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INTERNATIONAL STANDARD ISO 2289

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Rotary drilling equipment — Kellys

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FOREWORD

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Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 2289 was drawn up by Technical Committee ISO/TC 67, *Materials and equipment for petroleum and natural gas industries.*

It was approved in June 1971 by the Member Bodies of the following countries :

Austria	Hungary	Romania
Czechoslovakia	India	Spain
Egypt, Arab Rep. of	Japan	Turkey
France	Netherlands	United Kingdom
Germany	New Zealand	U.S.S.R.
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The Member Body of the following country expressed disapproval of the document on technical grounds :

U.S.A.

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Rotary drilling equipment — Kellys

1 SCOPE AND FIELD OF APPLICATION

This International Standard lays down specifications for kellys manufactured as a single piece, used for transmitting the rotational movement from the rotary table to the drill stem.

2 REFERENCES

ISO/R 79, *Brinell hardness test for steel.*

ISO/R 82, *Tensile testing of steel.*

ISO/R 83, *Charpy impact test (U-Notch) for steel.*

3 DEFINITIONS

3.1 upper upset : Cylindrical extremity of the kelly, having left-hand box connection for coupling with the swivel.

3.2 lower upset : Cylindrical extremity of the kelly, having right-hand pin connection for coupling with the drill-pipe string.

3.3 length of drive : Part of the kelly limited by the upper and lower upsets, taking over the rotational movement from the rotary table.

4 SYMBOLS AND ABBREVIATIONS

REG = Regular

FH = Full Hole

IF = Internal Flush

LH = Left-Hand

RH = Right-Hand

Opt = Optional

Std = Standard

5 CLASSIFICATION

The kellys are manufactured with

— square drive section;

— hexagonal drive section.

6 MANUFACTURE

6.1 Material

The kellys shall be made of alloy steel having, after heat treatment, the characteristics specified in section 7.

6.2 Workmanship

The outside surface of the kellys shall be sound, free from cracks, slivers, laminations, inclusions or other visible defects liable to affect the quality and the strength of the kellys.

6.3 Heat treatment

6.3.1 The full length of the kelly shall be heat treated.

6.3.2 On agreement between the manufacturer and the purchaser, the heat treatment can be limited to the two ends, on lengths of roughly 1 500 mm (60 in).

