

HDS ROLLER KELLY BUSHING

(Pre-GBX-6)

OPERATION MANUAL

HDS-SM

STANDARD: Q/320623AD07



7K-0048

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I . Introduction

Roller kelly bushing is a necessary tool for drilling. It matches with master bushing to drive kelly pipe. When kelly pipe is drilling in, the rollers of bushing will favor the kelly pipe's motion and keeping concentric with well hole.

Fig.1 is HDS type roller kelly bushing. Squar body at the bottom is to match with inner square of master bushing. It is designed for the most rugged, high torque, high speed drilling conditions, its roller assembly provides an efficient driving mechanism that maintains good driving edges on the kelly. Within a certain drilling speed, kelly will not bend.

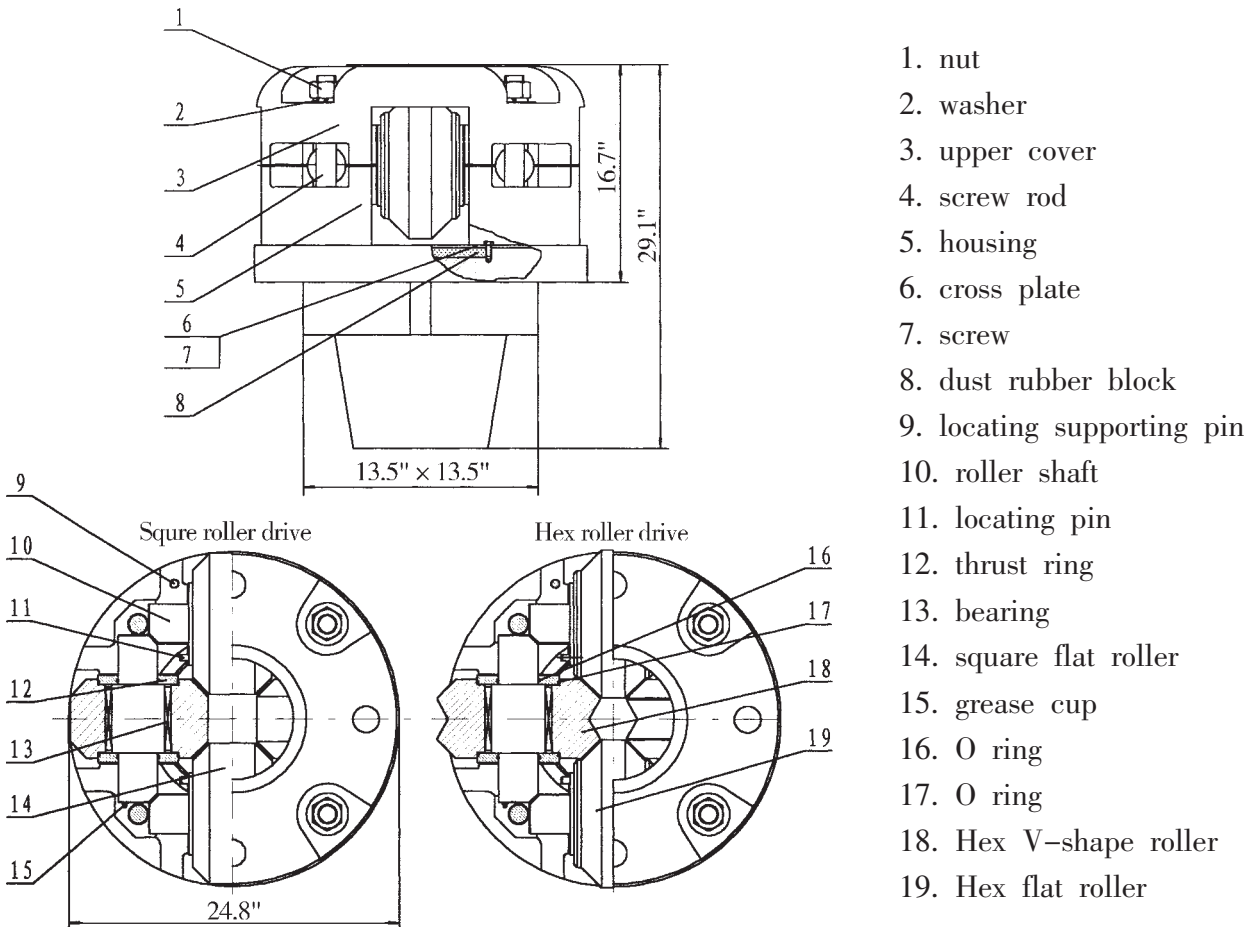


Fig.1 HDS Roller Kelly Bushing

HDS roller kelly bushing is applicable for ZP175,ZP205,ZP375 rotary tables, also can match with master bushings or rotary tables conforming to requirements of API Spec 7K “Specification for Drilling Equipment”. Square body, the part to fit with master bushing, will transfer the torque. By changing the four drive rollers of different size and shape, the kelly bushing can work with sorts of square and hex kellys.

