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# DEN·CON TOOL<sup>CO.</sup>

## ROLLER KELLY BUSHINGS MEDIUM DUTY SQUARE DRIVE

“RSM”

DATA BOOK & TECHNICAL / OPERATIONAL / SERVICE MANUAL

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# DEN-CON TOOL COMPANY DATA BOOK INDEX

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# DEN-CON TOOL COMPANY DATA BOOK INDEX GENERAL CATALOG PRODUCT SHEET



RSM

DEN-CON RSM Kelly Bushing is a medium duty square drive bushing used with DEN-CON SSB Master Bushings and all Master Bushings having a drive square dimension of 13 9/16 " (API). The RSM will handle Kelly sizes from 2 1/2" to 5 1/4" square and 3" to 4 1/4" hex.

DEN-CON RPM Kelly Bushing is a medium duty pin drive bushing to fit 17 1/2" Master Bushings.

KELLY SIZE/TYPE	MEDIUM DUTY ROLLER KELLY BUSHINGS				
	RPM COMPLETE	RSM COMPLETE		ROLLER ASSY. COMPLETE	ROLLER SET COMPLETE
	w/ wrench, less wiper. Fits 17 1/2" Pin Drive Master Bushing	w/ wrench, less wiper assy. Fits Square Drive Master Bushing			
PART #	PART #	WT. LBS.	PART #	PART #	
2 1/2" Sq.	2410-25S	2400-25S	870	2131	2140-4
3" Sq.	2410-30S	2400-30S	870	2132	2141-4
3 1/2" Sq.	2410-35S	2400-35S	870	2133	2142-4
4 1/4" Sq.	2410-42S	2400-42S	870	2134	2143-4
5 1/4" Sq.	2410-52S	2400-52S	870	2135	2144-4
3" Hex	2410-30H	2400-30H	860	2136	2145-46
3 1/2" Hex	2410-35H	2400-35H	860	2137	2147-48
4 1/4" Hex	2410-42H	2400-42H	860	2138	2149-50

## DEN-CON BUSHING FEATURES

All DEN-CON Kelly Bushings incorporate the following design features:

- Self-locking straight roller pins - prevents pin rotation and movement.
- Heavy duty graphite fiber bearing - prevents rusting, corrosion and galling of bearing structure.
- Stabbing skirt - allows fast and easy stabbing into master bushing assembly.
- Fast installation on Kelly - no shims required.
- Longer roller life - Roller assemblies may be turned 180° to double wear life to the assembly.
- Low maintenance - all parts field replaceable.
- Meets all API dimensions and specifications.
- Sealed Bearing Assembly - provided on RH Series.
- Optional Heavy Duty Roller bearings are available.

Den-Con manufactures replacement parts for Varco 4KRP, 4KRS and 4KRBM bushings which have been discontinued. Parts are also available for Varco MD Series bushings.

Replacement Kelly Bushing Parts and Assemblies may be ordered by Varco Part Numbers.

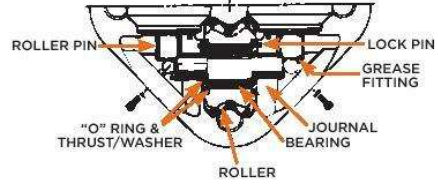
### Additional Kelly Bushings - Special Order.

- Kelly Bushings for "Big-Hole" Drilling application are available by special order.

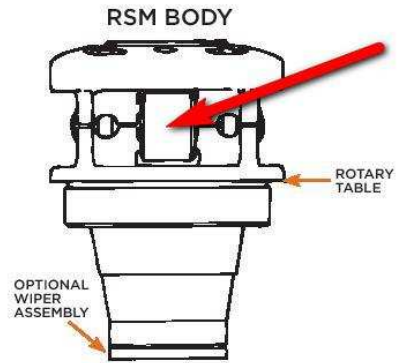
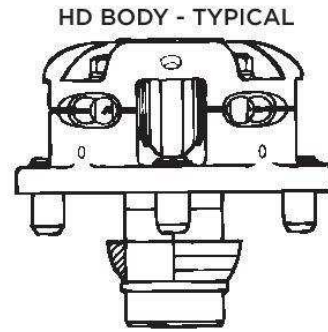