6.4 Dimensions

6.4.1 The dimensions of square kellys are specified in Table 1.

6.4.2 The dimensions of hexagonal kellys are specified in Table 2.

6.4.3 For tolerances on dimensions see Table 3.

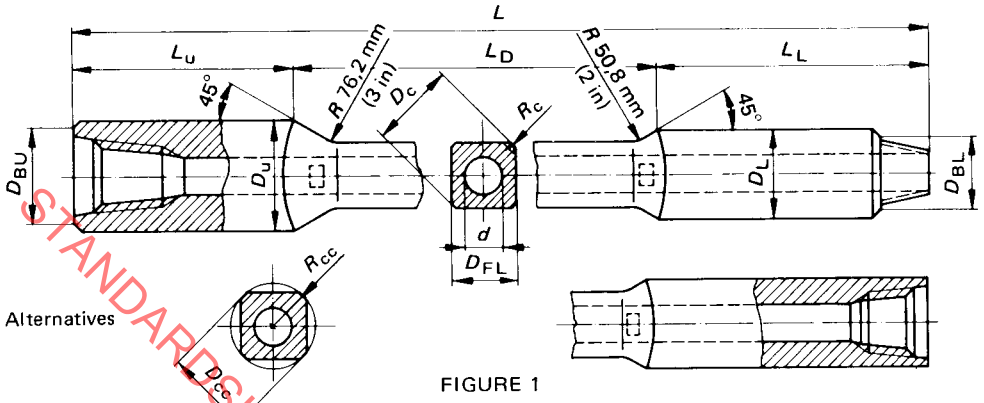

FIGURE 1

TABLE 1 — **Square kellys**

a) Dimensions in millimetres

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
Kelly size		Length of drive section		Length overall		Upper box connection							Lower pin connection				Inside diameter	Drive section					Mass[1]
						Size and Style		Outside diameter		Length	Bevel diameter							Across corners	Across corners	Across flats	Radius	Radius	
		L_D		L		LH		D_U		L_U	D_{BU}		RH	D_L	L_L	D_{BL}	d	D_c	D_{cc}	D_{FL}	R_c	R_{cc} approx.	
		Std	Opt	Std	Opt	Std	Opt	Std	Opt		Std	Opt											
mm	in	mm	mm	mm	mm	in	in	mm	mm	mm	mm	mm	in	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
63,5	2 1/2	11 250	–	12 190	–	6 5/8 REG	4 1/2 REG	196,8	146,0	420	186,1	134,5	2 3/8 IF	85,7	520	82,6	31,8	83,3	82,6	63,5	7,9	41,3	402
76,2	3	11 250	–	12 190	–	6 5/8 REG	4 1/2 REG	196,8	146,0	420	186,1	134,5	2 7/8 IF	104,8	520	100,4	44,4	100,0	98,4	76,2	9,5	49,2	500
88,9	3 1/2	11 250	–	12 190	–	6 5/8 REG	4 1/2 REG	196,8	146,0	420	186,1	134,5	3 1/2 IF	120,6	520	116,3	57,2	115,1	112,7	88,9	12,7	56,4	597
108,0	4 1/4	11 250	15 500	12 190	16 460	6 5/8 REG	4 1/2 REG	196,8	146,0	420	186,1	134,5	4 IF	152,4	520	140,5	71,4	141,3	139,7	108,0	12,7	69,8	829
													4 1/2 IF	155,6		150,4	69,8						
133,4	5 1/4	11 250	15 500	12 190	16 460	6 5/8 REG	–	196,8		420	186,1	–	5 1/2 FH	177,8	520	170,7	82,6	175,4	171,4	133,4	15,9	85,7	1 255
140,0	5 1/2	11 250	15 500	12 190	16 460	6 5/8 REG	–	196,8	–	420	186,1	–	5 1/2 FH	177,8	520	170,7	82,6	181,0	177,8	140,0	15,9	88,9	1 490
152,4	6	11 250	15 500	12 190	16 460	6 5/8 REG		196,8	–	420	186,1	–	6 5/8 FH	203,2	520	200,0	88,9	200,0	196,8	152,4	19,0	98,8	1 694

b) Dimensions in inches

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
mm	in	ft	ft	ft	ft	in	in	in	in	in	in	in	in	in	in	in	in	in	in	in	in	in	lb
63,5	2 1/2	37	–	40	–	6 5/8 REG	4 1/2 REG	7 3/4	5 3/4	16	7 21/64	5 19/64	2 3/8 IF	3 1/8	20	3 1/4	1 3/4	3 9/32	3.250	2 1/2	5/16	1 5/8	886.26
76,2	3	37	–	40	–	6 5/8 REG	4 1/2 REG	7 3/4	5 3/4	16	7 21/64	5 19/64	2 7/8 IF	4 1/8	20	3 61/64	1 3/4	3 15/32	3.875	3	3/8	1 15/16	1 102.31
88,9	3 1/2	37	–	40	–	6 5/8 REG	4 1/2 REG	7 3/4	5 3/4	16	7 21/64	5 19/64	3 1/2 IF	4 3/4	20	4 37/64	2 1/4	4 19/32	4.437	3 1/2	1/2	2 7/32	1 316.16
108,0	4 1/4	37	51	40	54	6 5/8 REG	4 1/2 REG	7 3/4	5 3/4	16	7 21/64	5 19/64	4 IF	6	20	5 17/32	2 13/16	5 9/16	5.500	4 1/4	1/2	2 3/4	1 827.63
													4 1/2 IF	6 1/8		5 59/64	2 3/4						
133,4	5 1/4	37	51	40	54	6 5/8 REG	–	7 3/4	–	16	7 21/64	–	5 1/2 FH	7	20	6 23/32	3 1/4	6 29/32	6.750	5 1/4	5/8	3 3/8	2 776.80
140,0	5 1/2	37	51	40	54	6 5/8 REG	–	7 3/4	–	16	7 21/64	–	5 1/2 FH	7	20	6 23/32	3 1/4	7 1/8	7.000	5 1/2	5/8	3 1/2	3 284.88
152,4	6	37	51	40	54	6 5/8 REG	–	7 3/4	–	16	7 21/64	–	6 5/8 FH	8	20	6 7/8	3 1/2	7 7/8	7.750	6	3/4	3 57/64	3 734.43

1) The mass is calculated for the standard nominal dimensions.