Technical Data:

Applicable kelly size:

Square: 3½", 4¼", 5¼", 6"

Hex: 3", 3½", 4¼", 5¼", 6"

Max.torque: 23870 ft.lbf

Overall dimensions: L×W×H=24.8×24.8×29.1 in

Weight: 1540 lb

II . Installation

Refer to Fig.2 for the bushing's installation.

1. Lift the bushing and put it into master bushing.
2. Screw off four nuts and washers connecting upper cover and lower housing.
3. Remove the upper cover along the bolts.
4. Take out four roller parts from the inside of lower housing.
5. Loosely connect the upper cover and lower housing.
6. Put the kelly into busing.
7. Lift the upper cover and reset the roller parts. Notice that the locating pin for thrust ring should align with center of bushing, and be set on the lower groove.
8. Lay down the upper cover and make the locating suporting pin of housing fit with the pin hole of upper cover.
9. Install washers and nuts and screw tight.
10. Grease the rollers and inject lucriation oil into grease cup in the roller shaft to lubricate bearings inside roller parts before using the bushing.

III. Operation

1. Put the roller kelly bushing into master bushing. Its outer cone face enters into the inner cone face of rotary bushing.

2. When lowering the kelly bushing, rotary table will rotate slowly, and kelly bushing will auto-align with center, then the drive square will exactly fall into the square hole of rotary bushing.

3. Be careful when lowering the kelly bushing, do not allow the kelly impact with roller parts, as the impact will damage the roller parts.

4. If using the rubber dust block, service life of kelly and roller parts will extend by 20%. Dust block can prevent dust entering into the space between kelly and roller parts, and ease wearing of roller and kelly.

