	622,3	30	120	360		
26	660,4	33	132	396		
30	762,0	37	148	408		

NOMINAL DIMENSION OF DRILL COLLAR		NO. OF SEGM. FOR SLIP	NO. OF DIES		Max. Working Load	
in	mm		Normal	Circular	ts	tf
3 1/2 - 4 7/8	88,9 - 123,6	8	16	48	65	59
4 1/6 - 6	114,3 - 152,4	9	18	54		
5 1/2 - 7	139,7 - 177,8	9	18	54		
6 3/4 - 8 1/4	171,4 - 209,6	11	22	66		
8 - 9 1/2	203,2 - 241,3	12	24	72	100	91
8 1/2 - 10	215,9 - 254	13	26	78		
9 1/4 - 11 1/4	234,9 - 285,7	14	28	84		



Data to be introduced in the order

- Nominal dimension of slip for casing or drill collar
- Type of dies normal or circular which equip the slip
- Performance level of product, acc. to API Spec.7K
- Minimum environmental temperature

HANDLING TOOLS

SAFETY CLAMPS FOR DRILL COLLAR AND CASING

The safety clamps for tubular material is destined to fix the tubular material in the well hole, being a supporting surface for the safety of the suspended tubular material, or for its handling. The safety clamps are designed in compliance with the provisions imposed by API Spec. 7K.

The clamp allows the fixing of the tubular material in the well even if this has wears or irregularities on the external gripping surface and blocks it to slide in the slips.

The safety clamp is fixed above the multi-segment slips for casing or for drill collar.

The safety clamp consists of chain links the number of which depends on the dimension of the tubular material to be suspended. Each link is made of two straps united by means of a bushing and a support in which it is mounted a die with inclined external surface, which allows the relative movement in vertical plan by means of a spring fixed in the support. The main component parts of the safety clamp are made of forged low alloy steel, heat treated.

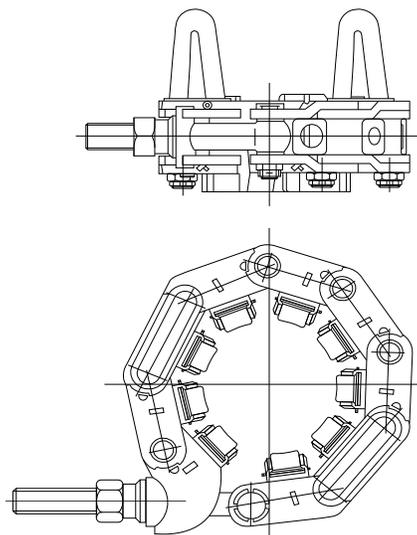
From the point of view of the environmental temperature, the safety clamps are manufactured in two solutions:

- a. for functioning in environment with low temperatures down to minus 20°C
- b. for functioning in environment with low temperatures down to minus 45°C

CLAMP DIMENSIONS		No. OF DIES	MAX. SUSPENDING IN THE CLAMP		MAX. HANDLING WITH THE CLAMP	
in	mm		Sht	tf	Sht	tf
2 7/8 - 4 1/2	73,0 - 114,3	8	40	32	10	9
4 - 5	101,6 - 127,0	9				
4 1/2 - 5 3/4	114,3 - 146,0	9				
5 1/2 - 7	139,7 - 177,8	9	65	59	15	13,6
6 3/4 - 8 1/4	171,5 - 209,6	10				
8 - 9 1/4	203,2 - 235,0	11				
9 1/4 - 10 1/2	235,0 - 266,7	12				
10 1/2 - 11 1/2	266,7 - 292,1	13				
11 1/2 - 12 1/2	292,1 - 317,5	14				

Data to be introduced in the order:

- 1) Dimension of clamp
- 2) Quality level of the product, acc. to API Spec. 7K
- 3) Performance level of product, acc. to API Spec.7K
- 4) Minimum environmental temperature



KELLY BUSHING FOR ROTARY TABLE

The Kelly bushings are handling tools destined to transmit the torque from the Rotary table to square or hexagonal Kelly. Kelly Bushing are used with Rotary Table Master Bushing.

The Kelly bushings comply with the provisions of API Spec. 7K, both from constructive point of view and functional.