# DEN-CON TOOL COMPANY DATA BOOK INDEX GENERAL CATALOG PARTS LISTING

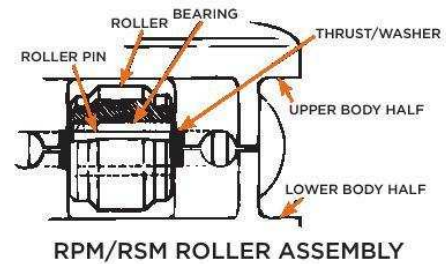
KELLY BUSHINGS PARTS LIST							
ITEM #	# REQ'D	DESCRIPTION	27 RPH SERIES	20 RPH SERIES	RSH SERIES	RSM SERIES	RPM SERIES
1	1	Body Assy. less Roller Assy.	2435	2430	2425	2400	2410
2	4	Hold Down Bolt	2428	2428	2428	2403	2403
3	4	Lock Washer, Hi-Collar	5110	5110	5110	—	—
4	4	Lock Washer	50924	50924	50924	50924	50924
5	4	Soc. Hd. Cap Screw	50110-8	50110-8	50110-8	—	—
6	4	Nut	1208	1208	1208	1208	1208
7	4	Drive Pin	2351	2352	—	—	—
8	4	Drive Pin Washer	2353	2353	—	—	—
OPTIONAL EQUIPMENT							
9	1	Wiper Rubber	A/R	A/R	A/R	A/R	A/R
10	1	Wiper Retainer Plate	2429	2429	2429	2404	—
11	8	Wiper Retainer Bolts	50008-10S	50008-10S	50008-10S	50008-10S	50008-10S
12	1	Hammer Wrench	2443	2443	2443	2443	2443



HD ROLLER COMPONENTS												
ITEM #	# REQ'D	DESCRIPTION	ROLLER ASSY. & KELLY SIZE									
			3 Sq. 2450	3 1/2 Sq. 2451	4 1/2 Sq. 2452	5 1/2 Sq. 2453	6 Sq. 2454	3" Hex 2455	3 1/2" Hex 2456	4 1/2" Hex 2457	5 1/2" Hex 2458	6" Hex 2459
1	2125	Roller Pin	4	4	4	4	4	4	4	4	4	4
2	2193	Sleeve Bearing	4	4	4	4	4	4	4	4	4	4
3	2126A	Thrust Washer w/ O-Rings	8	8	8	8	8	8	8	8	8	8
4	2126	Thrust Washer less O-Rings	8	8	8	8	8	8	8	8	8	8
4	3613	Lock Pin	8	8	8	8	8	8	8	8	8	8
5	233B	Inner O-Ring	8	8	8	8	8	8	8	8	8	8
6	358B	Outer O-Ring	8	8	8	8	8	8	8	8	8	8
7	2110	Roller	4									
	2111	Roller		4								
	2112	Roller			4							
	2113	Roller				4						
	2114	Roller					4					
	2115	Roller						2				
	2116	Roller						2				
	2117	Roller							2			
	2118	Roller							2			
	2119	Roller								2		
	2120	Roller								2		
	2121	Roller									2	
	2122	Roller									2	
	2123	Roller										2
	2124	Roller										2
OPTIONAL												
	2199	Wiper Rubber	-9	-10	-11	-12	-13	-14	-15	-16	-18	-19
	2127	Roller Bearing	ALL									



RPM/RSM MEDIUM DUTY BUSHING ROLLER COMPONENTS												
ITEM #	# REQ'D	DESCRIPTION	ROLLER ASSY. & KELLY SIZE									
			2 1/2" Sq. 2131	3" Sq. 2132	3 1/2" Sq. 2133	4 1/2" Sq. 2134	5 1/2" Sq. 2135	3" Hex 2136	3 1/2" Hex 2137	4 1/2" Hex 2138		
1	2156	Roller Pin	4	4	4	4	4	4	4	4	4	4
2	2194	Sleeve Bearing	4	4	4	4	4	4	4	4	4	4
3	2158	Thrust Washer	8	8	8	8	8	8	8	8	8	8
4	2140	Roller	4									
	2141	Roller		4								
	2142	Roller			4							
	2143	Roller				4						
	2144	Roller					4					
	2145	Roller						2				
	2146	Roller							2			
	2147	Roller								2		
	2148	Roller								2		
	2149	Roller									2	
	2150	Roller										2
OPTIONAL												
	2199	Wiper Rubber	-1	-2	-3	-4	-5	-6	-7	-8		
	2157	Roller Bearing	ALL									