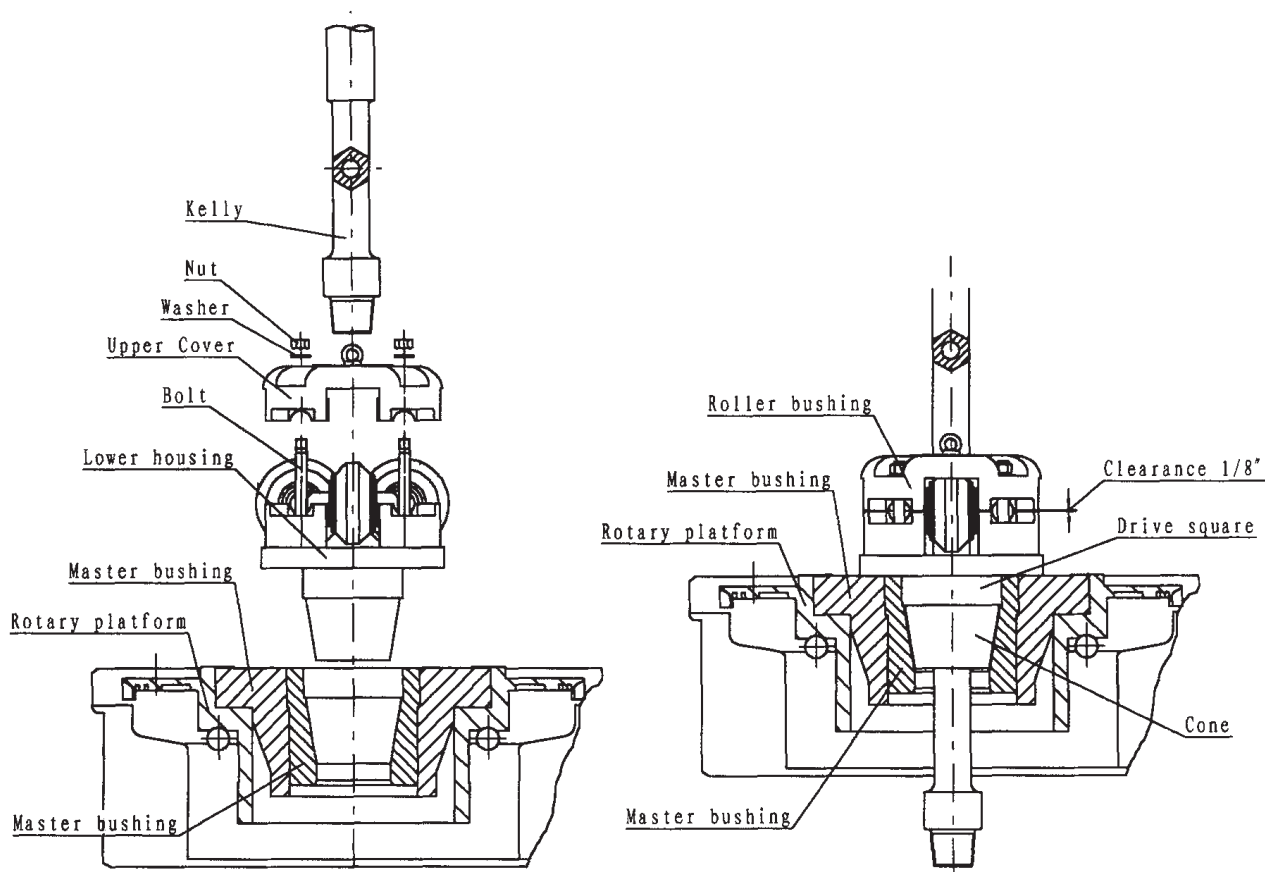


Fig.2 Installtion for HDS Roller Kelly Bushing

IV. Maintenance

1. Check up the four nuts weekly. Tighten if loose.
2. Inject grease (No.3# Calcium-base grease GB491-87) with grease gun to lubricate bearings inside of four roller parts once every shift.
3. Lubricating the bushing surface when it is idle.
4. Inspect the clearance between roller and kelly. Put kelly into the bushing, clearance can not exceed $\frac{1}{8}$ "(3.2mm), if clearance is over $\frac{1}{8}$ ", will cause roller parts wear more quickly.
5. Check the wearing of rollers and other parts, the max. wearing of hexagonal kelly is $\frac{1}{16}$ "(1.6mm) and for square kelly, it is $\frac{1}{8}$ "(3.2mm).
6. The clearance between the upper cover and the lower housing is $\frac{1}{8}$ "(3.2mm), It can be used to inspect the wearing of roller parts. Insert a pry rod from the underside of rollers and pry. lift distance of the roller should not be over $\frac{1}{32}$ "(0.8mm). Check its moveness from roller shaft side, secure the roller shaft does not move.

V. Recommended Spare Parts

Item	Part No.	Description	Qty.	Remarks
1	09-04B(a)	4 $\frac{1}{4}$ " square flat roller	4	
2	09-04B(b)	5 $\frac{1}{4}$ " square flat roller	4	
3	09-04B(c)	3 $\frac{1}{2}$ " square flat roller	4	
4	09-04B(d)	6" square flat roller	4	
5	09-04ZB(a)	4 $\frac{1}{4}$ " hex flat roller	2	
6	09-04ZB(b)	5 $\frac{1}{4}$ " hex flat roller	2	
7	09-04ZB(c)	3 $\frac{1}{2}$ " hex flat roller	2	
8	09-04ZB(d)	3" hex flat roller	2	
9	09-04ZB(e)	6" hex flat roller	2	
10	09-06ZB(a)	4 $\frac{1}{4}$ " V-shape roller	2	
11	09-06ZB(b)	5 $\frac{1}{4}$ " V-shape roller	2	
12	09-06ZB(c)	3 $\frac{1}{2}$ " V-shape roller	2	
13	09-06ZB(d)	3" V-shape roller	2	
14	09-06ZB(e)	6" V-shape roller	2	
15	09-09A	Square dust block 3 $\frac{1}{2}$ "、4 $\frac{1}{4}$ "、5 $\frac{1}{4}$ "、6"	1 for each	
16	09-09Z	Hex dust block 3"、3 $\frac{1}{2}$ "、4 $\frac{1}{4}$ "、5 $\frac{1}{4}$ "、6"	1 for each	
17	Q/Z1-66	Bearing 64920-1	8	
18	JB/ZQ4224-97	O ring 150×3.1	8	
19	GB3452.1-92	O ring 73×3.55		

VI. Parts List(Refer to Fig.3)

Item	Part No.	Description	Qty.	Remarks
1	GB6170-86	Nut M36×3	4	
2	GB93-87	Washer 36	4	
3	09-02	Upper cover	1	
4	GB5783-86	Bolt M10×20	8	
5	09-08	Cross plate	1	
6	09-09A	Square dust block	1 for each	
	09-09Z	Hex dust block	1 for each	
7	09.01.00Z	Housing	1	
8	09-01	Long screw rod M36×3	4	
9	GB/T70.1-2000	Screw M16×25	4	
10	09-03	Locating supporting pin	1	
11	JB/ZQ4224-97	O ring 150×3.1	8	
12	GB3452.1-92	O ring 73×3.55	8	
13	09-12B	Locating pin 12.7×35	8	
14	09-05B	Thrust ring	8	
15	09-07B	Roller shaft	4	
16	Q/Z1-66	Bearing 64920-1	4	
17	JB/T7940.2-95	Grease cup M10×1	4	
18	09-04B(a)	4 ¹ / ₄ " square flat roller	4	
	09-04B(b)	5 ¹ / ₄ " square flat roller	4	
	09-04B(c)	3 ¹ / ₂ " square flat roller	4	
	09-04B(d)	6" square flat roller	4	
19	09-06ZB(a)	4 ¹ / ₄ " hex flat roller	2	
	09-06ZB(b)	5 ¹ / ₄ " hex flat roller	2	
	09-06ZB(c)	3 ¹ / ₂ " hex flat roller	2	
	09-06ZB(d)	3" hex flat roller	2	
	09-06ZB(e)	6" hex flat roller	2	
20	09-04ZB(a)	4 ¹ / ₄ " V-shape roller	2	
	09-04ZB(b)	5 ¹ / ₄ " V-shape roller	2	
	09-04ZB(c)	3 ¹ / ₂ " V-shape roller	2	
	09-04ZB(d)	3" V-shape roller	2	
	09-04ZB(e)	6" V-shape roller	2	