There can be manufactured the following types of Kelly bushings:

- Kelly bushing for square kelly;
- Kelly bushing for hexagonal kelly.

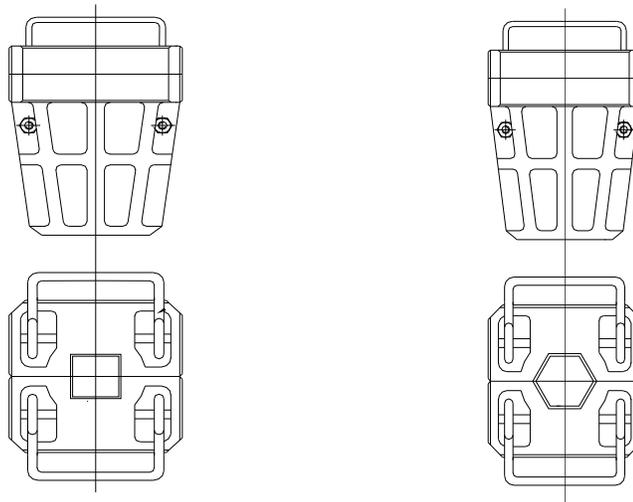
The Kelly bushing consists of two identical bodies each provided with a hook for hanging and two screws with washers and nuts in order to joint the two bodies.

The bodies of the Kelly bushings are provided at the inside with a hole for the passing of the square or hexagonal kellyes, and at the outside with a conical surface with the taper 1:3 and a square neck with the purpose to be introduced and lock against the rotation in the master bushings of the Rotary table.

From the point of view of the environmental temperature, the Kelly bushings are manufactured in two solutions:

- a. for functioning in environment with low temperatures down to minus 20°C
- b. for functioning in environment with low temperatures down to minus 45°C

NOMINAL DIMENSION OF THE KELLY BUSHINGS		NOMINAL DIMENSION OF THE KELLY			
		SQUARE		HEXAGONAL	
in	mm	in	mm	in	mm
2 1/2	64	2 1/2	64	-	-
3	76	3	76	3	76
3 1/2	89	3 1/2	89	3 1/2	89
4 1/2	108	4 1/2	108	4 1/2	108
5 1/4	133	5 1/4	133	5 1/4	133
6	152	6	152	6	152



Data to be introduced in the order:

- 1) Type of Kelly bushing
- 2) Nominal driving dimension
- 3) Quality level of the product, acc. to API Spec. 7K
- 4) Performance level of product, acc. to API Spec.7K
- 5) Minimum environmental temperature

ROLLER KELLY BUSHING

The roller Kelly bushing is destined to be used with the square or hexagonal Kellys of 2 1/2 in to 6 in. It is used in the master bushing with drive by bushing, with the square seat dimensions of 13 9/16 in (344,5 mm), FOR Rotary tables of: 17 1/2; 20 1/2 and 27 1/2 in.

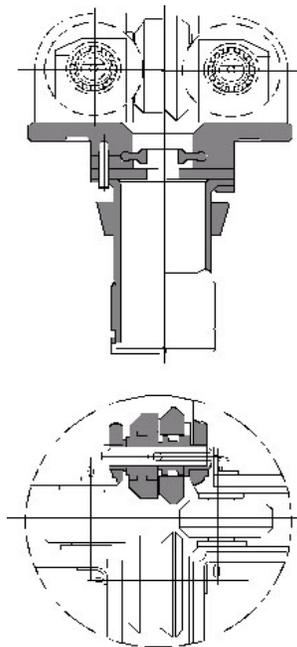
The roller Kelly bushing, may also be used in pin drive master bushing by means of pin frame.

Currently the roller Kelly bushing is equipped with rollers for the dimensions: 3 1/2; 4 1/4; 5 1/4 and 6 in, corresponding to the torques of: 2200; 3000; 3500 and 4000 daNm.

Upon request the roller Kelly bushing can also be equipped with rollers for Kellys of 2 1/2 and 3 in.

As main component parts the roller Kelly bushing consists of a body made of cast normalized steel or low alloy steel, heat treated. On the body are placed the rollers type I for square Kelly or rollers type II and III for hexagonal Kellys, whose external surfaces are subject to a hardening heat treatment. Guiding the rollers is made by wear plates, heat treated.