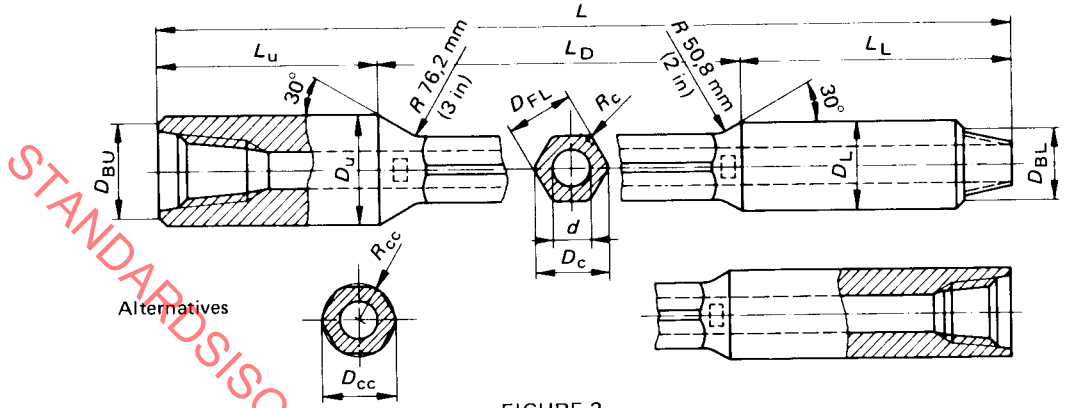

FIGURE 2

TABLE 2 — **Hexagonal kellys**

a) Dimensions in millimetres

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
Kelly size		Length of drive section		Length overall		Upper box connection							Lower pin connection				Inside diameter	Drive section					Mass[1]
						Size and Style		Outside diameter		Length	Bevel diameter		Size and Style	Outside diameter	Length	Bevel diameter		Across corners	Across corners	Across flats	Radius	Radius	
		L_D		L		LH		D_U		L_U	D_{BU}		RH	D_L	L_L	D_{BL}	d	D_c	D_{cc}	D_{FL}	R_c	R_{cc} approx.	
		Std	Opt	Std	Opt	Std	Opt	Std	Opt		Std	Opt											
mm	in	mm	mm	mm	mm	in	in	mm	mm	mm	mm	mm	in	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
76,2	3	11 250	–	12 190	–	6 5/8 REG	4 1/2 REG	196,8	146,0	420	186,1	134,5	2 3/8 IF	85,7	520	82,6	38,1	85,7	85,7	76,2	6,4	42,9	475
88,9	3 1/2	11 250	–	12 190	–	6 5/8 REG	4 1/2 REG	196,8	146,0	420	186,1	134,5	2 7/8 IF	104,8	520	100,4	44,4	100,8	100,0	88,9	6,4	50,0	560
108,0	4 1/4	11 250	15 500	12 190	16 460	6 5/8 REG	4 1/2 REG	196,8	146,0	420	186,1	134,5	3 1/2 IF	120,6	520	116,3	57,2	122,2	121,4	108,0	7,9	60,7	792
133,4	5 1/4	11 250	15 500	12 190	16 460	6 5/8 REG		196,8		420	186,1		4 IF	152,4	520	140,5	76,2[2]	151,6	149,9	133,4	9,5	75,0	1 024
													4 1/2 IF	155,6		150,4	82,6[2]						
152,4	6	11 250	15 500	12 190	16 460	6 5/8 REG		196,8		420	186,1		5 1/2 FH	177,8	520	170,7	88,9	173,0	173,0	152,4	9,5	86,5	1 207