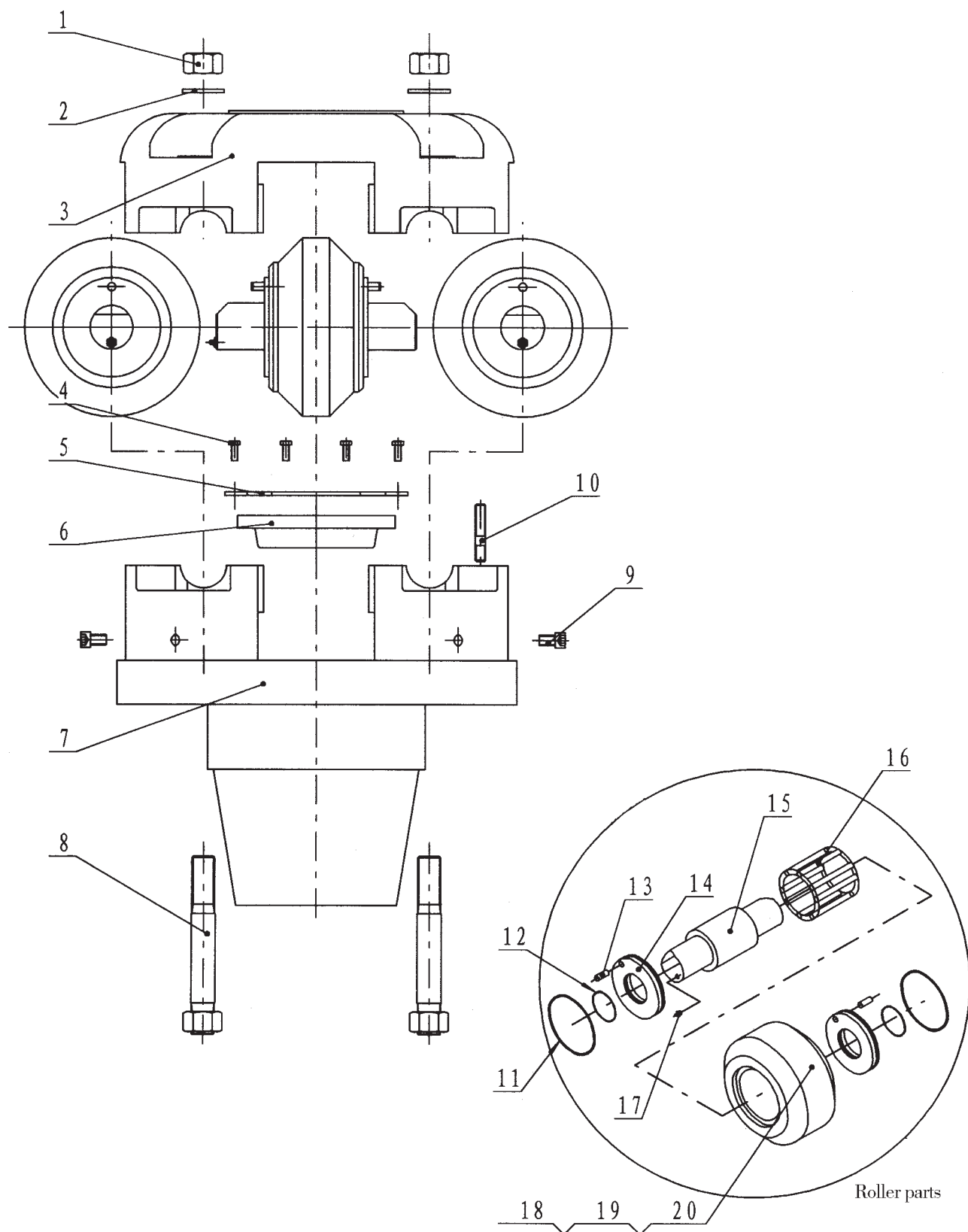


Fig.3 Parts Detail for HDS Roller Kelly Bushing