The roller Kelly bushing complies to the provisions of API Spec. 7K.



ITEM.	TYPE	NOMINAL DIMENSION OF THE KELLY		OPENING BETWEEN ROLLERS	WEIGHT
		in	mm		
1	Roller Kelly Bushing for Square Kelly	2 1/2	63,5	67,5	550
		3	76,2	80	513
		3 1/2	88,9	92,5	476
		4 1/4	108	111,5	447
		5 1/4	133,4	137	420
		6	152,4	157	392
2	Roller Kelly Bushing for Hexagonal Kelly	3	76,2	78	519
		3 1/2	88,9	91	487
		4 1/4	108	109	457
		5 1/4	133,4	134,5	438
		6	152,4	154	394

Data to be introduced in the order:

- 1) Dimension and type of kelly (square, hexagonal)
- 2) Type and dimension of rollers
- 3) Performance level of product acc. to API Spec. 7K
- 4) Minimum temperature of the environment

SUCKER ROD HOOKS

The sucker rod hook makes the connection between the production crane and the elevator links for tubing, or the arm of the elevator for the sucker rods.

The hook is used for the production wells, during operations of intervention and repair, for suspending or handling the segment of sucker rods or tubing.

The hook is manufactured in forged drop solution, made of low alloy steel, heat treated, in two types:

- without spring, with the working load of: 15 and 25 ts (13.6 tf and 22.6 tf)

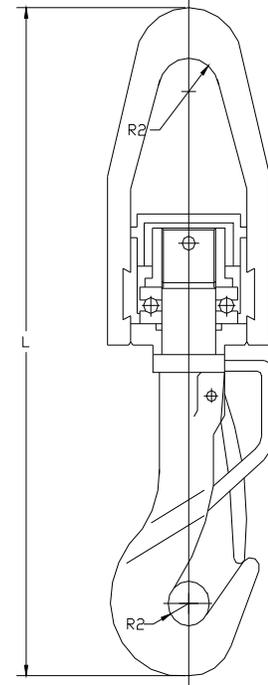
- with spring, with the working load of: 40 ts (36 tf).

For both types, the hook is provided with axial bearing which allows the taking over of the suspended load as well as the easy rotation, between the hook body and its handle.

The hook is manufactured in compliance with the provisions of API Spec 8C.

From the point of view of the environmental temperature, the hooks are manufactured in two solutions:

- a. for functioning in environment with low temperatures down to minus 20°C
- b. for functioning in environment with low temperature down to minus 45°C



MAXIMUM WORKING LOAD		R1		R2		L
Sht	tf	in	mm	in	mm	mm
15	13,6	1 1/2	38,1	1	25,4	600
25	22,6	1 1/2	38,1	1 1/2	38,1	695
40	36,3	2	50,8	2 3/4	69,8	1300

Data to be introduced in the order:

- 1) *Maximum working load*
- 2) *Quality level of the product acc. to API Spec. 8C: PSL 1 or PSL 2*
- 3) *Performance level of product acc. to API Spec.8C: SR1, SR2, SR3, SR4, SR5*
- 4) *Minimum temperature of the environment*