b) Dimensions in inches

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
mm	in	ft	ft	ft	ft	in	in	in	in	in	in	in	in	in	in	in	in	in	in	in	in	in	lb
76,2	3	37	–	40	–	6 5/8 REG	4 1/2 REG	7 3/4	5 3/4	16	7 21/64	5 19/64	2 3/8 IF	3 3/8	20	3 1/4	1 1/2	3 3/8	3.375	3	1/4	1 11/16	1 047.19
88,9	3 1/2	37	–	40	–	6 5/8 REG	4 1/2 REG	7 3/4	5 3/4	16	7 21/64	5 19/64	2 7/8 IF	4 1/8	20	3 61/64	1 7/8	3 31/32	3.937	3 1/2	1/4	1 31/32	1 234.59
108,0	4 1/4	37	51	40	54	6 5/8 REG	4 1/2 REG	7 3/4	5 3/4	16	7 21/64	5 19/64	3 1/2 IF	4 3/4	20	4 3/64	2 1/4	4 13/16	4.781	4 1/4	5/16	2 25/64	1 746.06
133,4	5 1/4	37	51	40	54	6 5/8 REG	–	7 3/4	–	16	7 21/64	–	4 IF	6	20	5 17/32	3 [3]	5 31/32	5.900	5 1/4	3/8	2 61/64	2 257.53
													4 1/2 IF	6 1/8		5 59/64	3 1/4 [3]						
152,4	6	37	51	40	54	6 5/8 REG	–	7 3/4	–	16	7 21/64	–	5 1/2 FH	7	20	6 23/32	3 1/2	6 13/16	6.812	6	3/8	3 13/32	2 660.98

1) The mass is calculated for the standard nominal dimensions.
2) If ordered with either 4 IF or 4 1/2 IF lower connection, an optional bore of 71,4 mm shall be furnished, if so specified on the purchase order.
3) If ordered with either 4 IF or 4 1/2 IF lower connection, an optional bore of 2 13/16 in shall be furnished, if so specified on the purchase order.

TABLE 3 – **Tolerances**

Dimension			Units	Kelly sizes							Remarks
			mm	63,5	76,2	88,9	108,0	133,4	140,0	152,4	
			in	$2\frac{1}{2}$	3	$3\frac{1}{2}$	$4\frac{1}{4}$	$5\frac{1}{4}$	$5\frac{1}{2}$	6	
Total length L			mm	$+\ 152\ 0$							
			in	$+\ 6\ 0$							
Drive length L_D			mm	$+\ 152\ -\ 127$							
			in	$+\ 6\ -\ 5$							
Length of upsets L_u and L_L			mm	$+\ 64\ 0$							
			in	$+\ 2\frac{1}{2}\ 0$							
Outside diameter of upsets D_u and D_L			mm	± 0,8							
			in	$\pm\ \frac{1}{32}$							
Bore diameter d			mm	$+\ 1,6\ 0$							See clause 6.4.7
			in	$+\ \frac{1}{16}\ 0$							
Bevel diameter D_{BU} and D_{BL}			mm	± 0,4							
			in	$\pm\ \frac{1}{64}$							
Across corners, D_c and D_{cc}	Square section	D_c	mm	$+\ 3,2\ 0$					$+\ 4,0\ 0$		
			in	$+\ \frac{1}{8}\ 0$					$+\ \frac{5}{32}\ 0$		
		D_{cc}	mm	$0\ -\ 0,4$							
			in	$0\ -\ 0,015$							
	Hexagonal section	D_c	mm			± 0,8					
			in			$\pm\ \frac{1}{32}$					
		D_{cc}	mm			$0\ -\ 0,4$					
			in			$0\ -\ 0,015$					
Across flats D_{FL}	Square section		mm	$+\ 2,0\ 0$					$+\ 2,4\ 0$		See clause 6.4.6
			in	$+\ \frac{5}{64}\ 0$					$+\ \frac{3}{32}\ 0$		
	Hexagonal section		mm			$+\ 0,8\ 0$					
			in			$+\ \frac{1}{32}\ 0$					
Radius R_c	Square section		mm	± 1,6							See clause 6.4.6
			in	$\pm\ \frac{1}{16}$							
	Hexagonal section		mm			± 0,8					
			in			$\pm\ \frac{1}{32}$					
Straightness (maximum deflection)	For total length		mm	0,000 5 mm per millimetre							
			in	0.000 5 in per inch							
	Local		mm	1 mm per 2 000 mm							
			in	0.04 in per 79 in							