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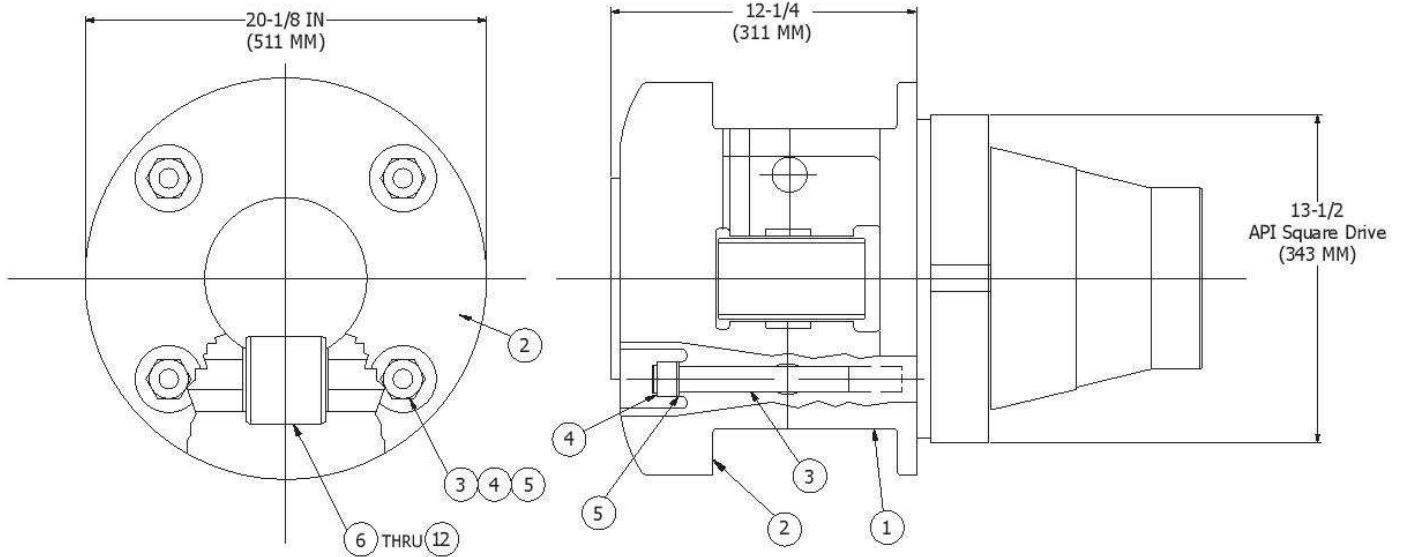
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RSM MATERIAL INDICATOR TABLE**

<b>PART #</b>	<b>DESCRIPTION</b>	<b>NO. REQ'D PER ASSY</b>
2400	RSM BODY	1
2403	HOLD DOWN STUD	4
1208	HOLD DOWN NUT	4
50924	HOLD DOWN WASHER	4
<b>ROLLER ASSEMBLY PARTS - RSM</b>		
2156	ROLLER PIN	4
2194	SLEEVE BEARING	4
2157	ROLLER BEARING (OPTIONAL)	4
2158	THRUST WASHER	8
A/R	ROLLERS	A/R

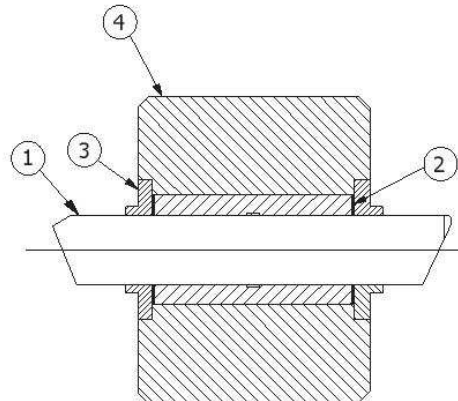
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# DEN-CON TOOL COMPANY DATA BOOK INDEX DESIGN FEATURES

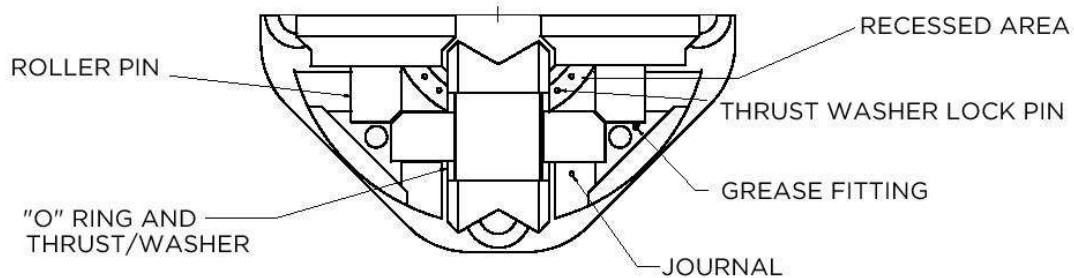


1. Fits all square drive master bushings with API drive square (13-9/16).
2. Handles 2-1/2" through 5-1/4" square or 3" through 4-1/4" hex kellys by roller change only.
3. High strength, heat-treated materials used for all components.
4. Integral stabbing skirt included.
5. Self-locking roller pins.
6. Roller or graphite bearings available.
7. Fast installation on kelly.
8. Fast stabbing in master bushing.
9. Long roller life - rollers may be turned 180 degrees to double life.
10. Low Maintenance.
11. Easy repair and minimal downtime.
12. All parts interchange with Varco 4KRV series.