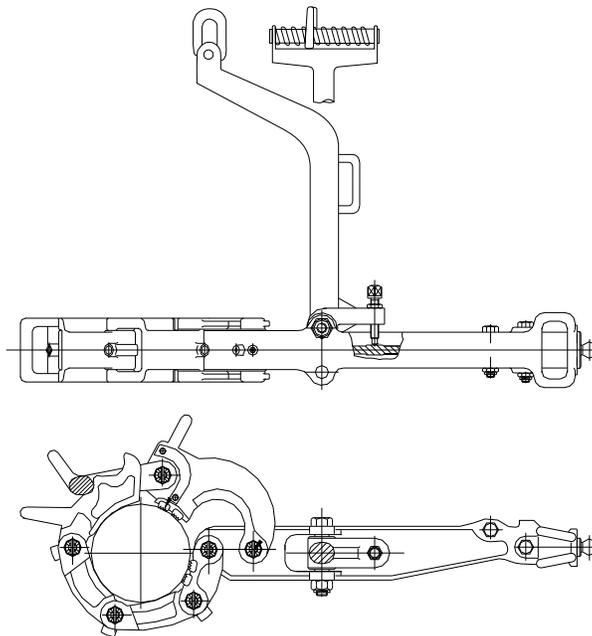
MULTI-DIMENSIONAL TONG

The multi dimensional tong is used to make up – break down operations of the tubular material, used in pair at the wells (tubing, drill pipe, drill collar and casing). The tong consists of a tail to which is assembled a long jaw and a short jaw, a latch assembled to the long jaw and a steppen jaw which can be assembled directly on the short jaw for smaller gripping dimensions, or after one or more intermediate jaws assembled to the short jaw for bigger dimensions.

By means of the hanger fixed on the tail, the tong is suspended in the mast of the installation. The lifting of the tong in optimum working position is made with the help of pneumatic elevator of the installation; the pneumatic command can be mounted on the tong's tail. The tong for 10; 22; 48 kNm is manufactured in forged drop solution made of low alloy steel, heat treated. The tong for 60; 90; 120 kNm is manufactured of cast low alloy steel, heat treated. The dies have the surfaces of the teeth hardened to 58-62 HRC and the geometry of the profiles appropriate to protect the tubular material. The multi dimensional tong is made in compliance with the provisions of API Spec. 7K.

From the point of view of the environmental temperature, the multi dimensional tong is manufactured in two solutions:

- a. for functioning in environment with low temperatures down to minus 20°C
- b. for functioning in environment with low temperature down to minus 45°C



Data to be introduced in the order:

- 1) Range of dimensions (in) x Tong torque (kNm)
- 2) Dimension of the lug jaws
- 3) Performance level of product, acc. to API Spec.7K
- 4) Minimum environmental temperature

HANDLING TOOLS

TONG TORQUE	RANGE OF DIMENSIONS	DIMENSION OF LUG JAW		WORKING TORQUE FOR JAW
		in	mm	
kN	in	in	mm	kN
10	1,05 - 6 3/8	1,05 - 1,9	26,7 - 48,3	1
		1,66 - 2 1/2	42,2 - 63,5	2
		2 3/8 - 3 13/64	60,3 - 93,2	4,5
		3 1/2 - 4 1/2	88,9 - 114,3	6,5
		4 - 5	101,6 - 127	7,5
		4 1/2 - 5 9/16	114,3 - 141,3	10.00
		5 1/4 - 6 3/8	133,4 - 161,9	
22	2 3/8 - 6 1/4	2 3/8 - 3 13/64	60,3 - 81,4	8
		3 1/2 - 4 1/2	88,9 - 114,3	22
		4 1/2 - 5 9/16	114,3 - 141,3	
		5 1/2 - 6 1/4	139,7 - 158,8	
48	2 3/8 - 10 3/4	2 3/8 - 4 1/2	60,3 - 114,3	48
		4 3/8 - 6 3/64	111,1 - 153,6	
		5 3/4 - 7 25/64	146,1 - 187,7	
		7 - 8 5/8	177,8 - 219,1	
		8 5/8 - 10 3/4	219,1 - 273	
60	2 3/8 - 14 3/8	2 3/8 - 4 1/8	60,3 - 105	35
		3 1/2 - 5 3/4	88,9 - 146	60
		4 1/4 - 6 1/4	108 - 159	
		6 1/4 - 8	159 - 203	
		7 5/8 - 9 5/8	194 - 244,5	35
		8 5/8 - 10 3/4	219 - 273	
		10 3/4 - 12 3/4	273 - 324	
90	3 1/2 - 17	12 3/4 - 14 3/8	324 - 365	70
		3 1/2 - 5	89 - 127	
		4 1/4 - 6 3/4	108 - 171,5	
		6 5/8 - 9	168 - 229	
		8 5/8 - 10 3/4	219 - 273	
		10 3/4 - 11 3/4	273 - 298,5	
		11 3/4 - 12 3/4	299-324	
120	4 3/4 - 25 1/2	13 3/4 - 14 27/32	339-377	90
		15 53/64 - 17	402-431,8	
		4 3/4 - 6 1/2	120 - 165,1	
		6 5/8 - 8 1/2	168 - 216	90
		8 5/8 - 10 1/8	219 - 258	120
		10 5/8 - 12 3/4	269 - 324	
		13 3/8 - 14 27/32	339 - 377	60
		15 33/64 - 17 3/4	402 - 451	
		18 5/8 - 21	473 - 534	
21 1/2 - 22 1/2	546 - 572			
24 1/2 - 25 1/2	622 - 648			

HANDLING TOOLS

SNAP-ON TUBING TONG

The snap-on tubing tong is used for make up and break down the tubing and their couplings during the operation of introduction and extraction in the well hole, both of the tubular materials with external dimensions compliant to the nominal gripping dimension of the tong.

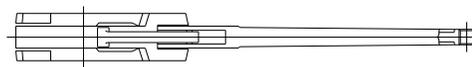
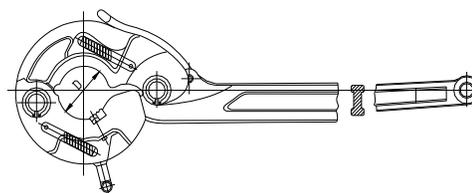
The tong consists of a tail to which is assembled a large jaw and a small jaw provided with a die. The closing of the tong is assured by means of a lock mounted on the tong's tail.

The snap-on tubing tong is manufactured in the forged drop solution from low alloy steel, heat treated.

The snap-on tubing tong is made in compliance with the provisions of API Spec. 7K.

From the point of view of the environmental temperature, the snap-on tubing tong is manufactured in two solutions:

- a. for functioning in environment with low temperatures down to minus 20°C
- b. for functioning in environment with low temperature down to minus 45°C



NOMINAL GRIPPING DIMENSION		TUBING TO BE GRIPPED			MAXIMUM TORQUE
		BODY	COUPLING		
			TBG	EUTBG	
in	mm	in	in		Nm
1,66	42,2	1,66	1,315	1,05	400
1,9	48,3	1,9	-	1,315	
2 13/64	56,0	-	1,9	1,66	840
2 3/8	60,3	2 3/8	-	-	
2 1/2	63,5	-	-	1,9	1300
2 7/8	73,0	2 7/8	2 3/8	-	
3 1/16	77,8	-	-	3 3/8	
3 1/2	88,9	3 1/2	2 7/8	-	
3 17/32	89,5	-	2 7/8	-	
3 43/64	93	-	-	2 7/8	1600
4	101,6	4	-	-	
4 1/4	108	-	3 1/2	-	1600
4 1/2	114,3	4 1/2	-	3 1/2	

Data to be introduced in the order:

- 1) Nominal gripping dimension
- 2) Performance level of product, acc. to API Spec.7K
- 3) Minimum environmental temperature

FULL GRIP TUBING TONG

The full grip tubing tong is used for make up and breaks down the tubing and their coupling during the operation of introduction and extraction in/from the well hole, as well as of the tubular material with external dimensions appropriate to the nominal gripping dimension of the tong.

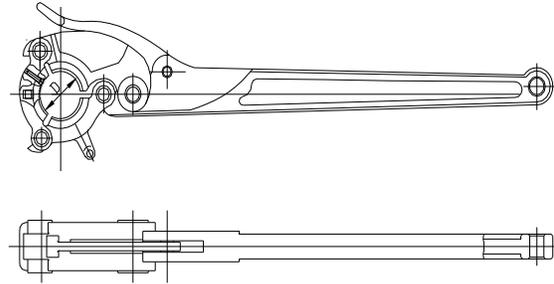
The tong consists of a tail to which is assembled a large jaw, jointed with an intermediate jaw and a jaw with handle. The closing of the tong is assured by means of a lock mounted on the tong's tail.

The tong jaws are equipped with dies on the whole jaw surface which is gripping on tubular material.

The full grip tubing tong is made in compliance with the provisions of API Spec. 7K.