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1. Set Kelly Bushing into Master Bushing.
2. Remove hold down nuts and lock washers.
3. Remove top half of Kelly Bushing body.
4. Remove four roller assemblies.
5. Place top half of bushing loosely over bottom half.
6. Stab Kelly through bushing.
7. Lift top half of bushing from bottom half.
8. Replace roller assemblies in lower half of body, making sure that flat areas of thrust washers are horizontal and fit into recessed area.
9. Position top half of body over the stud bolts.
10. Replace lock washers and nuts and make up the nuts with the hammer wrench.
11. Grease and check all rollers.



ROLLER ASSEMBLY



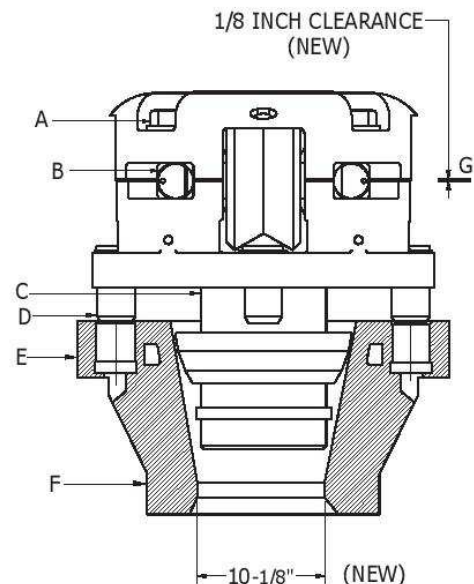
# DEN-CON TOOL COMPANY DATA BOOK INDEX OPERATION & MAINTENANCE

## OPERATION

1. Lower kelly bushing into master bushing. The stabbing skirt will follow the taper down the throat of the bowls. The skirt will center the kelly bushing in the master bushing assembly.
2. Turn the rotary table slowly as the kelly bushing is being lowered and the bushing will center itself and the drive pins or drive square will stab into the master bushing.
3. Use care when lowering the kelly into the rat-hole. Any sudden jarring stop when the kelly upset strikes the rollers can damage roller assembly.
4. The life of the kelly and kelly bushing parts can be increased by using the kelly wiper rubber. The wiper will help keep dirt and other material from getting between the kelly and the rollers.

## MAINTENANCE

- A. Tighten hold down nuts weekly.
- B. Grease roller assembly daily.
- C. Grease stabbing skirt for ease of stabbing.
- D. Replace drive pins when bottom taper is too worn to aid in stabbing (pin drives).
- E. Replace drive hole bushings in pin drive master bushings when worn in egg shape.
- F. Replace API No. 3 bowl when throat diameter exceeds maximum recommended dimension. Proper throat diameter is necessary for good stabbing.
- G. Top and bottom halves must have clearance. No clearance indicates worn journal area.
- H. To keep the edges of hex kelly dressed, rotate the kelly within the roller assembly one face, or 60 degrees, after each well is drilled. The center of the vee rollers will push the rolled edge back into place.





# DEN-CON TOOL COMPANY DATA BOOK INDEX PART NUMBER INTERCHANGE LISTING

DEN-CON PART #	VARCO PART #	DEN-CON PART #	VARCO PART #	DEN-CON PART #	VARCO PART #
2400	1401 & 1402	2142-4	1432-4	2131	1445
2425	3635 & 3636	2143-4	1433-4	2132	1446
2430	3690 & 3691	2144-4	1434-4	2133	1447
2435	3650 & 3651	2145-46	1437-38	2134	1448
1208	1208	2147-48	1439-40	2136	1450
2351	1605	2149-50	1441-42	2137	1451
2352	1505	2168-4	2930-4	2138	1452
2353	1506	2169-4	2931-4	2164	2949
2403	1414	2170-4	2932-4	2161	2943
2428	13501	2171-4	2933-4	2162	2944
2404	1417	2174-75	5221-22	2163	2945
2429	1321	2176-77	5223-24	2166	5210
2443	1210	2172-73	2939-40	2167	5211
2110-4	1331-4	2195-96	1387-88	2165	2948
2111-4	1332-4	2450	3660	2125	3609
2112-4	1333-4	2451	3661	2156	1411
2113-4	1334-4	2452	3662	2178	2910
2114-4	1335-4	2453	3665	2191	1311
2115-16	1338-39	2454	3666	2126A	3618
2117-18	1340-41	2455	3667	2158	1413
2119-20	1342-43	2456	3668	2180	2912
2121-22	1344-45	2457	3669	2192	1313
2123-24	1346-47	2197	3671	2193	1326
2140-4	1430-4	2458	3672	2194	1422
2141-4	1431-4	2459	3673	2179	5218
2127	1312	2157	1412	1316	1316
3613	3613/19138	2126	3610	358B	3611
233B	3612	2464	3695	2465	3696
2466	3697	2467	3698		