From the point of view of the environmental temperature, the full grip type tubing tong is manufactured in two solutions:

- for functioning in environment with low temperatures down to minus 20°C
- for functioning in environment with low temperature down to minus 45°C



NOMINAL GRIPPING DIMENSION		GRIPPING DIMENSION OF THE DIE		TUBING TO BE GRIPPED			MAXIMUM TORQUE
				BODY	COUPLING		
					TBG	EUTB G	
in	mm	in	mm	in	in	kNm	
1,05 - 2 1/2	26,7 - 63,5	1,05	26,7	1,05	-	-	1,5
		1,315	33,4	1,315	1,05	-	
		1,66	42,2	1,66	1,315	1,05	
		1,9	48,3	1,9	-	1,315	
		2,056	52,2	-	1,66	-	
		2,2	55,9	-	1,9	1,66	
		2 3/8	60,3	2 3/8	-	-	
		2 1/2	63,5	-	-	1,9	
2 3/8 - 3 1/16	60,3 - 77,8	2 3/8	60,3	2 3/8	-	-	2,2
		2 1/2	63,5	-	-	1,9	
		2 7/8	73,0	-	2 3/8	-	
		3 1/16	77,8	-	-	2 3/8	
3 1/2 - 4 1/2	88,9 - 114,3	3 1/2	88,9	3 1/2	2 7/8	-	3,6
		3 13/64	93,2	-	-	2 7/8	
		4 1/4	108,0	-	3 1/2	-	
		4 1/2	114,3	-	-	3 1/2	

Data to be introduced in the order:

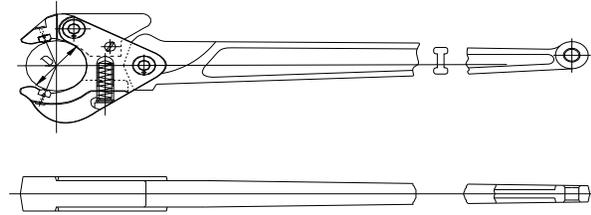
- Nominal dimension of the tong
- Gripping dimension of the die
- Performance level of product, acc. to API Spec. 7K
- Minimum environmental temperature

HANDLING TOOLS

OPEN TYPE TUBING TONG

The open type tubing tong is used for make up and breaks down the tubing and their couplings during the operation of introduction and extraction from the well hole.

The open tong consists of a tail to which is assembled a large jaw, jointed by means of a bolt and a small jaw which is maintained tightened on the tubular material by means of a spring-buffer system. Each jaw is equipped with one die.



The open type tubing tong is made in compliance with the provisions of API Spec. 7K.

From the point of view of the environmental temperature, the open type tubing tong is manufactured in two solutions:

- a. for functioning in environment with low temperatures down to minus 20°C
- b. for functioning in environment with low temperature down to minus 45°C

NOMINAL GRIPPING DIMENSION		TUBING TO BE GRIPPED			MAXIMUM TORQUE
		BODY	COUPLING		
			TBG	EUTBG	
in	mm	in	in		Nm
2 3/8	60,3	2 3/8	-	-	2500
2 7/8	73,0	2 7/8	2 3/8	-	
3 1/2	88,9	3 1/2	2 7/8	-	
4 1/2	114,3	4 1/2	-	3 1/2	

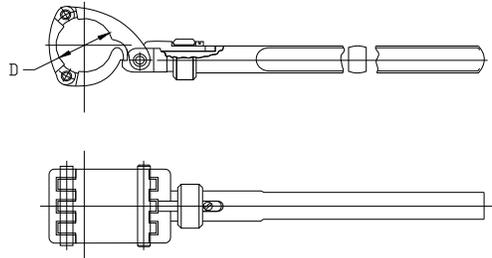
Data to be introduced in the order:

- 1) Nominal gripping dimension
- 2) Performance level of product, acc. to API Spec.7K
- 4) Minimum environmental temperature

FRICTION TONG

The friction tong is used for make up and breaks down the parts with cylindrical straight surfaces or with thin walls to which no degradations are allowed (subsurface pumps, tubing, polished rods, rods and nipples for rigs, rods for core drills, mechanical core drills and casing for the drilling with rigs).

The friction tong consists of three jaws with straight inner surfaces, jointed, which are closed and maintained closed on the gripping surface by means of a locking cut-off, driven by a mill grain nut.



From the point of view of the environmental temperature, the friction tong is manufactured in two solutions:

- a. for functioning in environment with low temperatures down to minus 20°C
- b. for functioning in environment with low temperature down to minus 45°C

HANDLING TOOLS

NOMINAL GRIPPING DIMENSION	GRIP INTERVAL	FORCE APPLIED ON LEVER	NOMINAL GRIPPING DIMENSION	GRIP INTERVAL	FORCE APPLIED ON LEVER
D	-	F	D	-	F
mm	mm	N	mm	mm	daN
17	17...17.7	1400	66	65.6...66.4	2000
19	19.3...19.7		67	66.6...67.4	
22	21.8...22.7		68	67.6...68.4	
24	23.7...24.5		70	69.6...70.4	
25	24.7...25.4		71	70.6...71.4	
26	25.7...26.3		73	72.6...73.5	
27	26.5...27.5		74	73.6...74.4	
29	28.5...29.3		76	75.6...76.4	
30	29.7...30.3		78	77.2...78.8	
32	31.8...32.8		1700	80	
33	32.6...34.2	81		80.6...81.4	
35	34.7...35.5	82		81.2...82.5	
37	36.6...37.3	89		88.2...89.8	
38	37.7...38.3	92		91.2...92.8	
43	42.7...43.3	93		92.2...93.8	
44	43.7...44.5	95		94.5...95.5	
45	44.5...45.4	96		95.5...96.5	
46	45.6...46.4	97		96.5...97.5	
47	46.6...47.4	1800		98	97.5...98.8
48	47.5...48.5		102	101.1...103	
49	48.6...49.4		105	104.2...105.8	
51	50.8...51.4		106	105.2...106.8	
55	54.6...55.4		108	107.2...108.8	
56	55.3...56.4		114	113.5...115.5	
57	56.6...57.4		116	115.5...116.5	
58	57.3...58.5		118	117.5...118.5	
59	58.6...59.4				
60	59.5...60.4				

Data to be introduced in the order:

- 1) Tong size
- 2) Nominal gripping dimension
- 3) Minimum environmental temperature

CHAIN TONG

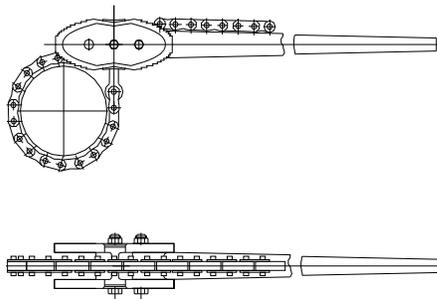
The chain tong with double jaws is used to make up and breaks down the tubular material used in the drilling and production activity, as well as for other tubular materials with dimensions and torques which comply with the parameters of the tong.

The chain tong with double jaws consists of a tail which has at one end mounted two jaws with teeth and a chain and is provided with bolts by means of which the tong is fixed on the external diameter of the tubular material, perpendicular on its longitudinal axis.

The chain tong with double jaws is manufactured in the forged drop solution from low alloy steel, heat treated.

From the point of view of the environmental temperature, the chain tong is manufactured in two solutions:

- a. for functioning in environment with low temperatures down to minus 20°C
- b. for functioning in environment with low temperature down to minus 45°C



TONG SIZE		RANGE OF GRIPPING DIAMETERS		MAX. WORKING TORQUE
in	mm	in	mm	Nm
1 5/16	33,3	19/32 ... 1 5/16	15 ... 33,3	150
2 3/8	60,3	19/32 ... 2 3/8	15 ... 60,3	250
4 1/2	114,3	1 ... 4 1/2	25,4 ... 114,3	700
6 1/2	165	1 3/8 ... 6 1/2	33 ... 165	1150
8 5/8	219	2 ... 8 5/8	50,8 ... 219	1250
12 3/4	324	2 3/4 ... 12 3/4	70 ... 324	2200
16	406,5	4 ... 16	102 ... 406,5	4900
18 5/8	473,1	4 ... 18 5/8	102 ... 473,1	7200
20	508	4 1/2 - 20	114...508	7200

Data to be introduced in the order:

- 1) Tong size
- 2) Minimum environmental temperature